INVESTIGATION INTO INTRINSIC MOTIVATION AND REPUTATIONAL CONCERNS IN THE PUBLIC SECTOR

A thesis submitted for the degree of
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by
Vurain Tabvuma

Department of Economics and Finance, Brunel University

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Abstract

The objective of this thesis is to provide both empirical evidence and theoretical explanations that will show the positive and negative effects of intrinsic motivation and reputational concerns in the public sector. The thesis argues that by having intrinsically motivated individuals in the public sector (i.e. individuals that are public service motivated), the government can provide higher quality public goods and services at a lower cost. The thesis finds empirical evidence for the existence of public service motivation and also finds that high extrinsic rewards in the public sector deter individuals with high levels of public service motivation from joining the public sector. There is also empirical evidence showing that individuals remain public service motivated in the long term.

This thesis also investigates whether the reputational concerns of a principal (government) can lead to under provision of quality improving effort by contracted firms in procurement contracts. The thesis finds that reputational concerns cause the decision maker to intervene in procurement projects more frequently than is optimal. This then results in the contracted private firm exerting less effort to produce quality improving firm specific investments.

Since public service motivation can improve the delivery of public goods and services, these findings lead us to conclude that governments must find ways to recruit a larger proportion of public service motivated individuals into the public sector. These findings also highlight the importance of reputational concerns in the decision making process of governments. They show us that reputational concerns can have very negative effects on procurement contracts.

Acknowledgement

Declaration of Co-Authorship

I hereby declare that this thesis incorporates material that is result of joint research, as follows:

This thesis also incorporates guidance and literature contributions from Prof. Elisabetta Iossa and Dr. Yannis Georgellis, the author's supervisors. The collaboration with Prof. Elisabetta Iossa is covered in Chapter 1 of the thesis and collaboration with Dr. Yannis Georgellis is covered in both Chapters 1 and 2 of the thesis. In all cases, the key ideas, primary contributions, empirical designs, data analysis and interpretation, were performed by the author, and the contribution of co-authors was primarily through linking the research with relevant literature.

I am aware of the Brunel University Senate Policy on Authorship and I certify that I have properly acknowledged the contribution of other researchers to my thesis, and have obtained written permission from each of the co-author(s) to include the above material(s) in my thesis.

I certify that, with the above qualification, this thesis, and the research to which it refers, is the product of my own work.

Contents

Descriptive Statistics

Tables for Probit Regressions

Tables for Wage and Satisfaction Equations with Selectivity Bias Correction

Differential Correlations

Tables for Probit Regressions (without Satisfaction with Pay Differential)

APPENDIX TO CHAPTER 2………………………………………………………..114

Figures Summarizing Fixed Effects Regression Results

Descriptive Statistics

Table for Comparison between Job Changers and Stayers

Tables for Fixed Effects Regressions

APPENDIX TO CHAPTER 3

Figures Illustrating Simulations of the Relationship between z and model parameters (i.e. g, γ, r, and s).

Introduction

I.1 Motivations

The public sector is plagued with various incentive problems that manifest themselves in the form of cost overruns and/or poor quality in the delivery of public services. Economists have attempted to determine the nature and causes of these cost overruns and poor quality outcomes in the delivery of public services. This thesis attempts to analyze whether of reputational concerns and intrinsic motivation can improve performance in the public sector.

I analyse reputational concerns and intrinsic motivation because the public sector provides unique challenges that more obvious remedies may not be able to correct. For example the role of extrinsic rewards in improving public sector performance has been questioned. Holmstrom and Milgrom (1991) argue that if an agent performs several tasks, and how well these tasks are performed is not equally measurable then giving explicit incentives may not be efficient. A good example is in teaching. Teachers have the choice of whether to invest in effort that will improve the test scores of students or effort that gives students other skills such as inquisitiveness and curiosity whose performance is difficult to measure. Holmstrom and Milgrom (1991) argue that if teachers are given incentive pay based on exam performance then they will exert less of the second type of effort. Thus the overall outcome of incentive pay may be undesirable and it may be better to simply give teachers a flat salary. How then to further motivate teachers? I consider whether reputational concerns and intrinsic motivation can be a further source of motivation, which results in the improvement of the delivery of public services.

The literature on public procurement gives several reasons for the existence of persistent cost overruns in public procurement. Firstly, cost overruns have been attributed to a soft budget constraint problem that exists between the government and the contractor. This literature (Kornai, Maskin, and Roland (2003), Dewatripont and Maskin (1995), Kornai (1979)) views the government as the supporting organisation

and the contractor as the budget constrained organisation.[1] The government cannot credibly commit not to bail out the contractor when the contractor encounters financial problems and as a result the contractor loses the incentive to keep costs low.[2]

Secondly, cost overruns have been attributed to design and project complexity. Bajari and Tadelis (2001) argue that projects that are simple should be procured using fixed price contracts as their designs have a high degree of completeness and so are unlikely to require costly renegotiation. Projects with complex designs, and therefore have a high degree of incompleteness and require alteration and so costly renegotiation. Such projects are better provided using cost plus contracts.

Cost overruns have also been attributed to a lack of competition in the bidding stage for contracts. Ganuza (2000) argues that low levels of competition in the bidding stage will result in a lower level of design specification which leads a higher likelihood of cost overruns once the project has begun.

The literature attributes firms reneging on quality to contract incompleteness. Private firms contracted to the government exploit contract incompleteness, producing low quality services and goods in order to save on costs (Hart, Shleifer and Vishny, 1997).

Reputation building has been shown to create incentives to keep costs low and improve quality, at least in the short term. Lewis (1986) argues that contractors have an incentive to keep costs low in the beginning stages of a project. However, after a number of stages have passed, the sponsor is "locked in" and cannot terminate the project. When this happens, the contractor no longer has an incentive to keep cost

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[1] Dewatripont and Maskin (1995) present a model where due to adverse selection; projects that are unprofitable may receive financing. This refinancing will occur, and possibly continue, if sunk costs have already been incurred. The paper also shows that credit decentralisation offers a way for providers of finance (supporting organisations) to credibly commit not to refinance such projects, discouraging entrepreneurs from adopting poor projects.

[2] Other researchers have not looked at SBCs as dynamic commitment problems. Boycko, Shleifer, and Vishny (1996) attempt to explain the SBC phenomenon as being due to political interventions in firms. In this case, politicians may have political motivation "to obtain subsidies for firms in financial difficulty. They strive to save jobs so as to increase their popularity and political influence". Bai and Wang (1996) consider the SBC as a principal agent problem, with the planner being the agent and the government being the principal. Their model is set in an economy with many projects, with some projects being ex ante profitable, others ex ante unprofitable but ex post profitable, and others unprofitable both ex ante and ex post. The agent first screens for the profitability of the projects, which requires effort, deciding afterwards which projects to undertake. The principal cannot terminate ex post profitable projects once they have been selected by the agent, even though they are ex ante inefficient.

low, but will stop exerting the effort required to keep costs low resulting in cost overruns. Dalen, Moen and Riis (2006) suggest that the government can have a contract renewal policy where after each period a certain proportion of firms are replaced according to where the firms lie in a quality (of project) ranking that is done by a third party. The greater the proportion of firms replaced after each period, the greater the incentives on the contractors to improve quality. However, there is a trade off, replacing firms is costly as new firms will have to incur a sunk cost (which implies that the government has to increase the payment made to firms, thus reducing the benefits that the government enjoys).

In addition to reputational concerns, a growing literature in economics, psychology and sociology has argued that placing individuals that are intrinsically motivated (or public service motivated) in the public sector will improve performance in the public sector, resulting in greater efficiency in the public sector. Grout and Yong (2003) and Grout and Schnedler (2006) have argued that organisational form is important in allowing individuals to donate labour. These papers have argued that because the public sector can credibly commit to not expropriate labour, individuals are more willing to donate labour in the public sector. Francois (2001) argues that agents who care about the output will have less incentive to shirk in the public sector than in the private sector. This is because public sector managers cannot commit to increase other factors of production to maintain output if an agent shirks effort, whereas private sector managers can, due to the profit motive. It is argued that the public sector provides greater opportunity for public service motivated individuals to carry out work that will satisfy these motivations.[3]

However, these previous approaches to explain cost overruns and low quality, and the role of reputation and intrinsic motivation in improving performance leave some room for improvement. First, these theories on procurement and reputation do not look at how reputational concerns by the principal may affect the agent. This is a very important issue as governments that give out procurement contracts have reputational concerns as they desire to be re-elected by voters. The desire for re-election, I argue can have a profound impact on the incentives of contracted parties.

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[3] In a recent paper, Gregg, Grout, Ratcliffe, Smith and Windmeijer (2008) show that workers in the non-profit sector donate significantly more labour than workers in the private sectors.

Second, whilst the literature on intrinsic motivation highlights the benefits of intrinsic motivation (public service motivation) in the public sector. The literature on intrinsic motivation does not identify what determines whether public service motivated individuals join the public sector. There is a growing literature that looks at crowding out of pro-social behaviour by extrinsic rewards.[4] However there is no work that looks at factors that deter intrinsically motivated individuals from joining the public sector. Third, the studies on intrinsic motivation do not take into account what happens to intrinsic motivation over time.

In order to fill these gaps in the literature, this thesis attempts to provide both theoretical explanations and empirical evidence that will show the positive and negative effects of reputational concerns and intrinsic motivation in the public sector. This thesis will attempt to determine whether extrinsic rewards deter intrinsically motivated people from joining the public sector. Second, this thesis will attempt to determine what happens to the level of intrinsic motivation of individuals over time. Third, this thesis investigates whether reputational concerns by a principal (government) can lead to underinvestment of effort by contracted firms. This can also be viewed as investigating whether reputational concerns by a manager can lead to underinvestment of effort by a subordinate.

This thesis makes several key assumptions. Firstly, I assume that satisfaction with the work itself is a proxy for satisfaction derived by individuals from the intrinsic aspects of work. Secondly, I assume that contracts are incomplete. This is because the quality of services provided in procurement contracts cannot be fully specified in a contract.

In summary, this thesis involves three main objectives:

1.   The first is to theoretically and empirically determine whether extrinsic rewards will deter individuals that are intrinsically motivated from joining the public sector.

2.   Secondly, the thesis will empirically determine whether intrinsic motivation in the public sector adapts over time.

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[4] See Frey and Jegen (2001) for a survey of this literature.

3.	Finally, this thesis will theoretically show that when a principal has reputational concerns, under some conditions this can result in an agent under-investing in firm specific investments that can bring about quality improvements or cost reductions.

I.2 The Structure of the Thesis

This thesis deals with three themes. The first is to develop a theoretical model and undertake empirical analysis to determine whether extrinsic rewards deter intrinsically motivated individuals from joining the public sector. The second is to empirically determine whether intrinsic motivation (public service motivation) adapts, i.e. to examine how intrinsic motivation changes over time in the public sector. The third is to develop a theoretical model explaining how reputational concerns by a principal can lead to under performance by a contracted agent.

The remainder of this introductory chapter surveys relevant literature that will give background information and clarify the research areas where this thesis contributes. This survey investigates the literature on the following issues: the relationship between intrinsic motivation and public sector performance, and incentive problems that occur in public sector contracting and procurement, and a brief overview of how to overcome some of these problems. This survey is followed by a brief description of the research methodologies that are used in this thesis.

In Chapter 1, I argue that having higher wages and other higher extrinsic rewards, such as pay, job security, and working hours, in the public sector (than in the private sector) will make it less likely that intrinsically motivated individuals will join the public sector. This is because if intrinsically motivated individuals are concerned about their reputations for being altruistic, when they join the public sector they gain increased utility from undertaking pro-social work in the public sector, but also have their utility decreased because the higher extrinsic rewards in the public sector reduce their reputations or being altruistic. I then test out this hypothesis using data from the British Household Panel Survey (BHPS). Using subjective well-being measures I show that individuals are less likely to move to the public sector due to the higher

amount of extrinsic rewards in the public sector, but are more likely to move to the public sector due to the nature of work undertaken in the public sector.

In Chapter 2, I investigate the inter-temporal nature of intrinsic motivation in the public sector. That is, I investigate whether public service motivation adapts over time. I do this by examining overall job satisfaction and its domains before, during and after a change of job and/or employment sector. To gain comparative perspective, the job changes I consider are changes from the private sector to the public sector, from the public sector to the private sector, job changes within the public sector and job changes within the private sector. The analysis is undertaken using data from the BHPS. I show that for both men and women, transition into the public sector from the private sector results in a permanent increase in overall job satisfaction and satisfaction with the intrinsic characteristics of work. All other job changes are associated with an increase in job satisfaction and its domains, however these increases are not permanent and satisfaction decreases over time. The exception is men who make the transition into the private sector. This transition results in a permanent increase in job satisfaction, however this increase is associated with increased satisfaction from extrinsic rewards, such as pay and job security. Thus, overall these results provide strong evidence that intrinsic motivation (public service motivation) does not adapt in the public sector.

In Chapter 3, I develop a model to show that when a decision maker (e.g. government) has got reputational concerns and can step in to undertake a project being undertaken by an agent (e.g. contracted firm) to enhance their reputation for being competent, there are cases where the agent will under-invest in effort that could result in improved quality of the project. First, I set up the basic structure of the model, into which the reputational concerns of the decision maker and the firm specific investment made by the agent are included. Then I continue by showing that a decision maker with reputational concerns will step in more frequently than is optimal. This increases the likelihood of private firms facing expropriation. Therefore, private firms choose lower than optimal levels of firm specific quality improving investment.

Finally, in Chapter 4, I summarise the findings of the theoretical and empirical analysis of the thesis. I then provide some concluding remarks based on the findings.

I.3 Literature Survey 1: Intrinsic Motivation and Public Sector Performance[5]

Early work on intrinsic motivation was undertaken by psychologists. However, more recently intrinsic motivation has come to the forefront of economic research. The focus of much of the work on intrinsic motivation has been on how it is crowded out by extrinsic rewards. Indeed, intrinsic motivation is often identified where output or effort decreases when extrinsic rewards are introduced. Intrinsic motivation is introduced to the literature in the seminal work of economist Titmuss (1970); and psychologists Deci (1971) and Lepper, Greene, and Nisbett (1973). Titmuss (1970), in his book *The Gift Relationship: From Human Blood to Social Policy*, argued that paying for blood would decrease the supply of donated blood because monetary compensation would undermine social values. Deci (1971) found that when money was used as an external reward there was a decrease in intrinsic motivation. The paper also finds that verbal reinforcement and positive feedback increased intrinsic motivation. Lepper et al. (1973) found that amongst children, extrinsic rewards reduced intrinsic motivation.

Continuing on the work by Deci (1971) and Lepper et al. (1973), researchers in psychology have built up empirical evidence showing that providing monetary rewards for some tasks can have negative consequences.[6] Deci, Koestner, and Ryan (1999) provide a survey of empirical results that show that extrinsic rewards have a negative effect on intrinsic motivation.

Modelling using agents with altruistic and other regarding preferences has become increasingly common in economics. This has been very important because it has allowed economists to better understand many social and economic interactions, especially interactions where individuals display pro-social behaviour. This section argues that other regarding preferences and other pro-social motivations have

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[5] This literature survey includes literature that will be discussed once more in Chapters 1 and 2.
[6] See Frey and Jegen (2001) for a survey on motivation crowding theory of literature from both economics and psychology.

significant economic impacts in the provision of public goods and social services. The section then moves on to discuss pro-social motivation in the public sector, i.e. public service motivation. The section continues by discussing how monetary and other extrinsic rewards may crowd out altruism and other pro-social behaviours and then finally discusses the literature on adaptation.

I.3.1 Pro-social Motivation and Performance

Economists divide altruism and pro-social behaviours into two types, impure (or action-oriented) altruism and pure (output-oriented) altruism. Impure or action-oriented altruism is where agents derive a direct benefit from performing tasks that the agent considers worthwhile. The agent may care about the impact of his actions, but this type of modelling emphasises that the agent derives utility from undertaking a worthwhile task. Pure or output-orientated altruism is where an agent derives a direct benefit from the worthwhile good or service itself. These definitions highlight two important differences in the two types of altruism. Firstly, free-riding only occurs when there is pure altruism. With impure altruism, agents derive direct benefit from undertaking the worthwhile task and thus free-riding is not a problem. With pure altruism, agents derive benefit from the worthwhile good or service, regardless of who was responsible for its provision. Secondly, pure altruism also gives rise to a moral hazard problem. This is because agents maybe unsure about how much of their effort is contributing to the provision of the worthwhile good. There is no moral hazard problem with impure altruism (Francois and Vlassopoulos, 2007).

I begin by considering the literature on impure altruism. Andreoni (1990) argues that individuals not only gain from increasing the total supply of public goods, but they also gain additional utility from giving, i.e. there is a "warm glow" that people receive from giving. Empirical evidence of the "warm glow" effect is given by Meier and Stutzer (2006), who find that volunteers have higher life satisfaction than non-volunteers.

Besley and Ghatak (2005) investigate the effect of having impure altruism on the optimum contract in a setting with moral hazard. They do this by studying the optimal incentive where some agents are pro-socially motivated and others are motivated by

monetary and other extrinsic rewards. They show that better matching of agents and principals with similar preferences reduces the need for high-powered incentives and increases organizational efficiency. Altruistic agents are shown to provide more effort and to require less monetary compensation than extrinsically motivated agents.

Delfgaauw and Dur (2007) investigate firm selection and screening of workers whose type varies between workers that are impurely altruistic and workers that are extrinsically motivated. They show that the employer faces a trade off in designing his or her optimal wage scheme in that by increasing wages, the employer increases the probability of hiring workers that have low levels of pro-social motivation. Francois (2007) finds a similar result. He finds that higher wages increase the number of applications from both shirkers and non-shirkers. He also finds that the impact on output depends on the relative density of the two types of workers, i.e. if there is a higher concentration of shirkers, then having higher wages will reduce output.

Dixit (2005) constructs a model where a firm produces two types of output, primary output and its by product, both of which are intrinsically valuable to the worker. The principal, however, only values the primary output and only compensates the worker for provision of the primary output. The paper shows that the agent's pro-social motivation is a substitute for monetary compensation, but lowering compensation also lowers the output of the by-product, if the principal has an aversion for the by-product. Canton (2005) finds that pro-social motivation reduces the fixed cost of meeting the worker's participation constraint and also finds that intrinsically motivated workers only need small amounts of incentives to induce effort. Murdock (2002) shows that pro-social motivation induces firms to invest in projects with higher intrinsic payoffs. Pro-social firms are more likely to invest in projects that have ex ante negative returns but can generate positive returns if the project is intrinsically valuable to the worker and the worker provides higher effort, increasing the likelihood of positive profits for the firm.

All the above literature concludes that impure altruism reduces the need for high powered incentives to induce effort. This suggests that if pro-social motivation is correctly harnessed, it can result in the delivery of services and goods that pro-socially motivated individuals find worthwhile at a lower cost.

I now turn to pure or output oriented altruism. Francois (2000) argues that agents who care about the output will have less incentive to shirk in the public sector than in the private sector. This is because public sector managers cannot commit to increase other factors of production to maintain output if an agent shirks effort, whereas private sector managers can, due to the profit motive. Therefore agents that care output will exert more effort in the public sector than in the private sector because in the public sector their extra effort goes to producing more of the output. Whereas in the private sector the agents anticipate that if they do not exert extra effort the manager will increase other factors of production to ensure output levels are maintained because of the profit motive.

This suggests that in the private sector, if employers can somehow commit to not be able to increase the other factors of production if employees (who care about the output) shirk, then purely altruistic employees would exert more effort. Francois (2001) investigates this. This paper argues that if firms can gain a reputation for not expropriating the extra effort of employees by reducing other the factors of production, then employees would exert extra effort. However, this does not overcome the free riding problem associated with output-orientated altruism. Employees still derive utility from the output if other employees exert extra effort, thus resulting in under provision of effort. To overcome this problem, Francois (2007) argues that firms should use performance-contingent compensation. Assuming that employees are heterogeneous in their valuation of the output, this is because without performance-contingent compensation employees with high valuations for the output will exert extra effort, whilst individuals with low valuations do not exert any effort. This negatively affects output.

Several other papers are also concerned with firm commitment as a mechanism to induce extra effort (in the form of donated labour) and monetary donations. Grout and Yong (2003) and Grout and Schnedler (2006) also argue that individuals are more willing to donate labour in the not for profit sector because the public sector can

credibly commit not to expropriate labour.[7] Bilodeau and Slivinski (1998) argue that by choosing non-profit status, instead of for-profit, firms can commit not to appropriate funds thus inducing higher monetary donations from society. Glazer (2004) shows that if a firm can commit to provide a level of capital (even after observing the employee's effort); this induces purely altruistic employees to exert extra effort. Rowat and Seabright (2006) argue that aid agency hiring of purely altruistic workers is a commitment device that shows donors that its managers are willing to work for less money in order to undertake provision of the worthwhile action. Delfgaauw (2007) argues that doctors who are both purely altruistic and value extrinsic rewards prefer to work in the public sector whereas doctors that only value extrinsic rewards prefer to work in the private sector. This is because in the public sector, the altruistic doctors can treat patients that cannot afford the extra effort required to ensure quality treatment.[8] Vlassopoulos (2006) argues that committing not to appropriate donated labour and being mission-orientated allows non-profit employers to attract purely altruistic volunteers with career aspirations.

Researchers have also investigated gender differences in pro-social behaviour. Andreoni and Vesterlund (2001) find that women are more altruistic when it is more costly to be altruistic and that men are more altruistic when it is less costly. Cronson and Gneezy (2009) find that the social preferences of women are more situationally specific and more malleable than men.[9] This finding that women are more sensitive to social cues in determining appropriate behaviour implies that women may place higher value on a pro-social reputational than men. Benabou and Tirole (2006, pp.1662) argue if indeed women have higher weights on pro-social reputational concerns than men, then women are more likely to contribute more pro-social actions in the absence of extrinsic rewards and women will also more likely respond more negatively than men to extrinsic rewards. Evidence of this is found by Mellstrom and Johannesson (2008) who when studying the willingness to donate blood find that in the absence of monetary incentives women donate more blood than men. However,

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[7] Grout and Schnedler (2006) introduce a third player, an output-orientated individual willing to contribute effort. They show that labour contribution of the individual is dependent on the negotiating power of the individual. With less negotiating power the individual contributes more labour.
[8] Delfgaauw (2007) also shows that in mixed strategy equilibrium, having both private and public sector doctors is pareto superior to having only private sector provision or only public sector provision of medical care.
[9] Cronson and Gneezy (2009) give a survey on gender differences in preferences.

when monetary incentives are introduced, the blood donations of women drop significantly. When subjects are offered the choice to give the monetary payment to charity, the blood donations of women increase back to levels when there were no monetary incentives. The blood donations of men remain approximately the same throughout. Thus, in this thesis I also investigate gender differences.

I.3.2 Public Service Motivation

Pro-social behaviour in the public sector is referred to as Public Service Motivation (PSM). The concept of PSM originated in the discipline of public administration. Perry (1996) defines PSM as "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions". This predisposition is a combination of both impure and pure altruism. It is determined by environmental factors, such as parental modelling or socialization within organizations. It reflects three categories of motives: rational, norm-based and affective. Rational motives are present when individuals want to participate in policy-making to pursue their political agenda, or when individuals commit to a public program because they personally identify with it. Norm-based motives are generated by a desire to pursue the public interest; they include patriotism, civic duty and a sense of loyalty to the government. Affective motives refer to behaviour motivated by emotional responses to different social contexts and are characterized by a desire to help others.

Most of the empirical evidence on the existence and impact of PSM is found in the public administration literature. Brewer and Selden (1998) find evidence of PSM amongst whistle-blowers in the public sector. However, because their sample only consists of workers in the public sector, this paper is not able to give a comparative perspective of PSM. That is, we cannot tell whether whistle-blowers behave any differently in the private sector from this paper. Crewson (1997) and Dilulio (1994) show that workers in the public sector report higher satisfaction with the intrinsic characteristics of work than workers in the private sector. Houston (2000) shows that public sector employees are more likely to place a higher value on the intrinsic rewards. Houston (2006) shows that public sector workers undertake more charitable activities than workers in the private sector.

In economics, recent literature has attempted to estimate the impact of having intrinsically motivated individuals in the public sector. A recent paper by Gregg, Grout, Ratcliffe, Smith and Windmeijer (2008) shows that workers in the non-profit sector donate significantly more labour than workers in the private sectors. They find that workers in the non-profit sector are 12 percentage points more likely to undertake unpaid overtime. This amounts to an equivalent of an extra 60,000 people working in the non-profit sector in the UK. Thus having intrinsically motivated individuals in the public sector can have a dramatic impact on public sector performance. Since intrinsically motivated workers can be of great benefit to the public sector, this thesis will attempt to determine whether intrinsically motivated workers are attracted to the public sector and attempt to identify the factors that stop intrinsically motivated workers from joining the public sector. Thus this thesis will determine whether it is the public sector that causes individuals to have higher intrinsic motivation or whether it is individuals with higher intrinsic motivation that are attracted to the public sector. This thesis will also attempt to determine whether intrinsically motivated workers remain intrinsically motivated as their length of time of employment in the public sector increases.

I.3.3 Crowding Out Intrinsic Motivation

Motivation crowding out proposes that the introduction of monetary incentives or punishments may undermine intrinsic motivation. According to Francois and Vlassopoulos (2007) intrinsic motivation is "where an individual pursues actions not because of external rewards but because the activity is valuable in its own right".[10] Motivation crowding theory has its roots in both economics and psychology. In economics, Titmuss (1970), in his book *The Gift Relationship: From Human Blood to Social Policy*, argued that paying for blood would decrease the supply donated blood because monetary compensation would undermine social values.

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[10] Frey (1997) cites the definition of intrinsic motivation by Deci (1971), "one is said to be intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself."

In psychology, researchers have built up empirical evidence showing that providing monetary rewards for some tasks can have negative consequences.[11] Deci, Koestner, and Ryan (1999) provide a survey of empirical results that show that extrinsic rewards have a negative effect on intrinsic motivation. They also find that extrinsic rewards do not negatively affect intrinsic motivation when they are unexpected or when they are not related to the performance of a task. This leads them to conclude that extrinsic rewards undermine self-regulation, i.e. a consequence of extrinsic rewards is that individuals take less responsibility for self motivation.

Motivation crowding out has now come to the forefront of economics. Benabou and Tirole (2006) develop a theory that considers both an individual's altruistic motivation for undertaking pro-social behaviour and an individual's care for monetary transfers, i.e. greed. Given an individual is concerned about how others perceive him/her, rewards (monetary transfers) provide some incentives for undertaking pro-social behaviour, however they reduce the reputation (and thus create doubt) for altruism and thus reduce the utility the individual derives from pro-social behaviour. Visibility is shown to encourage pro-social behaviour to a limit. When actions are too visible, this results in less intrinsically motivated agents making it more difficult to signal one's altruism.

Frey, Oberholzer-Gee, and Eichenberger (1996) and Frey and Oberholzer-Gee (1997) show that people are less likely to accept that "Not In My Backyard" (NIMBY) projects are undertaken in their own town when they are offered monetary compensation. In an experimental study, Gneezy and Rustichini (2000a) show that individuals exert less effort when a small amount of monetary compensation is offered than when no compensation is offered. In Gneezy and Rustichini (2000b) the introduction of a fine to parents who are late in collecting their children from school increases the rate of parents arriving late. Ariely, Bracha, and Meier (2009) show that image motivation is crowded out by monetary incentives, meaning that monetary incentives are less likely to work in public pro-social activities and more likely to work in private pro-social activities. Carpenter and Myers (2007) find that altruism and reputational concerns are positively related to individual's volunteering to be fire

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[11] See Frey and Jegen (2001) for a survey on motivation crowding theory of literature from both economics and psychology.

fighters. They also find that positive effect that monetary incentives have on volunteering decline with reputational concerns, thus providing further evidence of extrinsic incentives crowding out pro-social behaviour. Mellstrom and Johannesson (2008) study the willingness to donate blood find that in the absence of monetary incentives women donate more blood than men. However, when monetary incentives are introduced, the blood donations of women drop significantly. When subjects are offered the choice to give the monetary payment to charity, the blood donations of women increase back to levels when there were no monetary incentives. The blood donations of men remain approximately the same throughout.

I.3.4 Adaptation

The concept of adaptation was first noted in the late 19th century by economists and has more recently come to the attention of economists again (see Bruni and Sugden (2007)). Work by Kahneman and Tversky (1979) gives some theoretical background to adaptation, though a complete theoretical model for adaptation is still to be developed.

Adaptation (or habituation) is where events cause an individual's subjective well-being to depart from a baseline. Gradually the positive or negative effect of such events cease having an impact and subjective well-being (SWB) returns towards the baseline level (Brickman, Coates, and Janoff-Bulman (1978)). The baseline level of SWB of an individual is mostly due to personality traits and past experience. Heady and Wearing (1989) propose that after an unexpected event, individuals will adapt back to a baseline level of SWB because individuals have stable personality traits which individuals revert to after initially experiencing a change in SWB.

There are several reasons why adaptation may take place when one moves to a new job. Firstly there are various aspects of a new job that may de-motivate an employee and overtime these de-motivating job factors reduce the satisfaction derived from the job. Secondly, promotion prospects have a positive impact on job satisfaction (Clark (2004)). However, when one is promoted the new responsibilities and roles of the new position may reduce satisfaction derived from the type of work one undertook before.

Although most of the empirical literature that has looked at modelling subjective well being data and adaptation has considered contemporaneous correlations, there is a growing literature that has begun to use large-scale panel data. The use of large-scale panel data allows one to analyse changes in subjective well-being of a particular individual around the time of a particular event, this is the approach I take in this thesis.

There is a growing literature that uses panel data to analyse adaptation. An early study is by Headey and Wearing (1989) that uses data from the Australian Panel Study to show that individuals' subjective well being is affected by both good and bad events. However in this study used a large variety of events, some of which arguably would not have much impact on subjective well being. Secondly, even though this study had data covering 8 years, this data was from only 3 waves. Panel data over 3 waves may not be enough to make conclusions about the existence of adaptation.

Most of the literature on adaptation has focused on adaptation to income and unemployment. This literature has found that unemployment reduces subjective well-being. Di Tella, MacCulloch, and Oswald (2001) show that life satisfaction is negatively correlated with inflation and unemployment for 12 European countries and the United States using data from the Euro-Barometer Survey and United States General Social Survey. Clark and Oswald (1994) use data from the British Household Panel Survey (BHPS) to show that unemployment lowers subjective well being. They show that this lowering of subjective well being declines the longer one stays unemployed. Using 3 data sets, the BHPS, European Community Household Panel (ECPS), and the German Socio-Economic Panel (GSOEP), Clark (2006) finds evidence of unemployment having less impact on life satisfaction over time. Blanchflower (2001) finds that unemployment lowers subjective well being in East European countries and in countries that were former members a unified Soviet Union. Bjorklund and Eriksson (1998) also find a negative relationship between subjective well being and unemployment in Denmark, Finland, Norway, and Sweden.

Other authors have investigated how individuals respond to other life events. This literature has focused on how individuals respond to marriage and divorce. Stutzer and Frey (2006) and Lucas, Clark, Diener, and Georgellis (2003) show that

individuals fully adapt to marriage after being married for a few years. Lucas, Clark, Diener, and Georgellis (2004) show that individuals do not adapt fully back to baseline levels due to unemployment. Clark, Diener, Georgellis, and Lucas (2008) use data from German households to analyse how individuals adapt and anticipate six different life events: unemployment, marriage, divorce, widowhood, birth of child, and layoff. They find that individuals do not fully adapt to unemployment. However, they cannot reject the hypothesis of full adaptation to marriage, divorce, widowhood, being laid off, and the birth of a child.

Chi, Freeman, and Kleiner (2006) take a similar approach to Chapter 2 in investigating how individuals' subjective well being responds to changing jobs. Using data from the National Longitudinal Survey of Youth (NLSY), they find that workers who leave to their jobs voluntarily, seeking another job have higher long term job satisfaction. Surprisingly they also find that public sector workers report lower job satisfaction after controlling for various individual and job characteristics. This last result maybe because their sample is of young workers, whose preferences and sources of satisfaction from work may differ from older workers.

I.3.5 Contribution to this literature.

In this thesis I argue that intrinsic motivation in the public sector, i.e. public service motivation, leads to improved performance by the public sector both in terms of cost and quality. This is because employees that are public service motivated do not need high powered incentives (as compared to extrinsically motivated employees) to produce the worthwhile good or service. This means the public sector can provide a service at a lower price with workers that are public service motivated as compared to using workers that are extrinsically motivated. In addition, workers with PSM care about the output and therefore will not shirk on effort that is required to produce output that is of high quality.

In this thesis I attempt to find evidence of PSM and investigate whether extrinsic rewards crowd out PSM. The literature survey shows that the empirical evidence on PSM is not conclusive for the following two reasons. The leading studies in the literature do not compare intrinsic motivation in the public sector to that in other

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sectors (for example Brewer and Selden, 1998). Conclusions about the existence of PSM can only be made after investigating how individuals with PSM behave in the private sector and other sectors. Secondly, the studies in the literature do not show whether it is the public sector that causes individuals to derive greater satisfaction from the intrinsic characteristics of their work or whether it is individuals who derive greater satisfaction from the intrinsic characteristics of public-sector work that are attracted to the public sector.

I use data from the British Household Panel Survey (BHPS) to investigate whether PSM can explain individuals' propensity to move into public sector jobs. Using this approach, I can show that that PSM is what attracts individuals to the public sector, thus providing evidence for the existence of PSM. I also investigate whether higher extrinsic rewards in the public sector (compared to the private sector) deter individuals with PSM from joining the public sector because higher extrinsic rewards lower the reputational gain for such individuals joining the public sector (Benabou and Tirole, 2006).

In this thesis, I also investigate whether the public service motivation of individuals adapts. That is, I investigate whether the positive effect of a public service motivated individual joining the public sector dissipates over time? The public sector allows individuals with PSM to be better able to carry out their pro-social motivations, however if their motivation decreases over time back to a baseline level, i.e. adapts, then the benefits of having individuals with high levels of PSM in the public sector may be over estimated.

I.4 Literature Survey 2: Public Sector Procurement and Contracting[12]

The non-contractible nature of every aspect in a project, such as quality, is the source of low quality and cost overruns in procurement. Thus this section begins by discussing the literature on procurement in an incomplete contracting framework. The section then moves on to discuss how regulatory risk impacts economic interactions.

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[12] This literature survey includes literature that will be discussed once more in Chapter 3.

Finally, the section investigates the benefits and costs of reputational concerns in contracting.

I.4.1 Contracting and Procurement

I begin with a review of literature that uses the incomplete contracting framework to analyse quality concerns in public procurement. This is because quality is difficult to fully specify in a contract. As a result, most of the literature in this survey also assumes contract incompleteness. If everything was observable and could be specified in a contract, then the contract could ensure that the first best allocation is achieved regardless of whether there is in-house provision or contracting out. In such a case, the principal would be indifferent between contracting out and in house provision. However, in practice, quality is often not observable. Therefore, in order to fully understand the benefits and costs of in house provision versus contracting out, we have to consider a situation where contracts are incomplete and residual control rights are important in motivating agents.

Hart, Shleifer and Vishny (1997) look at whether it is optimal for a government to provide public services internally or to contract out their provision. The paper considers a model with two types of costly innovations, one that leads to lower costs (but adversely affects quality) and one that leads to improved quality. They assume incomplete contracts. Property rights can be allocated to the government (in house provision) or can be allocated to the private sector (contracting out). The private provider has a larger incentive to invest in cost reducing innovations (that lead to lower quality). Government provision by an employee has got less incentive to lower costs. Their model finds that in house provision is better when non contractible cost reductions have a large adverse impact on quality, or if quality reduction cannot be controlled contractually, and when quality innovations are not important. Private provision is better when cost reductions are accompanied little quality reduction (or quality reduction can be controlled contractually), and when quality innovations are strong.

Schmidt (1996) uses the incomplete contracts approach to explain why privatization may be more beneficial than public provision. The paper shows that different

government structures that are a result of different allocations of property rights between the private firm and the government "give rise to different commitment options for the government and different incentives for the management to save costs, which can explain some of the costs and benefits of privatization endogenously". The paper argues that a manager in a privatized firm will have greater incentives to minimize costs and produce more (or face bankruptcy thus facing a "hard budget constraint") than one in a public entity (productive efficiency). However, due to cost cutting, allocative efficiency is lower under privatization than government. Therefore there is a trade off between lower allocative efficiency and greater productive efficiency that comes with privatization.

Besley and Ghatak (2001) consider how the allocation of property rights between a public entity and private firms (NGOs) will affect the provision of public goods. The main result of the paper is that it shows that when contracts are incomplete, it is better to allocate the ownership of the public good/service to the party that values the project the most (relatively more). This is true regardless of whether this party is also a key investor, or is at an advantage in other key aspects of the required technology.

Expected future earnings and contract renewal have been proposed as a means of improving quality in procurement projects. Klein and Leffler (1981) were the first to propose the repeat purchase mechanism as a mechanism that provides firms with an incentive to maintain quality. They argue that the value of future profits motivate firms to maintain quality. Laffont and Tirole (1993) show that for experience goods (goods whose quality reveals itself upon purchase), the optimal contract for public procurement of these goods lowers the incentive to reduce costs in order to increase incentives to achieve higher quality. The contractors have an incentive to improve quality because this increases the probability that they can provide the service for the government again. Dalen, Moen, and Riis (2006) argue that contract renewal creates incentives for contracted parties to improve quality. They propose that having the private firms in a tournament where the quality of projects is ordinally ranked. They show that not renewing the contracts of firms whose project quality ranking is in the bottom 50% of ranking is the optimal renewal policy that trades off improved quality at the expense of entry costs of new firms.

Cost overruns are also the result of poor contract design. Bajari and Tadelis (2001) consider the decision to provide a service/good within the firm or to have it provided by an external company. In the model developed, the buyer incurs a cost for the design (this cost is ex ante). The better the design (higher design cost for buyer), the lower the ex post renegotiation cost. That is, the more complete a contract, the higher the design cost, the lower the probability of renegotiation ex post. In addition, ex post renegotiation occurs under asymmetric information with the seller (contractor) having private information about the costs involved. This makes fixed price contracts costly to renegotiate. This paper shows that projects that are simple will be procured using fixed price contracts as their designs have a high degree of completeness and so are unlikely to require renegotiation. Projects with complex designs, and therefore have a high degree of incompleteness and require alteration and so costly renegotiation. Such projects are better provided using cost plus contracts. Projects that are needed to be completed in a short period of time are best provided using cost plus contracts due to low levels of design completeness. The basic trade off the Tadelis and Bajari model is that with a fixed price contract, a firm has incentives to produce effort that will reduce costs. However, if any contingencies arise, renegotiation is very expensive because in addition to the modification costs, the sponsor has to pay an additional amount to the contractor because the contractor has no incentive to change from the original contract (and has asymmetric information about the additional costs). With cost plus pricing, the private firm faces no incentives that will induce it produce effort to reduce costs and so costs will be higher in this case.

Cost overruns are also attributed to a lack of competition when bidding for procurement contracts. Ganuza (2000) proposes that the sponsor of a project will alter the degree of design specification depending on the level of competition amongst the contractors that will bid for the contract. If there is a high level of competition amongst the contractors, the paper proposes that the sponsor will have a high degree of design specification. This in turn results in a lower chance of there being cost overruns when the project is being implemented. In contrast, if there is a low level of competition amongst the contractors, the sponsor will have a low degree of design specification. This results in a higher likelihood of there being cost overruns during the implementation of the project.

I.4.2 Regulatory Risk

Researchers have not fully analysed the impact that regulatory risk can have on the incentives of private firms involved in procurement contracts to reduce costs and improve quality. Regulatory risk is the risk associated with the likelihood that laws and regulations related to a particular industry, country, or type of security, will change and thus affect the projects and investments in those industries, countries, or their funding arrangements.

Research has found that uncertainty over possible future regulatory intervention can have adverse effects; for example possible regulatory taking of land negatively affects land value (Riddiogough, 1995), regulatory restructuring can adversely affect delivery of electricity (Ishii and Yan, 2004), regulatory risk increases share volatility (Robinson and Taylor, 1998), and regulatory risk increases systematic risk (Buckland and Fraser, 2001). Recently Panteghini and Scarpa (2008) have attempted to give a theoretical explanation to regulatory risk in price-capped industries whereby they argue that price-cap rules suffer from a credibility problem. They argue that regulatory risk comes about when regulated firms make large profits.

In this thesis, I argue that reputational concerns are also an important source of regulatory risk. I show that reputational concerns increase regulatory risk by increasing the level of government intervention above the optimal level of intervention. In addition, the research on regulatory risk does not consider the impact of regulatory risk on the incentives faced by other parties in contractual relationships. Therefore in this thesis, I investigate the impact of possible government intervention on the level of quality firm specific investments by private firms contracted by the government.

I.4.3 Reputational Concerns

Reputational concerns are argued to enhance commitment power, therefore inducing higher effort levels in quality provision (or cost reduction). Thus, reputational concerns act as implicit contracts. Holmstrom (1999) studies how a person's concern for a future career may influence the individual's incentives to exert effort or make

decisions in the individual's current job. The individual's productive performance is revealed over time in the model. The individual's wage in each period is based on expected output, and expected output in turn depends on assessed output, thus linking today's performance with tomorrow's income. There is an incentive problem because an individual can take unobserved actions to affect the current period's performance thus affecting future income. Since the paper assumes an individual will choose between actions that benefit the individual and actions that benefit the firm, career concerns are shown to have detrimental and beneficial effects depending on how well the two actions are aligned. Holmstrom and Ricart I Costa (1986) also show how career concerns influence managers in capital rationing and investment decisions.

Further studies have investigated the impact of reputational concerns on other aspects of behaviour. Scharfstein and Stein (1990) and Ottaviani and Sorensen (2000) show how career concerns lead to herding, i.e. where players ignore their own signals of the state of the world and follow the actions of other players. Levy (2004) demonstrates how reputational concerns lead to anti-herding, i.e. where players ignore their signals of the state of the world (that other players have also received and acted upon) and choose actions that are different from other players in order to distinguish themselves.

Recent studies have highlighted the negative effects of reputational concerns. Morris (2001) considers a case where there is an advisor and an uninformed decision maker with identical preferences, which implies that the advisor has a current incentive to truthfully reveal her information. However, the advisor will have a reputational incentive to lie if the uninformed decision maker believes that the advisor is biased in favour of one decision. No information is conveyed in equilibrium if the advisor's reputational concerns are strong enough. In a repeated game, it is shown that the advisor (with the same preferences as the decision maker) will distort his revelation from the truthful one in the first period because she wants her opinion to be valuable in future periods. Morris calls this the "political correctness effect".

Ely and Valimaki (2003) argue that in some cases when the nature of the task undertaken naturally has a high frequency of bad observations, this leads the principal to believe that a good agent is bad. In such a case, a good agent will try to build a good reputation by reducing the frequency of these bad events, even though it is not

optimal to do so. The principal will anticipate this and therefore a good agent becomes just as unfavoured as a bad agent to the principal. In both these papers, it is shown that in some cases an agent will have a desire to deviate from her preference due to the agent having reputational concerns. This differs with my work where it is the reputational concerns of the principal that give rise to the agent's under investment problem.[13]

I.4.4 Contribution to this Literature

The survey in this section has shown that procurement contracts suffer from cost overruns and low quality. It is argued that regulatory risk can also result in poor performance in contractual relationships. It has also been shown that reputational concerns can act as implicit contracts that provide incentives to reduce costs and improve quality.

This thesis contributes to this literature by developing a theoretical model where the reputational concerns of a principal result in underinvestment of quality improving effort by a contractor. This is because the model shows that the principal is more likely to intervene (step in and takeover provision of the project) when he/she has got reputational concerns. This has important social implications especially in cases where provision of services should be provided by the public sector or requires more stringent regulation by the government.

This theoretical model shows how the reputational concerns of one party can affect the incentives faced by other parties in a hierarchy. Thus this paper contributes to a better understanding of how reputational concerns have an impact on players in different hierarchies of organisations and contractual relationships.

I.5 Methodologies

This section of the thesis describes the methodologies used for theoretical and empirical analysis. The thesis will theoretically show how reputational concerns by a

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[13] Several authors have investigated the adverse effects on public spending of reputational concerns (e.g. Dewatripont and Seabright (2006) and Coate and Morris (1995)).

principal (the government) can negatively affect a private contractor's incentives to improve the quality of a project. Empirically, the thesis investigates whether individuals are attracted to the public sector because they are public sector motivated and whether high extrinsic rewards in the public sector may deter individuals that have high levels of PSM from joining the public sector. Finally, the thesis empirically investigates whether PSM adapts over time.

I.5.1 Theoretical Methodology

The theoretical model used in the thesis is used to analyse how the reputational concerns of a principal affect the incentives of a private contractor to improve quality. To achieve this objective I construct a dynamic game with three players. The three players are an evaluator, the decision maker (government) and the private firm. Importantly, the decision maker can step in and take over the provision of the project at the end of the first period. The decision to step in is influenced by the desire for the decision maker to appear competent to the evaluator. I show in mixed strategy equilibrium that reputational concerns cause the decision maker to step in more often than is optimal. This in turn results in the private firm producing less than optimal firm specific investment that would improve the quality of a project.

I.5.2 Econometric Methodology

For the empirical analysis I use data from the British Household Panel Survey (BHPS). The BHPS began in 1991, with the first wave taking place in late 1991 and concluding in early 1992. The BHPS contains a wide range of information on households and individuals. The first wave consists of approximately 5,500 households and 10,300 individuals. In 1999, an additional sample of 1,500 households each was added to Scotland and Wales. In 2001, an additional sample of 2,000 households was added to Northern Ireland. The BHPS is thus a good data source for social science research of the United Kingdom (UK). In addition the BHPS follows the same individuals over a number of years, allowing us to identify individuals and their characteristics as they move between the private and public sectors.

To measure utility derived from the job, and the intrinsic and extrinsic aspects of work we use the response from a series of questions on job satisfaction. Referring to a 1-7 scale where a value of 1 corresponds to "not satisfied at all" and a value of 7 corresponds to "completely satisfied", the interviewees were asked to rank their level of satisfaction with respect to overall job satisfaction, satisfaction with total pay (including any overtime and bonuses), job security, the actual work itself, and the hours they work. I use satisfaction with the work itself as a proxy for utility derived from the intrinsic aspects of the job.[14] I use satisfaction with pay, job security and working hours as proxies for utility derived from extrinsic rewards. I use overall job satisfaction as a proxy for overall utility derived from work.

I also control for other individual and job characteristics, such as age, sex and education. I consider only workers aged between the ages 18 to 65 and only full time workers. I only consider full time workers because the nature of satisfaction experienced by full time workers is different to that of part time workers and full time workers give us more observations.

The empirical analysis first attempts to find evidence of PSM and investigate whether extrinsic rewards deter individuals with PSM from joining the public sector. I estimate standard Mincer-type earnings functions corrected for selectivity bias for both selection into the private and public sector individually for men and women, and for both men and women combined. I then repeat this by estimating satisfaction functions for the domains of job satisfaction, i.e. satisfaction with the work itself, pay, job security and the working hours. I then use these estimates to generate predicted earnings and satisfaction (with the different aspects of work) in the private and public sector for each individual. I calculate the expected earnings and satisfaction differential between the public and private sector for each individual in our sample, irrespective of current status. Finally, these expected earnings and satisfaction differentials are then used when estimating the probability of transition into the public sector using probit estimation. To gain a comparative perspective, I also estimate the probability of transition into the private sector using probit estimation.

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[14] Pouliakas and Theodossiou (2009) also use satisfaction with the work itself as a proxy for utility derived from the intrinsic aspects of work.

The empirical analyses then moves on to investigate whether PSM adapts. I consider job changes from the private to the public sector, but also consider job changes from the public to the private sector, and job changes within the public and private sectors to gain a comparative perspective. To undertake this analysis, I create lead and lag variables. Lead variables are dummy variables that have a value of 1 when the individuals will to the change job within a given number of years. For my analysis I construct lead variables for each year in the 4 years leading to an individual's change of job. Lag variables are dummy variables that have a value of 1 when in the years after an individual has changed jobs. I construct lag variables for each of the first 5 years after the job change and a long term lag variable that has a value 1 for more than 5 years after transition. Finally, job satisfaction and its domains are the dependent variables in fixed effects panel estimation, with the lead and lag variables as the key explanatory variables.

Chapter 1

Crowding Out Public Service Motivation

1.1 Introduction

Hiring individuals with Public Service Motivation (PSM) is often proposed as a way to improve public sector performance and to overcome incentive problems in the public sector. In this chapter I attempt to find evidence of PSM and to investigate whether extrinsic rewards crowd out PSM.

The concept of PSM has its roots in the public administration literature where it is broadly defined as "an individual's predisposition to respond to motives grounded primarily or uniquely in public institutions" (Perry, 1996). This predisposition is determined by environmental factors, such as parental modelling or socialization within organizations. It reflects three categories of motives: rational, norm-based and affective. Rational motives are present when individuals want to participate in policy-making to pursue their political agenda, or when individuals commit to a public program because they personally identify with it. Norm-based motives are generated by a desire to pursue the public interest; they include patriotism, civic duty and a sense of loyalty to the government. Affective motives refer to behaviour motivated by emotional responses to different social contexts and are characterized by a desire to help others (Perry, 1996).

The presence of PSM generates a number of implications. If values and sentiments associated with the public sector are attractive to individuals with PSM, hiring these individuals will help to overcome incentive problems in the public sector. Agents who care about the output will have less incentive to shirk in the public sector than in the private sector.[15] This is because public sector managers cannot commit to increase other factors of production to maintain output if an agent shirks effort, whereas private sector managers can, due to the profit motive (Francois, 2001).[16] Further,

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[15] See Francois and Vlassopoulos (2007) for a survey of literature that discusses the role of pro-social motivation in overcoming incentive problems in the provision of public goods.

[16] Individuals are more willing to donate labour in the public sector because the public sector can credibly commit not to expropriate labour (see Grout and Yong; 2003 and Grout and Schnedler; 2006).

hiring individuals with PSM will increase organizational efficiency in the public sector as better matching of agents and principals with similar preferences reduces the need for high-powered incentives (Besley and Ghatak, 2005). In fact the use of high powered incentives may have adverse effects on public-sector performance. As shown by Benabou and Tirole (2006), monetary incentives decrease the reputational value of pro-social actions and thus reduce the overall utility from pro-social behaviour. Extrinsic rewards may then crowd out PSM: whilst higher wages increase the probability of filling a job vacancy, they decrease the expected average quality of job applicants because less motivated workers are induced to apply (Delfgaauw and Dur; 2007).[17]

Conclusive empirical evidence of PSM amongst public-sector workers is however yet to be found. Some empirical research into PSM is discussed in the public administration literature: Brewer and Selden (1998) find evidence of PSM amongst whistle-blowers, but their sample comprises only public sector employees, thus they do not compare public sector workers with workers in other sectors. Crewson (1997) and Dilulio (1994) show that workers in the public sector report higher satisfaction with the intrinsic characteristics of work than workers in the private sector. Houston (2000) shows that public sector employees are more likely to place a higher value on the intrinsic rewards. Houston (2006) shows that public sector workers undertake more charitable activities than workers in the private sector. These studies however do not show whether it is the public sector that causes individuals to derive greater satisfaction from the intrinsic characteristics of their work or rather it is individuals who derive greater satisfaction from the intrinsic characteristics of public-sector work who are drawn to the public sector.

Further, the empirical literature on the crowding-out effect of monetary incentives has not considered the effect of extrinsic rewards on public sector workers.[18] Frey, Oberholzer-Gee, and Eichenberger (1996) and Frey and Oberholzer-Gee (1997) show that people are less likely to accept that "Not In My Backyard" (NIMBY) projects are

Gregg, Grout, Ratcliffe, Smith and Windmeijer (2008) find that workers in the non-profit sector donate significantly more labour than workers in the private sectors.

[17] Crowding out of workers with PSM has also been attributed to unmotivated workers being attracted to the public sector (see Delfgaauw and Dur; 2008).

[18] Titmuss (1970) argued that monetary compensation undermines civic duty so that the introduction of monetary compensation would result in blood of lower quality being collected.

undertaken in their own town when they are offered monetary compensation. In an experimental study, Gneezy and Rustichini (2000a) show that individuals exert less effort when a small amount of monetary compensation is offered than when no compensation is offered. In Gneezy and Rustichini (2000b) the introduction of a fine to parents who are late in collecting their children from school increases the rate of parents arriving late.[19] Ariely, Bracha, and Meier (2009) show that image motivation is crowded out by monetary incentives, meaning that monetary incentives are less likely to work in public pro-social activities and more likely to work in private pro-social activities. Carpenter and Myers (2007) find that altruism and reputational concerns are positively related to individual's volunteering to be fire fighters. They also find that the positive effect that monetary incentives have on volunteering decline with reputational concerns, thus providing further evidence of extrinsic incentives crowding out pro-social behaviour.

The crowding out hypothesis is especially important when we consider gender differences. Cronson and Gneezy (2009) find that the social preferences of women are more situationally specific and more malleable than men. The finding that women are more sensitive to social cues in determining appropriate behaviour implies that women may place higher value of a pro-social reputational than men. Benabou and Tirole (2006, pp.1662) argue if indeed women have higher weights on pro-social reputational concerns than men, then women are more likely to contribute more pro-social actions in the absence of extrinsic rewards and women will also more likely respond more negatively than men to extrinsic rewards. Evidence of this is found by Mellstrom and Johannesson (2008) who when studying the willingness to donate blood find that in the absence of monetary incentives women donate more blood than men. However, when monetary incentives are introduced, the blood donations of women drop significantly. When subjects are offered the choice to give the monetary payment to charity, the blood donations of women increase back to levels when there were no monetary incentives. The blood donations of men remain approximately the same throughout. Thus, I also investigate gender differences in this chapter.

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[19] See Frey and Jegen (2001) for a survey of the literature on crowding out and in of intrinsic motivation.

In this chapter, I use data from the British Household Panel Survey (BHPS) to investigate whether PSM can explain individuals' propensity to move into public sector jobs. To proxy the utility derived from extrinsic aspects of the job I use workers' self-reported satisfaction with pay, satisfaction with job security and satisfaction with work hours.[20] I consider satisfaction with work itself as a proxy for intrinsic rewards.[21] Using predicted differentials for these variables, I estimate transition probabilities from the private into the public sector.

The results show that the higher the predicted satisfaction with the work itself in the public sector, the higher the probability that an individual will make the transition from the private to the public sector. Instead, higher predicted satisfaction with the extrinsic characteristics does not raise the probability of transition. These results imply that individuals are drawn to the public sector by the intrinsic characteristics of working in the public sector rather than the extrinsic benefits, which is consistent with the existence of PSM evidence. Further, extrinsic rewards crowd out PSM, in that, higher predicted satisfaction differentials with the extrinsic characteristics of the job (i.e. satisfaction with hours of work, satisfaction with job security, and satisfaction with pay) decrease the likelihood of individuals moving into the public sector. Women experience crowding out of a greater magnitude than men. I find similar results by investigating transitions into different occupational classifications and into different sub-sectors of the public sector.

This chapter also offers some of the first evidence on the nature of public sector rents based on domain satisfaction measures, thus contributing to a growing literature on public sector rents using subjective well-being measures (see e.g. Luechinger, Meier, and Stutzer, 2005; Clark and Senik, 2005; and Clark. 2004). Earlier studies on public sector rents focus mainly on wage differentials (see e.g. Bender 1998).

The rest of the chapter is organized as follows. Section 2 provides the theoretical foundation of our empirical analysis and it derives the predictions. Section 3 discusses

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[20] The use of self-reported satisfaction data has been validated by several researchers. For example, it has been shown that job satisfaction predicts future quits (Freeman, 1978; Clark et al. 1998), it is negatively correlated with absenteeism (Clegg, 1983) and that it is positively correlated with productivity (Mangione and Quinn, 1975). See Diener (2000) for a review.
[21] Satisfaction with the work itself has been used as a proxy for the intrinsic utility derived from a job (Pouliakas and Theodossiou, 2009).

the empirical methodology whilst section 4 presents the empirical results. Section 5 concludes with some policy recommendations.

1.2 Theoretical Foundations

I borrow from Benabou and Tirole (2006) (hereafter BT) for the simple theoretical framework.[22] I consider the behaviour of agents who choose to work in the public sector. a_k denotes the level of pro-social activities undertaken by each agent in sector k at cost ca_k and y_k denotes the (vector of) extrinsic rewards, enjoyed by agents in sector k, $k=P,G$, where $k=P$ denotes the private sector and $k=G$ denotes the public sector. Extrinsic rewards include wages, job security and working hours. $\hat{a} \equiv a_G - a_P$ denotes the difference in pro-social activities between the public and the private sector whilst $\hat{y} \equiv y_G - y_P$ denotes the differential in extrinsic rewards. I take a_k as given and assume that more pro-social activities are carried out in the public sector so that $\hat{a} > 0$. The sector in which an agent works, the sectorial level of pro-social activities a_k and the extrinsic rewards y_k are publicly observable.

Agents differ in two dimensions: their intrinsic valuation for pro-social activities and their valuation for extrinsic rewards. An agent's type is then defined by the intrinsic value $\omega_i \in [\underline{\omega}, \overline{\omega}]$ that he attaches to carrying out 1 unit of pro-social activities, where $\underline{\omega}$ may be negative to indicate that an individual may dislike pro-social activities, and by the value $\chi_i \in [\underline{\chi}, \overline{\chi}]$ that he attaches to enjoying 1 unit (in monetary units) of extrinsic rewards. ω_i and χ_i are random variables with cumulative distribution function $H(\omega_i, \chi_i)$.

Agents have reputational concerns and wish to appear pro-social/altruistic. The value of reputation depends linearly on the posterior belief $E_{\omega_i}(\omega_i | \hat{a}, \hat{y}, k)$ of the agent's type ω_i, given the sector k in which the agent works, the differential $\hat{a}$ in the level of pro-social activity between the two sectors, and the differential $\hat{y}$ in extrinsic rewards between the two sectors. The utility of agent i from working in sector k is

$$U_{i,k} = (\omega_i - c)a_k + \chi_i y_k + \mu_i E_{\omega_i}(\omega_i | \hat{a}, \hat{y}, k),$$

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[22] See also Benabou and Tirole (2003).

where $\mu_i \in [0,1]$ is the weight on reputational concerns, which may change across individuals.

Initially, agents are randomly allocated between the private and the public sector. On the job, agents privately learn their type $\theta = \{\omega_i, \chi_i\}$ and choose whether to remain in the sector they are in or to move to the other sector, given a_k and y_k. Types in the private sector for whom $U_{i,G} \geq U_{i,P}$ will move to the public sector; types in the public sector for whom $U_{i,G} < U_{i,P}$ will move to the private sector. Over time, therefore, types will separate between sectors: those (referred to as "the highly intrinsically motivated") for whom

$$\omega_i \hat{a} + \chi_i \hat{y} \geq \tilde{\omega}_i = c\hat{a} \quad \mu_i R(\hat{a}, \hat{y}),$$

where

$$R(\hat{a}, \hat{y}) \equiv E_{\omega_i}(\omega_i | \hat{a}, \hat{y}, G) - E(\omega_i | \hat{a}, \hat{y}, P)$$

will be in the public sector whilst those with low intrinsic motivation, $\omega_i < \tilde{\omega}$, will be in the private sector. $R(\hat{a}, \hat{y})$ denotes the reputational gain from working in the public sector compared to the private sector.

Since initially half of the agents are in the private sector, the probability of transition from the private to the public sector is

$$p(\hat{a}, \hat{y}, \mu) = \frac{1}{2} \Pr(\omega_i \hat{a} + \chi_i \hat{y} \geq \tilde{\omega}_i).$$

Within this framework, BT show as follows:

1.   Intrinsic motivation for pro-social activities is an important factor explaining why people wish to participate in pro-social activities. I add it that, to the extent that more activities are carried out in the public sectors, intrinsic motivation helps explaining the desire of people to work in the public sector.

41

Other things equal, people with higher intrinsic motivation wish the most to join the public sector.

2. The greater the level of pro-social activities carried out in the public sector compared to the private sector (and thus $\hat{a}$), the more intrinsically motivated people wish to move to the public sector.

3. For given level of pro-social activities in the public sector (and thus $\hat{a}$), an increase in extrinsic rewards in the public sector ($d\hat{y} > 0$) may reduce the reputational gain $R(\hat{a}, \hat{y})$ from working in the public sector.

Intuitively, as observers cannot observe agents' types, a signal extraction problem arises and an increase in extrinsic rewards generates two effects on reputation. First, new types are drawn to the public sector (i.e. $\tilde{\omega}_t$ decreases). The new composition of the public sector thus comprises fewer intrinsically motivated agents and the 'good reputation' of working in the public sector decreases (as the new members have lower ω_i's than the old one, they drag down the group reputation for pro-social orientation). However, the stigma of working in the private sector also increases (as the members with high ω_i's move to the public sector). As such the reputational gain $R(\hat{a}, \hat{y})$ of working in the public sector may increase or decrease (this is the "image spoiling effect of extrinsic rewards").

4. Because of (3), an increase in extrinsic rewards in the public sector ($d\hat{y} > 0$), may crowd out intrinsic motivation, in the sense that it may reduce the number of agents who wish to work in the public sector ($d\tilde{\omega}_t > 0$).

5. To the extent that women care more about their reputation for pro-social activities than men, crowding out is more likely to occur for women than for men.

1.3 Data and Methodology

I use data from the first fourteen waves of the British Household Panel Survey (BHPS) covering the period 1991-2004. The BHPS is a longitudinal survey of approximately 10,000 individuals in 5,500 households per year, providing a rich source of information of demographic and labour market characteristics, as well as information on individuals' subjective evaluation of their jobs and their economic

situation. Restricting the sample to full-time workers between the ages of 16 and 65 results in 37384 and 25728 person-year observations for men and women respectively. Crucially, the panel nature of the data allows us to identify, during the sample period, 747 transitions from the private to the public sector, all initiated by the workers themselves voluntarily (i.e. quits), with no intervening unemployment or inactivity spells.

In order to explore whether such transitions are driven or explained by PSM, I classify job attributes observed prior to and after each transition as intrinsic or as extrinsic. To make such a distinction operational, I consider wages, job tenure and hours of work to be extrinsic rewards, while the nature of the work itself to be an intrinsic reward. I take the view that individuals have a predetermined level of PSM, which is the result of environmental factors, such as parental modelling and socialization within social groups that individuals interact with or are part of. Because it is difficult to measure individuals' motives directly, I proxy such motives by using self-reported domain job satisfaction scores. Following the theoretical model in Section 2, I expect that satisfaction with intrinsic rewards is positively correlated with the probability of transition into the public sector. In contrast, due to reputational effects, satisfaction with extrinsic rewards should have little or even negative influence on individuals' decision to seek employment in the public sector.

More formally, the probability that individual i makes the transition into the public sector can be written as

$$\Pr\left(M_{it}^{G} = 1\right) = \Pr[\beta^{t} X_{i,t-1}^{p} + \varepsilon_{it} > 0]. \quad (1)$$

In equation (1), M_{it}^{G} is an observed indicator variable taking the value 1 if an individual i moves into the public sector at time t and 0 otherwise. The vector $X_{i,t-1}^{p}$ represents individual and labour market characteristics at time $t-1$, the year prior to making the transition.[23] It includes expected earnings differentials between the public and the private sector as well as expected satisfaction differentials for the various extrinsic and intrinsic job attributes under consideration. ε_{it} is a random error term.

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[23] Full list of individual and labour variables used given in the appendix.

I use satisfaction with the work itself as a proxy of utility derived from intrinsic rewards of a job. I use satisfaction with pay, job security and working hours as proxies for utilities derived from extrinsic rewards.[24] Earnings in both private and public sector employment are observed only for those in private employment and public employment respectively, and they are censored at zero. Because of this, firstly I estimate standard Mincer-type earnings functions corrected for selectivity bias (I give full results in the appendix) for men, women, and both men and women combined. Secondly, I use these estimates to calculate the expected earnings differential between the public and private sector $\hat{y}_{it}$ for each individual in my sample, irrespective of current status. Finally, these expected earnings differentials are then used when estimating equation (1), the transition into the public sector equation. In a similar fashion, I estimate differentials for satisfaction with pay $\hat{S}_{it(PAY)} = S^G_{it(PAY)} - S^P_{it(PAY)}$, satisfaction with job security $\hat{S}_{it(SEC)} = S^G_{it(SEC)} - S^P_{it(SEC)}$, satisfaction with hours worked $\hat{S}_{it(HRS)} = S^G_{it(HRS)} - S^P_{it(HRS)}$, and satisfaction with the work itself (an intrinsic reward) $\hat{S}_{it(WORK)} = S^G_{it(WORK)} - S^P_{it(WORK)}$ between the public and private sectors.[25] These predicted domain satisfaction differentials enter as additional regressors in the transition equation (1), which is written as,

$$\Pr\left(M^G_{it} = 1\right) = \alpha_0 + \alpha_1 \hat{y}_{it} + \alpha_2 \hat{S}_{it(PAY)} + \alpha_3 \hat{S}_{it(SEC)} + \alpha_4 \hat{S}_{it(HRS)} + \alpha_5 \hat{S}_{it(WORK)} + \beta' X^P_{i,t-1} + \varepsilon_{it}.$$

(2)

The main hypothesis that PSM increases the probability of transition into the public sector implies a positive and significant coefficient α_5. If extrinsic rewards exert little or no influence on individuals' decision to become public sector employees, then the coefficients α_1 to α_4 will be statistically insignificant. Negative and statistically significant coefficients α_1 to α_4 are consistent with the crowding out hypothesis, whereby extrinsic rewards mitigate an individual's utility from the intrinsic rewards associated with the transition into the public sector.

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[24] Summary statistics are given in Table 1.
[25] We use the combined (men and women) earnings and satisfaction functions, and differentials for estimations where we observe too few transitions by gender.

I expand on our analysis by testing our hypothesis on transitions from the public to the private sector. This will allow me to gain a comparative perspective of the motivations for transition between the two sectors. In this case I calculate $y_{it}^I = y_{it}^{IP} - y_{it}^{IG}$. I use the same procedure for the satisfaction differentials. This allows me to use the same hypothesis from equation (2) with the same signs.

In addition, I expand my analysis by testing the hypothesis on transition into caring and non-caring jobs and transition into different government sub-sectors.[26] Finally, I investigate whether the income levels of individuals affect their motivation to move to the public sector by testing our hypothesis on the lower and upper quartiles of real wages.

Given that actual pay (as opposed to satisfaction with pay) is arguably the only the measure that provides individuals' with any reputational return, the probit estimations were all repeated with the satisfaction with pay differential dropped as a right-hand side variable.[27]

1.4 Results

I begin by examining the number of transitions between the sectors in table 2. I observe that more women enter into caring jobs in the public sector when compared to entering non-caring jobs in the public sector. This is the opposite for men entering into the public sector, with more men entering into non-caring jobs than caring jobs. There are more individuals moving into non-caring jobs than caring jobs for both men and women moving into the private sector. Taking the view that the public sector offers more opportunity to carry out pro-social actions, these results suggest an important gender difference between men and women, that women are more pro-socially motivated than men (Cronson and Gneezy, 2009).

[Insert Table 2 here.]

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[26] Caring refers to health, education, and social care. Non-caring refers to all other industries (Gregg, et al, 2009).

[27] This suggestion was given by the external examiner during the defence of this thesis. The results for these estimations are given in Tables B4-7.

Table 3 shows that on average the public sector has higher extrinsic rewards than the public sector. The real wage is on average significantly higher in the public sector than in the private sector for both men and women. Working hours are significantly less in the public sector than in the private sector (for both men and women). Public sector workers (both men and women) have significantly longer job tenure than private sector workers. This suggests that the public sector offers better job security than the private sector.[28] These results are important because they show that the public sector has higher extrinsic rewards than the private sector on average. This means there is scope for the theoretical model and its predictions. That is, the public sector having higher extrinsic rewards may reduce the reputational (for being pro-social) benefit for making the transition to the public sector because the high extrinsic rewards in the public sector make it harder to differentiate whether an individual's motive for moving to the public sector are to fulfil pro-social motivations or to satisfy extrinsic desires.

[Insert Table 3 here.]

I now examine the results that make use of observed transition into the public sector. Table 4 below gives the probit estimations for transition from the private to the public sector for men and women. In order to gain a comparative perspective, Table 4 also includes results for transition from the public to the private sector for both men and women.

[Insert Table 4 here]

There is strong evidence for the main hypothesis: individuals are more likely to move to the public sector if they expect to enjoy greater satisfaction with the work itself in the public sector. Furthermore, higher predicted satisfaction with pay in the public sector will reduce the probability of moving to the public sector, thus providing evidence of the image spoiling effect of monetary rewards in the public sector. The satisfaction with job security differential is insignificant for men, but is positive and

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[28] This is consistent with previous studies. See e.g. Rama (1999) and Bender (1998).

significant for women. This suggests that job security is important for women when choosing a job. This is reinforced as the job security satisfaction differential is positive and significant for transition into the private sector as well. However, for men this provides evidence that men are not more likely to join the public service out of a desire to derive greater utility from job security. There is strong evidence that higher (predicted) utility with the number of hours worked in the public sector in fact reduces the probability of joining the public sector for both men and women. Thus, the results of the predicted satisfaction with pay and working hours differentials are consistent with the crowding out hypothesis, whereby extrinsic rewards mitigate an individual's utility from the intrinsic rewards associated with the transition into the public sector.

This grouping of results shows that people join the public sector mainly because it offers individuals with PSM the opportunity to carry out more intrinsically satisfying work. Higher wages or better extrinsic rewards are not the driving force behind the transition. In fact, our results show that higher extrinsic rewards in the public sector crowd out PSM from the public sector. That is, higher extrinsic rewards in the public sector make it less likely for individuals who are public service motivated to join the public sector.

These findings are reinforced when I compare them to our findings for transition into the private sector from the public sector. I find that the satisfaction with the work itself differential is insignificant for both men and women. This means that individuals are not attracted by the intrinsic aspects of work in the private sector. Instead, the wage, satisfaction with job security, and satisfaction with working hours differential are positive and significant for women. The satisfaction with job security differential is positive and significant for men. This clearly shows that a move to the private sector is more likely the greater the utility derived from extrinsic rewards in the private sector. Therefore the move to the private sector is motivated by extrinsic rewards, whereas the move from the private to the public sector is motivated by intrinsic rewards (and mitigated by extrinsic rewards).

Table 5 contains probit estimation results for transition into caring and non-caring jobs in the public and private sectors.[29] The results for transition into both caring and non-caring jobs in the public sector confirm the hypotheses. Transition into both caring and non-caring jobs is more likely the greater the satisfaction with work differential, i.e. the greater the amount of satisfaction derived from the intrinsic aspects of work in the public sector whereas extrinsic rewards mitigate this probability. I find similar results when I investigate transition into different sub-sectors of the government in Table 6. In this case, the crowding out is of greatest magnitude for transition into the NHS and higher education. This is perhaps because these sub-sectors have a high proportion of caring jobs.

[Insert Tables 5 and 6 here.]

Finally I test whether the crowding out effect is affected by income. I give results for probit estimations for individuals that were in the lower quartile of earnings before the transition and individuals in the upper quartile of earnings in Table 7. These results show that there is a greater amount of crowding out for individuals with lower incomes. This is because both the satisfaction with pay and working hours differentials are negative and significant. However, the satisfaction with job security differential is positive and significant. This suggests that job security is important for individuals with low levels of income. There is no crowding out for individuals with higher income. However, transition into the public sector is still driven by satisfaction from the intrinsic aspects of working in the public sector as the satisfaction with work itself differential is positive and nearly significant at a 10% confidence level.

[Insert Table 7 here.]

The results for the estimations without the satisfaction with pay differential are given in Tables B4 to B7. These results lead to the same conclusions as the results above (that include the satisfaction with pay differential). The coefficients for the satisfaction with work itself, job security, and working hours differentials and the remaining right hand side variables, and level of significance are nearly the same as

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[29] These results are from a combined sample of both men and women.

those from the estimates that include satisfaction with pay. The only notable difference lies with the actual pay differential whose sign remains the same but whose magnitude and significance increase when satisfaction with pay is not included in the estimations.

The predicted satisfaction and real wage variables are linear combinations of a number of explanatory variables. The satisfaction and real wage equations are estimated using similar explanatory variables to the selection into the private and public sector equations that are used to generate the inverse mills ratios. It is not a problem for these equations to have identical explanatory variables (Johnson and DiNardo, 1997: p. 448), especially in the case where one is controlling for a large number of explanatory variables with a large sample. Therefore, there is no problem with the separate identification of the estimated coefficients through the variance covariance matrix.

1.5 Conclusion and Policy Recommendations

The results show that higher wages, satisfaction with pay, job security and working hours in the public sector are either insignificant in influencing the probability of transition to the public sector or reduce this probability. Instead, higher satisfaction with the intrinsic characteristics of work in the public sector increases the probability of transition to the public sector. Individuals are more likely to move due to higher satisfaction with the work itself in the public sector, as the public sector provides greater opportunity for these individuals to carry out their public service motivation. This grouping of results provides strong evidence of PSM and suggests that extrinsic rewards may crowd out intrinsic motivation.

These results suggest that from an efficiency point of view, the public sector should lower wages and other extrinsic rewards for two reasons. Firstly, high wages in the public sector deter individuals with PSM from entering the public sector as high wages decrease their utility from this pro-social move because they are perceived to be "greedy". Therefore lower wages and other extrinsic rewards allow for better matching as individuals with PSM will be more willing to work in the public sector. Secondly, a reduction in wages and other extrinsic rewards will reduce problems of

adverse selection in hiring new workers for the public sector. High wages in the public sector will also attract individuals who do not have PSM. These individuals require higher powered incentives to perform the same task compared to individuals with high levels of PSM and therefore are more costly than individuals with PSM. By offering lower wages the public sector will attract a higher proportion of individuals with PSM.

Chapter 2
Does Public Service Motivation Adapt?

2.1 Introduction

An emerging theme in the recent economics literature is that in many circumstances it is intrinsic rather than extrinsic rewards that matter the most in a workplace (see e.g. Clark, 1997; Clark, 2001). The same theme has been advanced in the public administration literature where intrinsic rewards are linked to workers' motivation to accept employment in the public sector, often referred to as Public Service Motivation (PSM).[30] Persuasive theoretical arguments highlight the importance of Public Service Motivation in underpinning employment relationships in the public sector, mainly based on the presumption that many aspects of public service provision are non-contractible. Consequently, hiring workers who are public service, or pro-socially, motivated helps to overcome incentive problems (Francois and Vlassopoulos, 2007) and to increase organizational efficiency, reducing the need for high-powered incentives (Besley and Ghatak, 2005).

Nevertheless, empirical evidence on PSM is sparse. Existing studies find that public sector workers report high job satisfaction with intrinsic job attributes (Crewson, 1997; Dilulio, 1994), they place high value on intrinsic rewards and they are highly likely to undertake charitable activities (Houston, 2000, 2006). There is also evidence, not necessarily in the context of public sector employment, suggesting that pro-social motivation is associated with a crowding-out effect of monetary incentives. Frey and Oberholzer-Gee (1997) find, for example, that people are less likely to accept *"Not In My Backyard"* projects when they are offered a monetary reward. In the same spirit, Gneezy and Rustichini (2000) show that individuals exert less effort when a small monetary compensation is offered.

Chapter 1 provides empirical evidence on PSM focusing on transitions into public sector employment. The results support the PSM hypothesis by showing that

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[30] Perry (1996) defines Public Service Motivation (PSM) as an individual's predisposition to respond to motives grounded primarily in public institutions.

individuals are more likely to make the transition into the public sector due to higher satisfaction with the nature of the work itself, a proxy for intrinsic rewards and PSM, rather than due to extrinsic job attributes. Yet, a question remains whether the initial boost in satisfaction with the nature of the work itself, associated with accepting public sector employment, dissipates with job tenure.

In this chapter, I answer the above question using data from the British Household Panel Survey (BHPS) to explore patterns of overall and domain job satisfaction measures for workers who made the transition from the private into the public sector. Importantly, the longitudinal nature of the BHPS data allows this researcher to follow up workers in consecutive annual interviews prior and after the transition and therefore to test the hypothesis that PSM adapts back to pre-transition levels. As psychological explanations of adaptation suggest, new stimuli and changing circumstances cause deviations of well-being from a baseline level, but such deviations are likely to be temporary. [31] In the context of the present chapter, accepting a job in the public sector is the new stimulus and I am particularly interested in exploring whether any possible increase in overall and domain satisfaction dissipates with tenure in the new job. Focusing on workers who made the transition from the private to the public sector, I find no evidence of adaptation of satisfaction with the nature of the work itself, our proxy for PSM, back to pre-transition levels. Interestingly, this is not the case for workers who moved from the public to the private sector where I find stronger evidence of adaptation, especially for women for whom the boost in satisfaction with the nature of the work itself does not last beyond the first year on the new private sector job. Evidence of a rapid adaptation of PSM towards pre-transition levels is also strong for women who change jobs within the public sector, which is not the case for men. Men who change jobs within the public sector enjoy a more permanent boost in their satisfaction with the nature of the work itself. For both men and women, the boost in satisfaction with the nature of the work itself associated with job switching within the private sector is very short-lived.

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[31] Economists have increasingly showed an interest in adaptation level theory and its potential implications for economic analysis (e.g. Lucas, Clark, Georgellis and Diener, 2003, 2004; Clark, Diener, Georgellis and Lucas, 2008; Kahneman and Krueger, 2006).

This chapter contributes also to the broader debate about the temporal stability of job satisfaction, a relatively unexplored theme in the economics literature. A notable exception is the study by Chi, Freeman and Kleiner (2006) who explicitly focus on how workers' job satisfaction responds to changing jobs and on how it evolves over time following such job changes. In contrast, industrial and social psychology researchers have devoted more effort into the dynamics of job satisfaction and they tend to find that job satisfaction is relatively stable, but with an emerging consensus that such stability decreases with job tenure and labour turnover.

The remainder of the chapter is organised as follows. Section 2 offers a brief review of recent findings on the link between job switching and job satisfaction, highlighting some of the factors that could affect the temporal stability of job satisfaction. Section 3 outlines the methodology and describes the data. Section 4 discusses the results and section 5 concludes.

2.2 Job Switching and Job Satisfaction: Related Literature

Following Freeman's (1978) seminal study, job satisfaction has been at the core of economic analysis, with ample empirical evidence linking job satisfaction with actual observed behaviour in the labour market such as absenteeism, productivity, and quits (see e.g. Akerlof et al. 1988; Clark et al. 1998). In a recent development in the literature, Chi, Freeman and Kleiner (2006) follow a new line of inquiry by examining how job satisfaction changes over time when employees change jobs. Their findings suggest that workers who voluntarily leave their jobs tend to experience an increased long-term job satisfaction with their new jobs. In the case of multiple quitters they find the increase in job satisfaction is only transitory. Such findings supplement earlier findings in other social sciences where the issue of the temporal stability of job satisfaction has attracted considerably more attention. Among others, Breeden (1993) finds that subjects that change job and occupations report significantly higher job satisfaction than subjects that did not change job or occupation. De Rijk, Nijhuis, and Alexanderson (2009) find that upon returning to work after illness, women report significantly higher job satisfaction than before.

In an attempt to explain changes in job satisfaction, Bowling et al. (2005) review the existing evidence and propose an integrated model of the stability of job satisfaction based on three alternative, but not necessarily mutually exclusive, explanations: (i) workers' dispositions to work-related attributes; (ii) adaptation-level theory; and (iii) opponent process theory. Such explanations emphasize the dynamic nature and the time element inherent in any subjective evaluation of one's job situation and work-related circumstances.

Changes in job satisfaction are argued to be determined by person effect and/or workplace effects. The person effect approach posits that person (genetic) dispositional effects affect job satisfaction as a trait. This leads to the conclusion that workers are innately satisfied or dissatisfied with their jobs and thus job satisfaction should not change when workers quit and move on to new jobs (Arvey el al, 1989, 1991; Cropanzano et al, 1993; and Judge and Hulin, 1993).[32]

The workplace effect approach argues that the job characteristics and the work environment affect job satisfaction, thus some job characteristics and workplace conditions positively affect job satisfaction whilst others negatively affect job satisfaction. Job satisfaction and its responsiveness to workplace or organisational change are investigated mainly in the related disciplines of organisational behaviour, organisational psychology and human resource management. Researchers investigate how job changes impact job satisfaction and how workplace reorganisation impacts job satisfaction. The studies that investigate the impact of workplace reorganisation find that there is a decrease in job satisfaction and other employee well-being measures immediately before and during reorganisation. Job satisfaction is found to increase after reorganisation. This decrease in job satisfaction is attributed to uncertainty during reorganisation and is found in many different forms of workplace reorganisation, including privatisation (Nelson, Cooper, and Jackson, 1995), reorganisation of local government (Pollard, 2001) and intra-company job transfers (Gerpott, 1990). Firm sponsored training is found to increase job satisfaction for men (Georgellis and Lange, 2007).

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[32] See Dormann and Zapf (2001) for an overview of this literature.

2.3 Data and Methodology

I use data from the first seventeen waves of the British Household Panel Survey (BHPS), covering the period 1991 to 2007. The BHPS is a longitudinal survey of approximately 10,000 individuals in 5,500 households per year. It provides information on demographic and labour market characteristics, as well as important information on individuals' subjective evaluation of various aspects of their jobs and their economic situation. I restrict the sample to include full time workers aged between 18 and 65 years, resulting in an effective sample of 45,397 and 32,727 person-year observations for men and women respectively. The panel nature of the BHPS data allows this researcher to identify workers who made the transition from one job and/or sector to another and to follow these workers up to four years prior and at least 5 years after the transition. Table 1 gives the number of leads and lags observed for men and women.

In Table 1 it can be observed that the largest numbers of job transitions are job transitions within the private sector, followed by job transitions within the public sector. This shows that the private sector has a much higher amount of labour turnover than the public sector and this is more so in the case of men. In contrast, more women than men change jobs within the public sector. This suggests that the public sector has qualities that allow women greater flexibility with changing jobs than the private sector. Across sector transitions are fewer than within sector transitions for both men and women. Interestingly, there are more women than men that move from the private to the public sector, while men are more likely to move from the public to the private sector. Such stylised facts are suggestive that women are more pro-socially motivated than men (Cronson and Gneezy, 2009). The multivariate analysis that follows offers a more definitive answer as to whether women are more likely to move into the public sector because of Public Service Motivation rather than other pecuniary aspects of public sector employment.

[Insert Table 1 here]

Following Pouliakas and Theodossiou (2009), I use satisfaction with the nature of the work itself to capture the intrinsic utility derived from a job, which in the present context I associate with Public Service Motivation. For comparison reasons and to identify whether the patterns of temporal variation in satisfaction with the nature of the work itself associated with transitions into the public sector are unique, I explore variation in other domain satisfaction measures, including satisfaction with pay, satisfaction with job security and satisfaction with hours as well as overall job satisfaction. Overall job satisfaction and domain satisfaction measures in the BHPS are reported as ordinal categorical variables on a scale 1 to 7 (with 1 meaning completely dissatisfied and 7 meaning completely satisfied). Table 2 shows the distribution of the various job satisfaction measures for men and women respectively.

[Insert Table 2 here]

I investigate how job satisfaction and its domains move around the time a worker changes job. While the primary focus is on whether satisfaction with the nature of work itself dissipates following a transition into the public sector, I also examine transitions from the public into private sector and transitions within the same sector (public and private). Given the panel nature of the data allows this researcher to observe individuals before and after changing jobs, I calculate lag (identifying years since move) and lead (identifying years until move) dummies.[33] For example, having identified transition events into the public sector, I then construct lag variables of the event so that the incidence of being in the public sector for less than a year, denoted by $PUB_{0it}=1$, is identified by the individual being currently in the public sector whereas being in the private sector in the previous year (i.e. $PUB_t = 1$ but $PUB_{t-1} \neq 1$). Similarly, being in the public sector for one to two years, $PUB_{1it}=1$, is identified as $PUB_t=1$, $PUB_{t-1}=1$ and $PUB_{t-2} \neq 1$, and so on for longer lags. The last category is a catch all category for individuals that moved to the public sector five or more years previously from the private sector.

In order to identify the anticipation of moving to the public sector, I create lead variables so that an individual moving to the public sector within a year is

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[33] This is the same methodology used by Clark et al (2008) to examine adaptation and anticipation effects for major life and economic events, including unemployment, marriage, divorce, birth of child, widowhood and layoff. In this context, the event is getting a new job.

identified as being currently in the private sector but will move to the public sector in the following interview, $PUB_{-1,it}$ implies $PUB_{t+1}=1$ and $PUB_t\neq1$. An individual moving to the public sector within one to two years, $PUB_{-2,it}$, is identified as $PUB_{t+2}=1$, $PUB_{t+1}\neq1$ and $PUB_t\neq1$, and so on for longer leads. The same procedures are used for transition from the public to the private sector, transitions within the public sector and transitions within the private sector.

To test the significance of lags and leads effects (i.e. adaptation and anticipation) in job satisfaction prior and after the transition into public sector employment, I estimate fixed-effects regressions for lags (equation 1) and leads (equation 2) of the following form:

$$S_{it} = \alpha_i + \beta X_{it} + \theta_0 PUB_{0it} + \theta_1 PUB_{1it} + \theta_2 PUB_{2it} + \theta_3 PUB_{3it} + \theta_4 PUB_{4it} + \theta_5 PUB_{5it} + \varepsilon_{it}, \quad (1)$$

where S stands for job satisfaction and X is a vector of demographic and job characteristics, includes marital status, education, number of children, age, income (gross monthly income), health, regional and year dummies. For different specifications of equation (1) S will be overall job satisfaction, satisfaction with pay, satisfaction with job security, satisfaction with the work itself, and satisfaction with the hours worked. Similarly, to test anticipation I estimate the following equation with lead event dummies:

$$S_{it} = \alpha_i + \beta X_{it} + \theta_{-4} PUB_{-4,it} + \theta_{-3} PUB_{-3,it} + \theta_{-2} PUB_{-2,it} + \theta_{-1} PUB_{-1,it} + \varepsilon_{it}. \quad (2)$$

I expect the lead coefficients to be negative. Negative and significant lead coefficients imply that dissatisfaction with that aspect of work is a reason for individuals to change jobs.

2.4 Results

Table 3 compares the mean overall job satisfaction and domain satisfaction of workers that changed job and/or employment sector to that of workers who did not change jobs (stayers). For both men and women, the means of overall job satisfaction and its domains are higher in the year after the change than in the year leading up to

the change. This is consistent with findings by Chi, Freeman and Kleiner (2006). Stayers in the public sector enjoy greater satisfaction (overall job satisfaction and its domains) than individuals that move to the public sector. This is consistent with Clark (2004), Luechinger, Meier, and Stutzer (2005), and Clark and Senik (2006) who find evidence of higher job and life satisfaction in the public sector than in the private sector.

The results show important gender differences when consideration is made of satisfaction with the work itself, our proxy for utility derived from intrinsic aspects of work. For women, the move from the private to the public sector results in significantly higher satisfaction with the work itself compared to women who stay in the private sector. For men, this same transition results in mean satisfaction with the work itself that is not significantly different from stayers. This means that for women, moving to the public sector has a greater impact on intrinsic motivation than it does for men. This suggests that women maybe more public service motivated than men (Cronson and Gneezy, 2009).

Interestingly, satisfaction with working hours is higher in the year before leaving the public sector than in the year after a move to the private sector for both men and women. This clearly shows that the public sector has better working hours than the private sector.

Main Results

In this section, I summarise the main results of the multivariate analysis in Figures 1-8. More specifically, Figures 1-8 present the estimated coefficients for the lag and lead dummies from equations 1 and 2, controlling for standard demographic characteristics (see appendix for results in tables). The results are generally consistent with patterns of anticipation prior to changing job and/or employment sector. This is because there is a statistically significant deterioration in overall job satisfaction prior to the transition into a new job. This is also true for reported domain satisfaction measures whereby a general dissatisfaction with all aspects of employment precedes the move into a new job and/or sector. Such findings confirm previous evidence supporting the importance of job satisfaction as a determinant of quits (e.g., Akerlof,

Rose and Yellen 1988; Clark, Georgellis and Sanfey, 1998). Interestingly, the results hint to the fact that perhaps it is not job satisfaction in the last year prior to transition that matters the most in explaining quits, but instead it is a pattern of deterioration in satisfaction in the four years prior to the transition. The exception is that both men and women enjoy high significantly positive satisfaction with working hours before leaving the public sector (and moving the private sector). This suggests that the public sector has better working hours for both men and women (Bender, 1998; and Chapter 1 of this thesis).

Following the transition into the public sector, there is an immediate improvement in overall job satisfaction as well as an improvement in domain satisfaction measures for both men and women. This increase is significant for at least five years, suggestive of a slow and possibly incomplete adaptation to pre-transition levels of overall job satisfaction. The same story emerges in the case of satisfaction with work itself, our proxy for intrinsic or public service motivation. Workers who move into public sector employment enjoy increased levels of satisfaction with the work itself that persists for at least five years after the transition. For both men and women, public service motivation is indeed a motivating factor for accepting employment into the public sector.

Transition into the public sector is also associated with increased satisfaction with the extrinsic rewards of work (i.e. pay, job security, and working hours) for several years after transition. Most notably women have increased satisfaction with job security for at least five years after transition. This is perhaps due to the public sector having better pay, job security and working hours (Bender, 1998; see Chapter 1 of this thesis). The only exception is satisfaction with pay for women which decreases after the first year in the public sector. This suggests women are less interested with pay when they work in the public sector.

For men, there is a sustained increase in job satisfaction for at least five years after making the transition from the public to the private sector (figures 3 and 4). However, this increase is strongly associated with sustained increases in satisfaction with job security and pay for men. This implies that men that move from the private to the public sector are more extrinsically motivated (see Chapter 1 of this thesis).

Women have an increase in overall job satisfaction when they move to the private sector, but this decreases and becomes insignificant after just one year in the private sector. Only satisfaction with job security remains significantly positive for at least five years. These results suggest that private sector employment does not increase the long term well being of women. Taking the view that the public sector gives more opportunity to individuals to carry out pro-social actions, the results for transition into the public sector are consistent with the view that women derive greater satisfaction from being pro-social (Cronson and Gneezy, 2009).

In summary, three main findings emerge from comparing the analysis of anticipation and adaptation to changing jobs from the private to the public sector and transition from the public to the private sector.

1.   Moving to the public sector significantly increases overall job satisfaction and satisfaction with the work itself (our proxy for utility derived from intrinsic aspects of the job) for both men and women.

2.   The size and duration of boost in overall job satisfaction and its domains is dependent on which sector individuals are moving into. The boost is sustained for at least five years for transition into the public sector. For transition into the private sector (from the public sector); the boost in job satisfaction for men is associated with increased utility from extrinsic rewards and the boost completely dissipates after one year for women.

3.   Transition into a new sector is preceded by steep decline in job satisfaction and its domains for men (with the exception satisfaction with working hours). For women transition into the public sector is preceded by a sharp decline in job satisfaction and its domains. However, transition into the private sector is only associated with a decline in satisfaction with job security. This again shows that women have a strong preference for work in the public sector, with them only leaving the public sector because of job insecurity.

These results suggest that for both men and women, public service motivation is indeed a motivating factor for accepting employment into the public sector.

Figures 5 and 6 give results for transition into new jobs within the public sector. Overall job satisfaction adapts rapidly to the baseline within the first two years of

moving to a new public sector job for both men and women. Interestingly, men enjoy significantly higher satisfaction with the work itself for at least five years after starting a new job within the public sector. This provides further evidence of intrinsic or public service motivation within the public sector. Women enjoy increased satisfaction with job security for at least three years after moving into new public sector jobs.

Figures 7 and 8 summarise the results for job transitions within the private sector. Overall job satisfaction declines rapidly after an initial sharp increase for both male and female workers, with evidence of full adaptation within two years of moving to a new job within the private sector. In the long term, women experience negative overall job satisfaction, satisfaction with pay, and satisfaction with the work itself from moving to a new private sector job. Men have increased satisfaction with pay and job security for three and four years respectively. However, men have negative satisfaction with the work itself in the private sector three years after moving into new jobs in the private sector.

Taken together, the results show that individuals respond differently to employment in the public and private sector. Transition into the public sector is associated with a long term increase in job satisfaction for both men and women. Importantly, these results highlight the existence and persistence of intrinsic motivation in the public sector, suggesting that indeed, public service motivation does not adapt.

2.5 Conclusion

The recent interest in the process of adaptation, coupled with the wider availability of longitudinal data, is likely to spur a renewed interest among economists about the dynamics of job satisfaction. In this spirit, the purpose of this chapter has been to investigate patterns of job satisfaction as workers make transitions from private to public sector employment, and comparing these with transitions from the public to the private sector and transitions within the sectors. Within such a context, I paid particular attention to whether intrinsic motivation in the public sector (also referred to as public service motivation) adapts. The results suggest that both men and women who accept public sector employment enjoy a boost in their satisfaction with work

itself in the public sector (our proxy for public service motivation) for up to five years on the job, as well as increased overall job satisfaction. This is welcome evidence for those who advocate the benefit of having intrinsically motivated people working in the public sector. As Francois (2000) argues, agents who care more about the output will have less incentive to shirk in the public sector than in the private sector. Individuals who are intrinsically motivated are more willing to donate labour in the public sector (Grout and Yong (2003) and Grout and Schnedler (2006)). Gregg, Grout, Ratcliffe, Smith, and Windmeijer (2008) find that workers in the non-profit sector donate significantly more labour than workers in the private sector. Furthermore, hiring individuals with PSM will increase organisational efficiency in the public sector as better matching of agents and principals with similar preferences reduces the need for high-powered incentives (Besley and Ghatak, 2005). The recent and growing literature on PSM argues that the public sector will benefit from hiring individuals with PSM, which could result in less use of high-powered incentives in the public sector. In this chapter, I argue that the importance of such potential benefits is not undermined because the initial boost in PSM following hiring does not dissipate. In this respect, the research is among the first to explore dynamic aspects of PSM, highlighting the need for further empirical evidence on the process of PSM adaptation.

Chapter 3

Regulatory Risk, Reputation and Underinvestment

3.1 Introduction

I argue that reputational concerns increase the level of government intervention resulting in contracted firms having reduced incentives to improve project quality, as they give the government an incentive to step in and take over the project. That is, reputational concerns increase regulatory risk, which causes firms to reduce quality (or output) improving firm specific investments.

Regulatory risk is the risk associated with the potential for laws and regulations related to a given industry, country, or type of security to change and thus impact relevant projects and investments. Researchers have found that the threat of appropriation that regulatory risk creates results in low quality project valuations and outcomes. Riddiogough (1995) finds that threatening regulatory taking of land by local authorities adversely affects land value when the authorities offer less than full compensation. Ishii and Yan (2004) argue that uncertainty regarding possible comprehensive regulatory restructuring in the U.S. electricity industry leads to firms delaying their investment decisions. This allows firms to gather information and assurances over possible future regulatory changes. However, very few researchers have attempted to fully explain why governments may decide to intervene in regulated industries and procurement projects. Recently Panteghini and Scarpa (2008) have explained regulatory risk by considering profitability in price-capped industries. They argue that price-cap rules suffer from a credibility problem and introduce regulatory risk if the firm makes large profits. They show that a well designed profit sharing system can be a mechanism to reduce regulatory risk. In this chapter, I argue that reputational concerns are also an important source of regulatory risk. I show that reputational concerns increase regulatory risk by increasing the level of government intervention above the optimal level.

I construct a model where government intervention and the reputational concerns of the government result in under investment of quality improving effort by a contractor.

I model the government as being one of two types: competent, i.e. it can correctly identify the type of project, and incompetent, i.e. it cannot correctly identify the type of project. The project can be either good or bad. A good project is intrinsically of higher quality and can be successfully carried out by either the government or private firm, however I assume the government is more likely to provide a successful outcome than a private firm on a good project. Only private firms can provide successful outcomes if the project is bad, and this only after making firm specific investments. The government wishes to maximise its reputation for being competent that is held by an evaluator (e.g. the electorate). Importantly, if a private firm has been awarded the contract, the government can decide to step in and take over the project if its belief that the project is good is high enough and it can gain a better reputation from doing so. In mixed strategy equilibrium I find that reputational concerns by the government cause the incompetent decision makers to step in more often than is optimal. This results in the contracted private firm producing less than optimal firm specific investment. This result contradicts much of the literature on reputational concerns that argues that reputational concerns improve performance.

The rest of the chapter is arranged as follows: the following section gives related literature. Section 3 gives an outline of the model. Section 4 gives the benchmark results of the analysis by considering the case with no reputational concerns. Section 5 analyses the behaviour of the players when the principal has reputational concerns. We conclude in section 6.

3.2 Related Literature

3.2.1 Regulatory Risk

Guasch and Straub (2006) and Guasch, Laffont and Straub (2008) investigate how regulatory institutions, institutional features, economic shocks and concession contract characteristics affect the probability of contract renegotiation. They find that having regulatory institutions greatly reduces the probability of renegotiation by deterring opportunistic renegotiations. However, they do not investigate the impact of regulatory risk on performance. In the model, I show that incompetent governments (decision makers) want to excessively intervene in public projects as a means of

enhancing their reputations for being competent. Regulatory risk is driven by reputational concerns. This chapter is important because it offers new insights that help explain poor performance in procurement.

Several authors have investigated the effect of regulatory risk on share volatility and systematic risk. Robinson and Taylor (1998) find that the expected volatility of regional electricity companies' share returns increases after significant regulatory events in the UK. Buckland and Fraser (2001) find that political and regulatory risk influences the systematic risk faced by shareholders. Pescetto (2008) finds that regulation competition and quality announcements can have a significant impact on the systematic risk of the water industry in England and Wales. These papers consider the impact of regulatory risk on the share valuations of companies. They do not attempt to explain the cause of regulatory risk. I argue that the reputational concerns of governments are the source of regulatory risk, thus giving an explanation for regulatory risk. These papers also do not consider the impact of regulatory risk on the incentives faced by agents in the firms. In this chapter, I investigate the impact of possible government intervention on the level of firm specific investments by private firms contracted by the government.

3.2.2 Reputational Concerns in Decision Making

Reputational concerns are shown to enhance commitment power and thus induce higher effort levels. Reputational concerns thus act as implicit contracts. Holmstrom (1999) and Holmstrom and Ricart i Costa (1986) show how career concerns provide incentives for agents to exert effort. Other ways in which reputational concerns have an impact on behaviour have been analysed. Scharfstein and Stein (1990) and Ottaviani and Sorensen (2000) show how career concerns lead to herding, i.e. where players ignore their own signals of the state of the world and follow the actions of other players. Levy (2004) demonstrates how reputational concerns lead to anti-herding, i.e. where players ignore their signals of the state of the world (that other players have also received and acted upon) and choose actions that are different from other players in order to distinguish themselves.

However, there is a small and growing literature that investigates the negative effects of reputational concerns. Our paper is related to several of these papers. Morris (2001) considers a case where there is an advisor and an uninformed decision maker with identical preferences, which implies that the advisor has a current incentive to truthfully reveal her information. However, the advisor will have a reputational incentive to lie if the uninformed decision maker believes that the advisor is biased in favour of one decision. No information is conveyed in equilibrium if the advisor's reputational concerns are strong enough. In a repeated game, it is shown that the advisor (with the same preferences as the decision maker) will distort his revelation from the truthful one in the first period because she wants her opinion to be valuable in future periods. Morris calls this the "political correctness effect".

Ely and Valimaki (2003) argue that in some cases when the nature of the task undertaken naturally has a high frequency of bad observations, this leads the principal to believe that a good agent is bad. In such a case, a good agent will try to build a good reputation by reducing the frequency of these bad events, even though it is not optimal to do so. The principal will anticipate this and therefore a good agent becomes just as unfavoured as a bad agent to the principal. In both these papers, it is shown that in some cases an agent will have a desire to deviate from her preference due to the agent having reputational concerns. This differs with our work where it is the reputational concerns of the principal that give rise to the agent's under investment problem.

Several authors have investigated the adverse effects on public spending of reputational concerns. Dewatripont and Seabright (2006) argue that politicians fund wasteful projects as a means to signal their diligence to voters, and voters reward them for this. Coate and Morris (1995) argue that when voters have imperfect information the predispositions of politicians and the impact of policies, then politicians may use inefficient methods of redistribution. I improve on this by not only examining how reputational concerns affect the decision making process, but also by examining how the reputational concerns of a decision maker affect the investment incentives of other parties in contractual relationships.

3.3 The Model

3.3.1 The Players and the General Setting

There are two periods and three players; a decision maker (D), a private firm (F), and an evaluator (E). At the beginning of period 1, D and F enter a contractual relationship to carry out a project and F begins undertaking the project. At the end of period 1, D can continue the contract with F or decide to step in. If D decides not to step in, F undertakes the project in period 2. If D decides to step in, he (D) will undertake provision of the project in period 2. The outcome of the project (V) is observable at the end of period 2.

The project can be of two types, good (G) or bad (B), i.e. $\theta \in \{B, G\}$. The probability that a project is good is g, i.e. $P(\theta = G) = g$. The project can achieve one of two outcomes, 0 or V (high or desired outcome), i.e. $y \in \{0, V\}$, at the end of period 2. If the project is good ($\theta = G$) and being undertaken by D, the probability of achieving outcome V is r, i.e. $P(y = V | \theta = G, D) = r$. If the project is good ($\theta = G$) and being undertaken by F, the probability of achieving outcome V is s, i.e. $P(y = V | \theta = G, F) = s$. If the project is bad ($\theta = B$) and being undertaken by D, the probability of outcome V is 0, i.e. $P(y = V | \theta = B, D) = 0$. If the project is bad ($\theta = B$) and being undertaken by F, the probability of outcome V is p, i.e. $P(y = V | \theta = B, F) = p$. p is the result of a firm specific investment by F, and it is costly. This cost is denoted as $c(p) = \frac{p^2}{2}$. I assume the firm specific investment is made in first period and that V is high enough that the expected continuation value of the project is positive. Therefore the project is always worth continuing and it must be kept with F or taken in house by D. I assume $r>s$. This implies that G has a greater ability or capacity to undertake a good project.

The type of the project is observed by the private firm and the competent decision maker ($D=H$) during period 1. If the project is bad the amount of firm specific investment, and whether the investment is made, is private and is only observed by the private firm. At the end of the second period the outcome y is observed by all the players.

3.3.1.1 The Decision Maker

The decision maker D can be of two types, competent (H) or incompetent (L), i.e. $D \subset \{L, H\}$. The probability that the decision maker is competent is γ, i.e. $P(D = H) = \gamma$. Only the decision maker knows his type. The decision maker has two strategies, to step in (i) or not step in (n), i.e. $d=i,n$. If the decision maker is competent ($D=H$), the decision maker will know the type of the project (θ) at the end of period 1. If the decision maker is incompetent ($D=L$), the decision maker will not know the type of the project (θ). The decision maker has reputational concerns, in that he maximises the posterior belief of E that he is competent. The decision by D to step in ($d=n$) or not step in ($d=n$) is observed by all the players.

3.3.1.2 The Private Firm

We restrict attention to simple linear contracts. If the outcome of the project is V, i.e. $y=V$, F receives kV, where $0<k<1$. The private firm maximises: $\max[skV, pkV - c(p)]$. The probability of achieving outcome V when the firm makes the firm specific investment, p, is unobservable to D and E.

3.3.1.3 The Evaluator

The evaluator E observes the decision made by the decision maker, d, at the end of first period, and observes the outcome of the project, y, at the end of the second period. I let γ_y^d denote the posterior belief of E, given that the decision d and the outcome y are observed by E. The evaluator updates his belief that D is competent, γ_y^d, at the end of second period.

3.3.2 Timing

Period 1. At the beginning of period 1, nature moves and randomly selects a project of either type $\theta = G$ or $\theta = B$, and a decision maker either of type $D=H$ or $D=L$. Also at the beginning of period 1, the private firm is awarded the contract and begins

working on the project. The private firm and the competent decision maker (*D=H*) then observe the type of the project (θ).

During period 1, if the project is bad the private firm can privately make a firm specific investment. This is not observed by the other players.

At the end of period 1, the decision maker chooses *d*, i.e. whether to step or to continue with the private firm. This is observable to all the players in the game.

Period 2. The outcome *y* of the project is realised and observed. The evaluator updates his belief that the decision maker is competent, r_y^d. The private firm receives $max[0, kV]$.

3.4 With No Reputational Concerns

3.4.1 First Best

I start by considering the case where all strategies and types are observable, and the decision maker does not have reputational concerns. I proceed as follows. First I study the behaviour of the decision maker. Then I analyse the incentives of the private firm to make firm specific investments. I have two possible cases. Firstly, I assume that, even when the private firm exerts no effort ($p = 0$), the expected payoff to society of having a private firm undertake the project at the beginning of period 1 is greater than the expected payoff to society of having decision maker undertake the project, i.e. $grV < gsV + (1 - g)pV$. In this case, it is optimal for the private firm to undertake provision of the project from the beginning of period 1, regardless of the level of effort that it will exert. Alternatively, I can assume that, even when the firm is expected to exert maximum effort, the expected payoff to society of having the decision maker undertake the project from the beginning of period 1 is greater than the expected payoff to society if the project was being undertaken by the private firm, i.e. $grV > gsV + (1 - g)pV$. In this case it is optimal for the decision maker to undertake the project from the beginning of period 1.

I begin by analysing the case were the private firm undertakes provision at the beginning of period 1, i.e. we assume $grV < gsV + (1-g)pV$.

When types are observable, the decision maker cannot engage in reputation building. However, the decision maker is a member of society and he receives a portion ε of the outcome (V). I assume that society is large, therefore the portion of the outcome received by the decision maker is very small but is positive, i.e. $\varepsilon V \to 0$.

The first best equilibrium is as follows: the decision maker D will choose to step in ($d = i$) if the project is good ($\theta = G$). The decision maker will not step in, choosing to continue with the private firm ($d = n$) if the project is bad ($\theta = B$).

This equilibrium is explained as follows. If $\theta = G$, if D chooses $d = i$, the expected payoff to society is rV. If $d = n$, the expected payoff to society is sV. Since we assume $r > s$, when $\theta = G$, D always chooses $d = i$. If $\theta = B$. If D chooses $d = i$ the expected payoff to society is 0. If $d = n$, the expected payoff to society is pV. Since $pV \geq 0$, when $\theta = B$, D always chooses $d = n$.

Therefore, when there are no reputational concerns, the decision maker makes the socially efficient decision. If the project is good ($\theta = G$), the decision maker D chooses to step in ($d - i$). This ensures the highest possible expected payoff to society (rV) when the project is good. If the project is bad ($\theta = B$), the decision maker D chooses to continue with the private firm ($d = n$). Society receives the highest possible expected payoff (pV) for when the project is bad. Given the strategy of the decision maker, the private firm will choose the amount of firm specific investment to make if the project is bad.

In the first best base, if $\theta = B$, the optimal level of p is where

$$max_p \{pV - \frac{p^2}{2}\}$$

This leads to

70

$$p^t = V. \text{ (1)}$$

3.4.2 No Reputational Concerns

Suppose now that the decision maker does have reputational concerns so that he just maximizes εV. The decision maker will then take the efficient decision: D will choose to step in ($d = l$) if the project is good ($\theta = G$) and not step in ($d = n$) if the project is bad ($\theta = B$).

It then follows that the private firm will make a level of investment that maximizes

$$max_p\{pV - \frac{p^2}{2}\}$$

Which leads to the first best

$$p^t = V.$$

3.5 With Reputational Concerns

In the section I first analyse the decision making behaviour of the decision maker when he has got reputational concerns. I then analyse how this impacts the incentives of a private firm to make firm specific investments on a bad project.

With reputational concerns, I assume the decision maker maximises the evaluator's ex post belief that D is competent (γ_y^d) and the portion of the outcome the decision maker receives, i.e. $\gamma_y^d + \varepsilon V$. However since $\varepsilon V > C$, the decision maker simply maximises the evaluator's ex post belief that D is competent, i.e. γ_y^d.

3.5.1 The Evaluator's Ex-Post Beliefs

To determine the evaluator's ex-post beliefs I postulate an equilibrium where the competent decision maker steps in if and only if the project is good, whilst the incompetent decision maker steps in with probability z. Given this equilibrium, I derive the evaluator's posterior belief using Bayes' rule. In equilibrium, upon observing outcome $y = V$ and the decision maker stepping in ($d = i$), the evaluator's updated belief that the decision maker is competent is:[34]

$$r_V^i = \frac{g \gamma r}{g \gamma r + g(1-\gamma)zr}.$$

z is the probability that an incompetent decision maker will step in. The evaluator's updated belief in this case is the probability that the decision maker is competent, since a competent decision maker steps in when the project is good ($\theta = G$) and achieves outcome V with probability r, divided by the probability of the decision maker stepping in and achieving outcome V ($g \gamma r + g(1-\gamma)zr$). The probability of the decision maker stepping in and achieving outcome V is the sum of the probability that the decision maker is competent (and thus steps in when the project is good, i.e. $g \gamma r$) and the probability that the decision maker is incompetent and stepped in with probability z (i.e. $g(1-\gamma)zr$).

Consider now the posterior belief of the evaluator upon observing the decision maker stepping in ($d = i$) and outcome 0. The evaluator's updated belief that the decision maker is competent is:

$$r_0^i = \frac{g \gamma (1-r)}{g \gamma (1-r) + g(1-\gamma)z(1-r) + (1-g)(1-\gamma)z}.$$

The evaluator's updated belief is the probability that the decision maker is competent (the competent decision maker steps in on a good project and the outcome is 0 with probability $(1-r)$ divided by the probability that the decision maker steps in and achieves outcome 0. The probability that the decision maker steps in and achieves outcome 0 is the sum of the probability that the decision maker is competent and steps

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[34] This simplifies to $r_V^i = \frac{\gamma}{\gamma + (1-\gamma)z}$

in because the project is good but achieves outcome *0* (i.e. $g\gamma(1-r)$), the probability that the decision maker is incompetent and stepped in on a good project but the outcome was *0* (i.e. $g(1-\gamma)z(1-r)$), and the probability that the decision maker is incompetent and steps in on a bad project achieving outcome 0 (i.e. $(1-g)(1-\gamma)z$).

Consider now the posterior belief of the evaluator upon observing that the decision maker does not step in and the outcome is *V*. The evaluator's updated belief that the decision maker is competent is:

$$\gamma_V^n = \frac{(1-g)\gamma p}{g(1-\gamma)(1-z)s + (1-g)\gamma p + (1-g)(1-\gamma)(1-z)p}.$$

The evaluator's updated belief is the probability that the decision maker is competent (the competent decision maker does not step in because the project bad and the private firm achieves *V*) divided by the probability that the decision maker does not step in and the outcome is *V*. The probability that the decision maker does not step in and the outcome is *V* is the sum of the probability that the decision maker is incompetent and the project is good with the private firm achieving *V* (i.e. $g(1-\gamma)(1-z)s$), the probability that the decision maker is competent and the project is bad with the private firm giving outcome *V* (i.e. $(1-g)\gamma p$), and the probability that the decision maker is incompetent and the project is bad with the private firm producing *V* (i.e. $(1-g)(1-\gamma)(1-z)p$).

Consider now the posterior belief of the evaluator upon observing decision maker does not step in and the outcome is *0*. The evaluator's updated belief that the decision maker is competent is:

$$\gamma_0^n = \frac{(1-g)\gamma(1-p)}{g(1-\gamma)(1-z)(1-s) + (1-g)\gamma(1-p) + (1-g)(1-\gamma)(1-z)(1-p)}.$$

The evaluator's belief is the probability that the decision maker is competent (which in this case implies that the competent decision maker does not step in because the project is bad) divided by the probability that the decision maker does not step in and

the outcome is *0*. The probability that the decision maker does not step in and the outcome is *0* is the sum of the probability that the decision maker is incompetent and the project is good with private firm producing outcome *0* (i.e. $g(1-\gamma)(1-z)(1-s)$), the probability that the decision maker is competent and the project is bad with the private firm producing outcome *0* (i.e. $(1-g)\gamma(1-p)$), and the probability that the decision maker is incompetent and the project is bad with the private firm producing outcome 0 (i.e. $(1-g)(1-\gamma)(1-z)(1-p)$).

The decision maker then calculates the expected reputational gain he receives from stepping in or choosing to renew the private firm's contract. The expected reputational gain of the decision maker will depend on the type of the decision maker and on the quality of the project.

3.5.2 Equilibrium

Given that the incompetent type (*L*) does not observe the type of the project (*θ*) during period 1 and that the competent type (*H*) does, we can calculate the expected value of stepping in ($d = l$) and of allowing the private firm to continue ($d = n$) for the decision maker.

I begin by showing that with reputational concerns, the competent decision maker always steps in if the project is good and does not step in if the project is bad. The competent decision maker (*H*) gets to know the type of the project during period 1. If the project is good ($\theta = G$), then the expected reputational benefit of stepping in is always greater than the expected benefit of not stepping in, i.e.[35]

$$r\gamma_V^l + (1-r)\gamma_0^l > s\gamma_V^n + (1-s)\gamma_0^n. \quad (2)$$

If the project is bad ($\theta = B$), then the expected reputational benefit of not stepping in is always greater than the expected benefit of stepping in, i.e.[36]

$$p\gamma_V^n + (1-p)\gamma_0^n > \gamma_0^l. \quad (3)$$

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[35] See appendix for proof with comparative statics.
[36] See appendix for proof with comparative statics.

Therefore if the project is good, the competent decision maker always steps in. If the project is bad, the competent decision maker continues with the private firm.

Consider now the incompetent decision maker. Given that he does not observe the type of the project, his expected payoff when he steps in is given by

$$g\left[r\gamma_W^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i.$$

If instead the incompetent decision maker does not step in, his expected payoff is

$$g\left[s\gamma_W^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_W^n + (1-p)\gamma_0^n\right].$$

I know show that there is no pure strategy Bayesian Nash equilibrium where the incompetent decision maker chooses either to always step in or never to step in. To see this, suppose by contradiction that the incompetent decision maker (L) chooses to step in ($d = i$) with probability 1, i.e. $z = 1$. Using Bayes' rule and the evaluator's updated beliefs we can calculate the expected reputational payoff to the incompetent decision maker from stepping in and from not stepping in. This implies $\gamma_W^i, \gamma_0^i < 1$ and $\gamma_W^n, \gamma_0^n = 1$. Therefore the incompetent decision maker (L) obtains

$$g\left[r\gamma_W^i + (1-r)\gamma_0^i\right] + (1-g)\left[\gamma_0^i\right] \; if \; d = i$$
$$1 \; if \; d = n.$$

As the expected payoff from stepping in is less than 1, i.e. $g\left[r\gamma_W^i + (1-r)\gamma_0^i\right] + (1-g)\left[\gamma_0^i\right] < 1$, the incompetent decision maker (L) has incentives to deviate and choose $d = n$. Since by deviating and choosing not to step in, the incompetent decision maker receives a payoff of 1. Therefore it cannot be that the incompetent decision maker chooses to step in with probability 1.

Alternatively, suppose by contradiction that the incompetent decision maker (L) chooses not to step in ($d = n$), i.e. $z = 0$. Using Bayes' rule and the evaluator's updated beliefs we can calculate the expected reputational payoff to the incompetent

decision maker from stepping in and from not stepping in. This implies $r_V^n, r_0^n < 1$ and $r_V^i, r_0^i = 1$. Therefore the incompetent decision maker (L) obtains

$$g[s r_V^n + (1-s) r_0^n] + (1-g)[p r_V^n + (1-p) r_0^n] \text{ if } d = n$$
$$1 \text{ if } d = i.$$

As the expected payoff from not intervening in this case is less than 1, i.e. $g[s r_V^n + (1-s) r_0^n] + (1-g)[p r_V^n + (1-p) r_0^n] < 1$, the incompetent decision maker (L) has incentives to deviate and choose to step in ($d = i$). Since by deviating, the incompetent decision maker receives a payoff of 1. Therefore it cannot be that the incompetent decision maker chooses not to step in with probability 1.

The following lemma summarizes the result.

Lemma. There is no equilibrium where the incompetent decision maker (L) chooses either to always step in or never to step in.

From the above lemma it follows that in equilibrium L must strictly randomize between stepping in ($d - i$) and not stepping in ($d - n$). I now derive the value of z where the incompetent decision maker is indifferent between stepping in and not.

I have shown that at $z = 1$, the payoff of the incompetent decision maker from not stepping in is strictly greater than the payoff from stepping in. And that at $z = 0$, the payoff of the incompetent decision from stepping in is strictly greater than the payoff from not stepping.

Now note that the payoff of the incompetent decision maker from stepping in, given by

$$g[r r_V^i + (1-r) r_0^i] + (1-g) r_0^i,$$

decreases in z, whilst the payoff from not stepping in is independent of z.

This means there must be a value of z between 0 and 1 where the incompetent decision maker will be indifferent between stepping in and not stepping in. At the equilibrium, the incompetent type (L) uses mixed strategies, implying that the expected reputational payoff from stepping in is equal to the expected reputational payoff from not stepping in for the incompetent type, i.e.

$$g\left[r\gamma_W^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i = g\left[s\gamma_W^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_W^n + (1-p)\gamma_0^n\right].$$

(4)

The comparative statics in the appendix can now helps us to show that the competent decision maker strictly prefers to step in if the project is good and not to step in if the project is bad.[37]

This leads us to the following proposition;

Proposition 1: There is an equilibrium where: (i) the competent decision maker H chooses to step in ($d = 1$) if the project is good ($\theta = G$), and chooses not to step in ($d = n$) if the project is bad ($\theta = B$). (ii) In this equilibrium the incompetent decision maker L uses mixed strategies, i.e. the incompetent decision maker will choose to step in ($d = 1$) with probability z.

In equilibrium, the value of z depends on the values of the other parameters in the model. With reputational concerns the behaviour of the competent decision maker remains the same, i.e. he makes the most efficient decision by stepping in when the project is good and by not stepping in when the project is bad. Reputational concerns, however, distort the behaviour of the incompetent decision maker.

Comparing the outcome of the equilibrium when the decision maker has reputational concerns with the case analyzed in section 3.4.2 where the decision maker does not have reputational concern.

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[37] See appendix for comparative statics.

Corollary. Reputational concerns create incentives that cause excessive intervention. This is because reputational concerns result in the incompetent decision maker stepping in more often than is optimal.

In the first best the optimal strategy of the incompetent decision maker is not to step in. This first best is achieved when the decision maker does not have reputational concerns. But with reputational concerns the incompetent decision maker (L) now steps in with probability z. This means that reputational concerns cause an increased amount of stepping in.

I now consider the impact of reputational concerns on the behaviour of the private firm. The fact that an incompetent decision maker can step in (because of reputational concerns) when a project is bad has a negative impact on the amount of firm specific investment the private firm chooses to make. With the decision maker having reputational concerns, if the project is bad, the private firm (F) maximises

$$max_p \left\{ \gamma p k V + (1 - \gamma)(1 - z) p k V - \frac{p^2}{2} \right\}.$$

Therefore the private firm chooses a lower p, where

$$p = [\gamma + (1 - \gamma)(1 - z)] k V. \text{ (5)}$$

This leads us to the following proposition;

Proposition 2: When the competent decision maker chooses to step in ($d - i$) if the project is good ($\theta = G$) or not step in ($d = n$) if the project is bad ($\theta = B$), and the incompetent decision maker steps in ($d = i$) with probability z, F will make less than the first best level of firm specific investment. The level of firm specific investment will be given where

$$p - [\gamma + (1 - \gamma)(1 - z)] k V.$$

Proposition 2 shows that there is under investment by the firm when the decision maker has reputational concerns compared to the case analyzed in section 3.4.2 where the decision maker does not have reputational concerns and the firm makes the optimal level of investment.

With reputational concerns there is underinvestment because the reputational concerns of the decision maker lead the incompetent decision maker to step in too often. The firm anticipates that it will not be able to fully appropriate its investment and will therefore under-invest. In fact, we note that $p = [\gamma + (1 - \gamma)(1 - z)]kV$ is lower than $p = V$, the level under first best.

This finding is consistent with the empirical findings on regulatory risk. I show that increased regulatory risk leads to under-investment in quality improving firm specific investment in procurement contracts. The empirical findings from the literature on regulatory risk also show that regulatory risk results in lower than optimal performance by firms, for example firms are shown to delay investment decisions in the U.S. electricity industry (Ishii and Yan, 2004). Regulatory risk is generally found to lead to lower performance in regulated industries (Pescetto, 2008; and Buckland and Fraser, 2001).

3.5.3 Description of Mixed Strategy Equilibrium

In this section I consider an example to show that an equilibrium described in the previous section exists and I make some comparative statics analysis.

I propose an equilibrium where the incompetent uses mixed strategy. That is, the equilibrium strategy of the incompetent decision maker is to step in with probability z. I use simulations to show the parameter values where z has a positive value and therefore the equilibrium exists. We also use simulations to show how the probability of stepping in, z, is related to the other parameters in the model.

In equilibrium I have;

$$g\left[r\gamma_V^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i$$
$$= g\left[s\gamma_V^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_V^n + (1-p)\gamma_0^n\right]$$

with the left hand side $(LHS) = g\left[r\gamma_V^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i$ and the right hand side $(RHS) = g\left[s\gamma_V^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_V^n + (1-p)\gamma_0^n\right]$. The equilibrium value of z is given where the LHS and the RHS intercept. We have an equilibrium if the interception yields a value of z between 0 and 1, i.e. if $z \in (0,1)$.

I begin by analysing how the z varies with the probability that a project is good, g. I give the following values to the parameters; $r = 0.6, s = 0.4, p = 0.5,$ and $\gamma = 0.5$. The graph on the left shows the LHS of the equilibrium equation. In the graph g takes values $0.3; 0.5; 0.7$ and 0.9. The graph rotates upwards as g increases in value. The graph on the right shows the RHS of the equilibrium equation. The parameters r, s, p and γ take the same values as they do in the LHS. In the RHS, g takes the values $0.3; 0.5; 0.7$ and 0.9. The RHS graph rotates and shifts to the right (downwards) as g increases in value. These results show that the probability of stepping in of the incompetent decision maker, z, increases with the proportion of good projects, g. This makes intuitive sense as a decision maker prefers stepping in when the project is good. A decision maker maximises his expected reputation by stepping in when the project is good. Therefore the incompetent decision maker (L) is more likely to step in as the probability that the project is good (g) increases.

[Insert Figures 1 and 2 here.]

I now investigate how z varies with the probability that the decision maker is competent, γ. I give the following values to the parameters; $g = 0.5, r = 0.6, s = 0.4,$ and $p = 0.5$. In the graph on the left (which shows the LHS of the equilibrium equation), γ takes the values $0.3; 0.5; 0.7$ and 0.9. As γ increases, the graph rotates upwards. The graph on the right shows the RHS of the equilibrium equation with the parameters having the same values as they do in the LHS. In the RHS, γ has the values; $0.3; 0.5; 0.7$ and 0.9. The RHS graph rotates upwards to the left as γ increases in value. This shows an ambiguous relationship

between z and γ. As γ increases, the reputational gain from stepping in increases, and the reputational gain from contract renewal increases as well.

[Insert Figures 3 and 4 here.]

I now investigate how z is related to r and s. I focus on the LHS when investigating how z varies with r. The RHS does not vary with r. For this example, the parameters take values $g = 0.5, s = 0.4, p = 0.5$ and $\gamma = 0.5$. In the diagram, r takes the values $0.5; 0.7;$ and 0.9. The graph shows that with increasing values of r, the graph shifts and rotates to the left. Given that the RHS does not vary with r, this means that z is negatively related to r. This relationship is explained as follows. The incompetent decision maker's expected reputational gain from stepping in is

$$g\left[r\gamma_V^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i.$$

Whilst the incompetent decision maker's expected reputational gain from not stepping in is

$$g\left[s\gamma_V^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_N^n + (1-p)\gamma_0^n\right].$$

As r increases and approaches 1, the incompetent decision maker's expected reputational benefit of stepping in decreases. When $r = 1$, the expected benefit of stepping in decreases to γ_V^i (because $\gamma_0^i = 0$ when $r - 1$). However, the expected reputational benefit of not stepping in remains the same. Therefore as r increases, the incompetent decision maker increasingly prefers not to step in (i.e. z decreases) because the incompetent decision maker has a higher expected reputational benefit from not stepping in.

[Insert Figures 5 and 6 here.]

I finally focus on the RHS when investigating how z varies with s. The LHS does not vary with s. In this example, the parameters take values $g - 0.5, r - 0.6, p - 0.5$ and $\gamma - 0.5$. In the diagram, s takes the values

0.1; 0.3 and 0.5. The graph shows that with increasing values of *s*, the graph shifts to the left. Given that the LHS does not vary with *s*, this means that *z* is negatively related to *s*. This is because as *s* increases, the reputational value of not stepping in also increases, thus reducing the likelihood of an incompetent decision maker stepping in (i.e. *z* decreases). This is shown as follows. The incompetent decision maker's expected reputational gain from not stepping in is

$$g\left[s\gamma_V^n + (1-s)\gamma_0^n\right] + (1-g)\left[p\gamma_V^n + (1-p)\gamma_0^n\right].$$

The incompetent decision maker's expected reputational gain from stepping in is

$$g\left[r\gamma_V^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i.$$

As *s* increases and approaches 1, the incompetent decision maker's expected reputational benefit of not stepping in increases. When $s = 1$, the expected benefit of not stepping in increases. This is because as s increases is γ_0^n is increasing whereas γ_V^n is decreasing. At $s = 1$, $\gamma_0^n > \gamma_V^n$. Figure 8 shows that as *s* increases, the expected benefits of stepping in curve shifts to the left. This implies that the increase in γ_0^n is larger than the decrease in γ_V^n as *s* increases. The expected reputational benefit from stepping in does not change with *s*. Therefore as *s* increases, the incompetent decision maker's expected reputational benefit increases thus the incompetent decision maker increasingly prefers not to step in (i.e. *z* decreases).

[Insert Figures 7 and 8 here.]

In summary, I use simulations to show two important results. Firstly I show that for some parameter values, the LHS and RHS intercept to give values of *z* between *0* and 1. This shows that the mixed strategy equilibrium exists. Secondly, I show that the probability of stepping in of the incompetent decision maker, *z*, increases with the proportion of good projects, *g*. This makes intuitive sense as it is more reputationally beneficial for a decision maker to step in when the project is good, therefore as *g* increases, the more likely *L* will step in. The probability that the decision maker is competent, γ, is ambiguously related to *z*. As γ increases, the reputational gain from

stepping in increases, and the reputational gain from not stepping in increases as well. I also show that z is negatively related to r and s.

3.6 Conclusion

This chapter shows that the reputational concerns of the government cause governments to excessively intervene in procurement projects. Thus, reputational concerns increase regulatory risk. I also show how reputational concerns have can have an impact on players in different hierarchies of organisations and in contractual relationships. When a principal has reputational concerns and is potentially incompetent, I show in our set up that having the option of stepping in can result in less than desired effort being undertaken by the private firm in improving the quality of the project.

The predictions of this theoretical model are consistent with the empirical findings from research that investigates the impact of regulatory risk on firm performance and asset valuation. This research shows that regulatory risk negatively affects land value (Riddiogough, 1995) and delivery of electricity (Ishii and Yan, 2004). Regulatory risk is also shown to increase share volatility (Robinson and Taylor, 1998) and increase a firm's systematic risk (Buckland and Fraser, 2001). The findings of this chapter suggest that avoiding the possibility of government intervention is a means of overcoming the under-investment problem.

Chapter 4

Summary and Conclusions

In this chapter, I first summarize the findings from the previous three chapters. I then provide some concluding remarks and policy implications.

4.1 Summary of the Thesis' Findings

The introductory chapter raised the important question of whether public service motivation and reputational concerns can improve quality in the provision of public goods and services. This is particularly important because the public sector provides unique challenges that traditional incentives may be unable to correct. This thesis has given empirical evidence that supports the view that by hiring individuals that are public service motivated, the public sector will improve performance. This thesis has also shown that reputational concerns can result in lower provision of quality improving effort.

4.1.1 Chapter 1: Crowding Out Public Service Motivation

Chapter 1 started by explaining public service motivation and proposing that hiring individuals that are public service motivated can improve performance and quality in the public sector.

I argued that the concept of PSM had its roots in the public administration literature and that satisfactory empirical evidence of PSM was lacking. Several studies have attempted to identify PSM these studies have failed to take a comparative perspective of worker motivation between the public and private sectors (e.g. Brewer and Seldon, 1998). The studies also showed that individuals in the public sector derive higher levels of satisfaction from the intrinsic aspects of work than their counterparts in the private sector (e.g. Crewson, 1997; Dilulio, 1994; and Houston, 2000, 2006). However, these studies have did not identify whether it was the public sector that caused individuals to derive higher levels of intrinsic satisfaction from public sector

work or whether it was intrinsically individuals that were attracted to the public sector that caused the higher intrinsic satisfaction in the public sector.

I also investigated whether high intrinsic rewards in the public sector deterred public service motivated individuals from joining the public sector. The reason why this may be the case is that if intrinsically motivated individuals also care about their reputation for being intrinsically motivated (altruistic), then higher extrinsic rewards may reduce the overall utility of moving to the public sector because higher extrinsic rewards reduce the individual's reputation for being pro-social when the individual moves to the public sector. That is, higher extrinsic rewards have an image spoiling effect.

I used data from the British Household Panel Survey (BHPS) to determine whether individuals that derived higher utility from the intrinsic characteristics of work in the public sector (i.e. public service motivated individuals) were more likely to move to the public sector. I also examine whether higher extrinsic rewards in the public sector deter individuals from joining the public sector. Using real wage, satisfaction with the work itself (as a proxy for utility derived from the intrinsic aspects of work), satisfaction with pay, satisfaction with job security, and satisfaction with the hours worked (as proxies for utility derived from the extrinsic aspects of work). I estimate Mincer-type earnings and satisfaction functions corrected for selectivity bias for both men and women. I use the estimates to calculate the expected earnings and satisfaction differentials between the private and public sector. I then use these differentials in probit estimation to determine how these differentials influence the probability of moving from the private to the public sector.

The main findings show that individuals are more likely to move to the public sector if they expect to enjoy greater satisfaction with the work itself in the public sector. This is strong evidence that individuals move to the public sector because they are public service motivated. Furthermore, higher predicted satisfaction with extrinsic rewards in the public sector reduces the probability of moving to the public sector. This result provides strong evidence of the image spoiling effect of extrinsic rewards in the public sector.

These findings suggest that the public sector should lower wages and other extrinsic rewards. Firstly, because higher extrinsic rewards in the public sector deter public service motivated individuals from entering the public sector. Lower extrinsic rewards allow for better matching as individuals with PSM are more willing to work in the public sector. Secondly, a reduction in extrinsic rewards reduces problems caused by adverse selection as extrinsically motivated individuals are less likely to apply for public sector jobs.

4.1.2 Chapter 2: Does Public Service Motivation Adapt?

In Chapter 2 I investigated the temporal stability of public service motivation. That is, I investigated whether intrinsic motivation in the public sector adapted back down towards a baseline level. This study is important because if PSM is to be beneficial to the public sector as is argued in the literature; then individuals must remain intrinsically motivated in the public sector in the long term.

I used data from the BHPS to determine the temporal nature of PSM. The panel nature of the data allows this researcher to observe individuals before and after they change jobs. I examine how overall job satisfaction and its domains vary before and after a change in job from the private to the public sector using fixed effects panel regression. Satisfaction with the work itself is the proxy for utility derived from the intrinsic aspects of the job. To gain a comparative perspective, I also examine how overall job satisfaction and its domains vary before and after job changes from the private to the public sector, job changes within the public sector, and job changes within the private sector.

The main findings show that PSM does not adapt for both men and women, even in the long term. That is, when individuals change jobs from the private to the public sector, there is a permanent increase in overall job satisfaction and this increase is associated with a permanent increase in satisfaction with the work itself. Job changes from the public to the private sector, job changes within the public sector, and job changes within the public sector do not result in a permanent increase in overall job satisfaction or its domains. The exception is for men who move from the public to the private sector. They experience a permanent increase in overall job satisfaction.

However, this increase is associated with a permanent increase in satisfaction from the extrinsic aspects of work.

These findings show that both men and women who accept public sector employment have a boost in satisfaction with the intrinsic aspects of work. I also show that this increase is permanent. This provides strong evidence that PSM does not adapt. This suggests that the public sector can gain in the long term from employing individuals with PSM.

4.1.3 Chapter 3: Reputation and Under-investment

In chapter 3, I investigate the impact of reputational concerns on procurement contracts. I analyse how reputational concerns impact the decision making behaviour of a government and how this then impacts on the performance of private firms in procurement contracts. I argue that instead of creating positive incentives (that can result in cost reduction and/or quality improvement), possible intervention by the government (where this decision affects the government's image) can in fact result in contracted firms having reduced incentives to improve quality. This is because reputational concerns cause the government to intervene more often than is optimal. This increases the likelihood of the private firm experiencing expropriation.

This chapter shows how reputational concerns can have an impact on players in different hierarchies of organisations and contractual relationships. This chapter suggests that avoiding the possibility of government intervention is a means of overcoming the under-investment problem.

4.2 Prospects for Future Research

The research undertaken in this thesis leads to several prospects for future research. In this section I will discuss topics that are of interest for future research. This discussion will include the data and methodologies that can be used to investigate these prospects for future research.

The first prospect for future research is to investigate how intrinsic motivation in the workplace is affected by life events. This is of interest because life events, such as marriage and having children, have been shown to have a significant impact on life satisfaction (Clark et al., 2008; Frey and Stutzer, 2006). The effects are significant both in the years leading up to the event and in the years after the event. If there is no segmentation of individual's life well-being and well-being at work then life events can affect well being at work. Researchers in sociology and psychology argue that if there is no segmentation, life events can impact well-being at work in two ways; spill-over or compensation. Spill-over is where the attitudes and behaviours that are developed in the life domain are carried into the work domain. Compensation is where individuals that do not receive satisfaction in one domain will attempt to achieve satisfaction in another domain by increasing involvement in the more satisfying domain. Life events can thus have an important impact on well-being at work. Of interest will be to determine whether life events impact intrinsic motivation at work and to determine whether some employment sectors (such as the public sector) are better at maintaining intrinsic motivation when different life events occur.

This can be investigated using data from the BHPS. The panel nature of BHPS data allows for identification of individuals over time. This means individual and work characteristics are observable over time. This means that the BHPS can be used to investigate how life events, such as marriage, can affect well-being and intrinsic motivation at work. The methodology can be similar to that used in Chapter 2, where lead and lag dummies for the years leading up to and after the life event are constructed and used as key explanatory variables in a fixed effects panel regression. The independent variable will be the various domains of job satisfaction. Overall job satisfaction will proxy overall utility from work. Satisfaction with the work itself will proxy satisfaction from the intrinsic aspects of work. Satisfaction with pay, job security, and working hours will proxy utility from extrinsic rewards. The regressions will control for various individual and work characteristics.

A second prospect for future research would be an investigation into how political affiliation can affect well-being at work and intrinsic motivation in the public sector. The study will determine whether or not an individual's political preference affects public service motivation. If the political party running the government is not that

which an individual prefers, this study will attempt to find out if this negatively affects intrinsic motivation in the public sector.

This can be tested using the BHPS. In addition to many individual and work characteristics, the BHPS also contains information on individuals' political party affiliation. To test the hypothesis that political affiliation affects work well being and intrinsic motivation at work, a dummy variable representing the political party individuals' support can be a key explanatory variable in panel fixed effects regression that has also controls for various individual and work characteristics. The independent variable will vary across the job satisfaction and its domains. Job satisfaction will proxy overall utility from work. Satisfaction with the work itself will proxy satisfaction from the intrinsic aspects of work. Satisfaction with pay, job security, and working hours will proxy utility from extrinsic rewards. The analysis will focus on public sector workers.

Third, research from this thesis indicates that investigating the determinants of PSM in individuals. The literature from public administration argues that PSM is the result of parental modelling or socialisation within organisations. This proposition can be tested using data from the BHPS. The BHPS contains data on religious affiliation and parent's occupation. These can be used to test the hypothesis that parental modelling and socialisation from organisations are significant determinants of intrinsic motivation and PSM. This can be tested using a pooled ordered probit regression with satisfaction from the work itself as the dependent variable and parent's occupation and religious affiliation as key explanatory variables. From these regressions we should be able to determine whether parental modelling and socialising from organisations are associated with intrinsic motivation.

Chapter 1 of this thesis also indicates that investigating the impact of reputational concerns in deterring intrinsically motivated individuals from joining the public sector or undertaking pro-social actions. To test the hypothesis that reputational concerns influence pro-social behaviour or the decision to join the public sector, personality measures that can proxy the value an individual places on their reputation are necessary. If a dataset can be found that contains such proxies and similar variables to

those analysed in Chapter 1 then the impact reputational concerns on pro-social behaviour can be analysed.

The BHPS also contains information on individuals working in for non-governmental organisations (NGOs), such as charities. Another future prospect for research will be to investigate whether individuals that move to the NGO sector have sustained increases in utility derived from the intrinsic aspects of working for NGOs. It will also be interesting to investigate whether high extrinsic rewards also deter intrinsically motivated individuals from joining the NGO sector, as they do when such individuals wish to join the public sector. Using the BHPS, individuals that make the transition from the non-NGO sectors (both private and public) to the NGO sector can be identified. Similar methodology to that used in Chapters 1 and 2 can be used to carry out the analysis.

This thesis also indicates that it would also be very interesting to investigate whether intrinsic motivation and PSM varies across different countries. This can be investigated using data from the World Values Survey (WSV). This can be investigated firstly by comparing the mean level of satisfaction from the intrinsic aspects of work from both the private and public sector of each country. Secondly, this can be investigated by estimating country intrinsic satisfaction equations that include a public sector employment dummy (to identify individuals that work in the public sector). The dummy coefficients for different countries can be compared across countries to determine which countries have higher intrinsic motivation in the public sector.

It would also be interesting to run an experiment to test the propositions in Chapter 3. This means running an experiment that tests two things; firstly, whether the competence of a decision maker will affect the probability of intervention by a decision maker will affect the probability of intervention by a decision maker. Secondly, the experimental study will test whether the increased probability of intervention will affect the performance of a party that is undertaking a task for the decision maker.

Another interesting idea will be use the theoretical model given to investigate how reputational concerns affect the behaviour of a decision maker if the decision maker undertakes provision of the project in period 1. In this case the decision maker is faced with the decision to continue in house provision or let a private firm takeover provision of the project in the second period. This will be interesting because it will allow investigation of how reputational concerns affect the decision to outsource or privatise. Thus determining whether reputational concerns can lead to more outsourcing or privatisation than is optimal. The propositions from the theoretical model can be tested using an experiment.

The above are prospective areas for future research that lead on from this thesis. They will make key contributions to the economic literature on intrinsic motivation and reputational concerns.

4.3 Concluding Remarks and Policy Implications

This thesis finds strong evidence of PSM and shows that individuals remain intrinsically motivated in the public sector even in the long term. Therefore, this thesis suggests that governments should actively recruit individuals with PSM as this will increase efficiency and performance in the public sector without a greater need for high powered incentives to achieve such improvements (Besley and Ghatak, 2005). In fact, this thesis shows if the public sector has extrinsic rewards that are too high, this may deter individuals with PSM from joining the public sector.

This thesis also shows that the reputational concerns of the government can have a detrimental effect on the performance of private contractors in procurement contracts, if these reputational concerns lead to a higher than optimal likelihood of government intervention.

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APPENDIX TO CHAPTER 1

Table 1
The Distribution of Job Satisfaction Measures

MALES

Rank	Overall Job Satisfaction		Satisfaction With The Work Itself		Satisfaction With Pay		Satisfaction With Job Security		Satisfaction With Hours Worked	
	Count	%	Count	%	Count	%	Count	%	Count	%
1	684	1.92	685	1.92	1,705	4.79	1,463	4.12	977	2.74
2	1,150	3.23	995	2.79	2,037	5.72	1,290	3.63	1,328	3.73
3	2,837	7.97	2,377	6.68	5,413	15.20	2,871	8.08	3,973	11.16
4	3,511	9.86	3,318	9.32	3,528	9.91	3,639	10.24	4,724	13.27
5	8,502	23.88	7,588	21.31	8,979	25.22	6,746	18.98	8,003	22.47
6	15,223	42.76	14,614	41.05	11,374	31.95	12,365	34.79	12,282	34.49
7	3,693	10.37	6,027	16.93	2,568	7.21	7,166	20.16	4,324	12.14
Total	35,600	100.00	35,604	100.00	35,604	100.00	35,540	100.00	35,611	100.00

FEMALES

Rank	Overall Job Satisfaction		Satisfaction With The Work Itself		Satisfaction With Pay		Satisfaction With Job Security		Satisfaction With Hours Worked	
	Count	%	Count	%	Count	%	Count	%	Count	%
1	444	1.75	449	1.77	1,168	4.60	868	3.42	542	2.13
2	708	2.79	673	2.65	1,477	5.82	655	2.58	785	3.09
3	1,691	6.66	1,608	6.33	3,791	14.93	1,700	6.70	2,930	11.53
4	1,642	6.47	1,712	6.74	2,023	7.97	1,828	7.21	2,369	9.32
5	5,566	21.92	5,206	20.49	6,198	24.41	4,308	16.99	5,718	22.51
6	11,803	46.48	10,819	42.58	8,390	33.04	9,478	37.38	9,284	36.54
7	3,542	13.95	4,939	19.44	2,348	9.25	6,519	25.71	3,777	14.87
Total	25,396	100.00	25,406	100.00	25,395	100.00	25,356	100.00	25,405	100.00

Table 2
Number of observations of Transitions

	Observations	
	Males	Females
Entry into Public Sector from Private Sector	336	411
Entry into Caring Public Sector from Private Sector	59	185
Entry into Non Caring Public Sector from Private Sector	162	95
Entry into Private Sector from Public Sector	349	310
Entry into Caring Private Sector from Public Sector	24	86
Entry into Non Caring Private Sector from Public Sector	241	135

Note: Not all individuals that make the transition from the public to the private sector and from the private sector to the public sector provide information on their occupations which I use to identify caring and non caring jobs. This is why lines 2 and 3 do not add up to line 1, and lines 5 and 6 do not add up to line 4.

Table 3
Gender and Sector Means for Real Wage, Hours Worked and Job Tenure

	Means		T-stat on Sector Difference
	Public	Private	
Real Wage (£/month)			
Men	1848	1688	10.69***
Women	1494	1131	34.19***
Hours Worked (weekly)			
Men	38.72	40.68	-22.02***
Women	35.83	37.09	-17.79***
Job Tenure (years)			
Men	6.42	4.56	21.25***
Women	4.99	3.45	22.02***

Table 4
Probit results for transition into Public and Private Sectors

	Public		Private	
	Males	Females	Males	Females
$\hat{y}_{it}$	-1.437* (0.832)	-1.185** (0.571)	0.239 (1.010)	1.738** (0.747)
$\hat{s}_{it(PAY)}$	-0.474 (0.354)	-0.024 (0.183)	-0.661 (0.411)	0.043 (0.227)
$\hat{s}_{it(SEC)}$	-0.223 (0.238)	0.312* (0.163)	0.677** (0.288)	0.475** (0.230)
$\hat{s}_{it(WORK)}$	0.591*** (0.221)	0.818** (0.320)	-0.001 (0.248)	-0.413 (0.447)
$\hat{s}_{it(HOURS)}$	-0.727** (0.317)	-0.606*** (0.236)	0.287 (0.347)	0.846*** (0.328)
Employer offers Pension (t)	0.265* (0.150)	0.250 (0.175)	0.367** (0.172)	-0.093 (0.224)
Age (t-1)	0.003 (0.005)	0.002 (0.004)	-0.007 (0.005)	-0.008 (0.006)
Pension (t-1)	-0.221*** (0.059)	-0.267*** (0.061)	-0.337*** (0.078)	-0.310*** (0.076)
Trade Union Member (t-1)	-0.072 (0.075)	0.258*** (0.077)	0.136* (0.082)	0.263*** (0.082)
Married (t-1)	-0.269*** (0.087)	-0.230*** (0.086)	-0.051 (0.100)	-0.145 (0.108)
Living as Couple (t-1)	-0.167* (0.088)	-0.182** (0.081)	-0.159 (0.109)	0.049 (0.100)
Widowed (t-1)	0.025 (0.427)	-0.394 (0.332)	0.196 (0.528)	-0.451 (0.331)
Divorced (t-1)	0.093 (0.172)	-0.117 (0.128)	0.057 (0.187)	-0.073 (0.148)
Higher Level Edu (t-1)	0.043 (0.078)	0.256** (0.116)	-0.032 (0.100)	-0.198 (0.155)
Medium Level Edu (t-1)	0.103 (0.076)	0.143 (0.098)	-0.034 (0.101)	-0.091 (0.125)
Health Problems (t-1)	-0.012 (0.050)	0.144*** (0.053)	-0.039 (0.060)	0.192*** (0.064)
No. of Children (t-1)	0.087*** (0.033)	0.066* (0.036)	0.023 (0.040)	0.026 (0.041)
Renter (t-1)	0.116 (0.073)	0.244*** (0.090)	0.164* (0.097)	0.045 (0.125)
Medium Firm (t-1)	-0.047 (0.068)	-0.084 (0.067)	0.160* (0.094)	0.187** (0.093)
Large Firm (t-1)	-0.111 (0.075)	-0.276*** (0.078)	0.291*** (0.095)	0.193* (0.099)
Regional Dummies (t-1)	Yes	Yes	Yes	Yes
Constant	-2.956*** (0.695)	-3.739*** (0.420)	-1.972** (0.826)	-2.189*** (0.595)
Pseudo R^2	0.074	0.105	0.084	0.115

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level. Note on differential*****.

Table 5
Probit results for Transition – Caring and Non Caring Jobs (Men and Women)

	Public	
	Caring	Non Caring
$\hat{y}_{it}$	-0.033 (0.985)	0.372 (0.844)
$\hat{s}_{it(PAY)}$	-0.517** (0.251)	-0.668*** (0.229)
$\hat{s}_{it(SEC)}$	0.309 (0.227)	0.328 (0.204)
$\hat{s}_{it(WORK)}$	1.166*** (0.389)	1.347*** (0.366)
$\hat{s}_{it(HOURS)}$	-1.047*** (0.359)	-1.020*** (0.320)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table 6
Probit results for Transition – Government Sub-sectors (Men And Women)

	Central Government	Local Government	NHS And Higher Education
$\hat{y}_{it}$	-0.158 (1.115)	-0.637 (0.917)	-0.634 (0.978)
$\hat{s}_{it(PAY)}$	-0.447 (0.301)	0.380 (0.243)	-0.892*** (0.246)
$\hat{s}_{it(SEC)}$	0.374 (0.266)	-0.216 (0.220)	0.261 (0.221)
$\hat{s}_{it(WORK)}$	1.463*** (0.485)	1.402*** (0.371)	0.745* (0.384)
$\hat{s}_{it(HOURS)}$	-0.788* (0.413)	-0.891*** (0.342)	-1.260*** (0.356)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table 7
Probit results for Transition into Public Sector– Income (Men and Women)

	Lowest 25th Percentile (<£910.00/month)	Highest 25th Percentile (>£1833.33/month)
$\hat{y}_{it}$	-1.428 (1.237)	0.668 (1.353)
$\hat{s}_{it(PAY)}$	-0.655** (0.325)	-0.397 (0.368)
$\hat{s}_{it(SEC)}$	0.703** (0.308)	0.187 (0.323)
$\hat{s}_{it(WORK)}$	1.304** (0.530)	0.967^ (0.592)
$\hat{s}_{it(HOURS)}$	-1.084** (0.489)	-0.604 (0.489)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level. ^ indicates significance at a 10.2% confidence level.

Table A1
Log Wage Equations with Heckman Selection

	Public		Private	
	Males	Females	Males	Females
Age	0.005*** (0.002)	0.009*** (0.001)	0.009*** (0.000)	0.007*** (0.001)
Trade Union Member	-0.173 (0.127)	0.337*** (0.041)	0.069*** (0.025)	0.040 (0.037)
Employer Offers Pension	-0.058 (0.050)	0.139*** (0.028)	0.176*** (0.007)	0.258*** (0.012)
Married	0.216*** (0.026)	-0.041*** (0.013)	0.207*** (0.009)	0.049*** (0.010)
Living as Couple	0.151*** (0.029)	-0.021 (0.016)	0.170*** (0.009)	0.086*** (0.011)
Widowed	0.124 (0.094)	-0.041 (0.036)	0.107*** (0.039)	-0.104*** (0.035)
Divorced	0.120*** (0.030)	-0.025 (0.019)	0.185*** (0.017)	0.086*** (0.017)
Higher Level Education	0.254*** (0.075)	0.679*** (0.036)	0.367*** (0.011)	0.429*** (0.021)
Medium Level Education	0.083** (0.041)	0.280*** (0.023)	0.138*** (0.008)	0.189*** (0.012)
Health Problems	-0.018* (0.011)	-0.007 (0.009)	-0.031*** (0.005)	-0.042*** (0.007)
No. of Children	0.054*** (0.007)	0.028*** (0.007)	0.058*** (0.003)	-0.009* (0.006)
Renter	-0.215*** (0.021)	-0.202*** (0.018)	-0.229*** (0.008)	-0.209*** (0.011)
Medium Firm	-0.013 (0.031)	0.063*** (0.019)	0.089*** (0.007)	0.091*** (0.009)
Large Firm	0.031 (0.035)	0.091*** (0.013)	0.167*** (0.008)	0.170*** (0.010)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	2.805*** (0.417)	1.254*** (0.145)	1.903*** (0.016)	1.669*** (0.024)
Age	0.012*** (0.001)	0.022*** (0.001)	-0.012*** (0.001)	-0.022*** (0.001)
Trade Union Member	0.992*** (0.019)	1.150*** (0.021)	-0.969*** (0.019)	-1.144*** (0.021)
Employer offers Pension	0.320*** (0.023)	0.531*** (0.024)	-0.218*** (0.022)	-0.480*** (0.024)
Married	-0.167*** (0.028)	-0.065** (0.028)	0.152*** (0.027)	0.073*** (0.027)
Living as Couple	-0.169*** (0.031)	-0.157*** (0.031)	0.158*** (0.031)	0.153*** (0.031)
Widowed	-0.374*** (0.131)	0.205** (0.084)	0.359*** (0.127)	-0.171** (0.083)
Divorced	0.076 (0.049)	-0.052 (0.043)	-0.072 (0.048)	0.065 (0.043)
Higher Level Education	0.578*** (0.025)	0.933*** (0.029)	-0.439*** (0.024)	-0.851*** (0.028)
Medium Level Education	0.292*** (0.026)	0.428*** (0.029)	-0.151*** (0.026)	-0.346*** (0.028)
Health Problems	-0.001 (0.017)	0.042** (0.019)	0.004 (0.017)	-0.035* (0.019)
No. of Children	0.032*** (0.010)	0.126*** (0.012)	-0.032*** (0.010)	-0.127*** (0.012)
Renter	-0.048 (0.030)	-0.146*** (0.033)	0.071** (0.030)	0.173*** (0.033)
Medium Firm	0.211*** (0.023)	0.125*** (0.024)	-0.232*** (0.023)	-0.126*** (0.024)
Large Firm	0.245*** (0.024)	0.189*** (0.025)	-0.271*** (0.023)	-0.197*** (0.025)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.106*** (0.054)	-2.472*** (0.062)	1.877*** (0.054)	2.308*** (0.061)
Mills Ratio	-0.382** (0.174)	0.261*** (0.059)	-0.225*** (0.057)	-0.102* (0.053)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table A2

Satisfaction with Work Itself Equations with Heckman Selection

	Public		Private	
	Males	Females	Males	Females
Age	-0.003 (0.006)	-0.005* (0.003)	0.005*** (0.001)	0.005*** (0.002)
Trade Union Member	-1.336*** (0.430)	-0.203 (0.131)	-0.344*** (0.082)	-0.461*** (0.118)
Employer Offers Pension	-0.321* (0.170)	-0.089 (0.089)	0.019 (0.021)	-0.111*** (0.039)
Married	0.049 (0.091)	0.272*** (0.039)	0.174*** (0.029)	0.095*** (0.034)
Living as Couple	-0.047 (0.100)	0.028 (0.049)	0.047 (0.029)	0.019 (0.036)
Widowed	0.924*** (0.333)	0.476*** (0.100)	0.279** (0.125)	0.272** (0.113)
Divorced	-0.296*** (0.108)	0.129** (0.058)	0.230*** (0.053)	-0.018 (0.053)
Higher Level Education	-0.609** (0.254)	-0.205* (0.112)	-0.083** (0.034)	-0.194*** (0.069)
Medium Level Education	-0.377*** (0.142)	-0.125* (0.071)	-0.062*** (0.024)	-0.083** (0.038)
Health Problems	-0.215*** (0.038)	-0.157*** (0.026)	-0.115*** (0.017)	-0.119*** (0.023)
No. of Children	0.003 (0.026)	0.045** (0.020)	0.020** (0.010)	0.047*** (0.018)
Renter	0.121 (0.074)	0.086 (0.055)	0.019 (0.026)	0.087** (0.037)
Medium Firm	-0.277*** (0.107)	-0.116*** (0.036)	-0.226*** (0.023)	-0.219*** (0.028)
Large Firm	-0.399*** (0.121)	-0.202*** (0.040)	-0.291*** (0.027)	-0.385*** (0.033)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	9.059*** (1.412)	6.183*** (0.458)	5.356*** (0.052)	5.421*** (0.076)
Age	0.012*** (0.001)	0.022*** (0.001)	-0.012*** (0.001)	-0.022*** (0.001)
Trade Union Member	0.992*** (0.019)	1.150*** (0.021)	-0.970*** (0.019)	-1.144*** (0.021)
Employer offers Pension	0.322*** (0.023)	0.532*** (0.024)	-0.217*** (0.022)	-0.480*** (0.024)
Married	-0.167*** (0.028)	-0.065** (0.028)	0.153*** (0.027)	0.073*** (0.027)
Living as Couple	-0.169*** (0.031)	-0.157*** (0.031)	0.158*** (0.031)	0.153*** (0.031)
Widowed	-0.373*** (0.131)	0.205** (0.084)	0.361*** (0.127)	-0.171** (0.083)
Divorced	0.076 (0.049)	-0.051 (0.043)	-0.070 (0.048)	0.065 (0.043)
Higher Level Education	0.579*** (0.025)	0.933*** (0.029)	-0.439*** (0.024)	-0.851*** (0.028)
Medium Level Education	0.292*** (0.026)	0.428*** (0.029)	-0.152*** (0.026)	-0.346*** (0.028)
Health Problems	-0.001 (0.017)	0.043** (0.019)	0.004 (0.017)	-0.035* (0.019)
No. of Children	0.031*** (0.010)	0.125*** (0.013)	-0.032*** (0.010)	-0.127*** (0.012)
Renter	-0.047 (0.030)	-0.146*** (0.033)	0.071** (0.030)	0.173*** (0.033)
Medium Firm	0.211*** (0.023)	0.125*** (0.024)	-0.233*** (0.023)	-0.126*** (0.024)
Large Firm	0.246*** (0.024)	0.189*** (0.025)	-0.271*** (0.023)	-0.197*** (0.025)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.107*** (0.054)	-2.472*** (0.062)	1.877*** (0.054)	2.308*** (0.061)
Mills Ratio	-1.677*** (0.587)	-0.149 (0.189)	0.282 (0.186)	0.447*** (0.169)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Satisfaction with Pay Equations with Heckman Selection

	Public		Private	
	Males	Females	Males	Females
Age	0.013** (0.006)	0.010*** (0.003)	0.003** (0.001)	0.005** (0.002)
Trade Union Member	-0.267 (0.502)	0.337** (0.160)	0.045 (0.095)	-0.306** (0.138)
Employer Offers Pension	0.183 (0.197)	0.553*** (0.109)	0.297*** (0.025)	0.204*** (0.046)
Married	-0.048 (0.098)	0.093* (0.048)	0.112*** (0.033)	0.198*** (0.040)
Living as Couple	-0.044 (0.108)	-0.048 (0.060)	0.011 (0.034)	0.092** (0.042)
Widowed	0.595* (0.344)	0.176 (0.126)	0.122 (0.145)	0.160 (0.133)
Divorced	-0.166 (0.106)	-0.380*** (0.073)	0.108* (0.061)	-0.178*** (0.063)
Higher Level Education	0.220 (0.293)	0.172 (0.138)	0.220*** (0.040)	-0.014 (0.081)
Medium Level Education	0.077 (0.161)	-0.054 (0.087)	0.025 (0.028)	0.094** (0.044)
Health Problems	-0.167*** (0.038)	-0.048 (0.033)	-0.129*** (0.019)	-0.197*** (0.027)
No. of Children	0.042 (0.026)	0.126*** (0.025)	0.009 (0.011)	0.010 (0.021)
Renter	-0.281*** (0.077)	-0.173** (0.068)	-0.187*** (0.031)	-0.077* (0.043)
Medium Firm	-0.129 (0.121)	0.111** (0.045)	-0.094*** (0.027)	-0.095*** (0.033)
Large Firm	-0.184 (0.136)	-0.095* (0.050)	0.048 (0.031)	0.022 (0.039)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	4.614*** (1.647)	3.102*** (0.562)	4.663*** (0.060)	4.255*** (0.089)
Age	0.012*** (0.001)	0.022*** (0.001)	-0.012*** (0.001)	-0.022*** (0.001)
Trade Union Member	0.992*** (0.019)	1.149*** (0.021)	-0.970*** (0.019)	-1.144*** (0.021)
Employer offers Pension	0.320*** (0.023)	0.534*** (0.024)	-0.216*** (0.022)	-0.479*** (0.024)
Married	-0.167*** (0.028)	-0.064** (0.028)	0.153*** (0.027)	0.073*** (0.027)
Living as Couple	-0.169*** (0.031)	-0.156*** (0.031)	0.159*** (0.031)	0.153*** (0.031)
Widowed	-0.374*** (0.131)	0.207** (0.084)	0.361*** (0.127)	-0.171** (0.083)
Divorced	0.076 (0.049)	-0.050 (0.043)	-0.071 (0.048)	0.064 (0.043)
Higher Level Education	0.578*** (0.025)	0.935*** (0.029)	-0.440*** (0.024)	-0.851*** (0.028)
Medium Level Education	0.292*** (0.026)	0.429*** (0.029)	-0.151*** (0.026)	-0.346*** (0.028)
Health Problems	-0.001 (0.017)	0.042** (0.019)	0.004 (0.017)	-0.035* (0.019)
No. of Children	0.032*** (0.010)	0.126*** (0.013)	-0.032*** (0.010)	-0.127*** (0.012)
Renter	-0.048 (0.030)	-0.147*** (0.033)	0.071** (0.030)	0.173*** (0.033)
Medium Firm	0.211*** (0.023)	0.124*** (0.024)	-0.233*** (0.023)	-0.126*** (0.024)
Large Firm	0.245*** (0.024)	0.189*** (0.025)	-0.271*** (0.023)	-0.197*** (0.025)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.106*** (0.054)	-2.477*** (0.062)	1.877*** (0.054)	2.308*** (0.061)
Mills Ratio	-0.329 (0.688)	0.626*** (0.231)	-0.424** (0.215)	0.437** (0.199)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table A4

Satisfaction with Job Security Equations with Heckman Selection

	Public		Private	
	Males	Females	Males	Females
Age	0.005 (0.006)	-0.002 (0.003)	-0.013*** (0.001)	-0.009*** (0.002)
Trade Union Member	0.065 (0.517)	-0.063 (0.153)	-0.533*** (0.094)	-0.805*** (0.129)
Employer Offers Pension	0.678*** (0.204)	0.548*** (0.104)	0.229*** (0.025)	-0.001 (0.043)
Married	-0.128 (0.101)	0.148*** (0.045)	0.064* (0.033)	0.084** (0.037)
Living as Couple	0.010 (0.111)	0.079 (0.057)	0.041 (0.034)	0.089** (0.040)
Widowed	0.510 (0.351)	-0.057 (0.118)	-0.138 (0.144)	0.079 (0.127)
Divorced	-0.029 (0.109)	-0.060 (0.068)	0.026 (0.061)	-0.087 (0.059)
Higher Level Education	0.204 (0.301)	0.123 (0.132)	-0.291*** (0.039)	-0.225*** (0.076)
Medium Level Education	0.045 (0.165)	0.079 (0.083)	-0.152*** (0.028)	0.013 (0.042)
Health Problems	-0.147*** (0.039)	-0.098*** (0.031)	-0.102*** (0.019)	-0.118*** (0.025)
No. of Children	0.065** (0.027)	-0.024 (0.024)	-0.022** (0.011)	-0.036* (0.020)
Renter	-0.183** (0.079)	-0.231*** (0.064)	-0.017 (0.030)	0.123*** (0.041)
Medium Firm	0.161 (0.124)	-0.017 (0.042)	-0.233*** (0.027)	-0.241*** (0.031)
Large Firm	-0.082 (0.140)	-0.048 (0.047)	-0.311*** (0.031)	-0.430*** (0.037)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	4.841*** (1.694)	5.500*** (0.535)	5.904*** (0.060)	5.914*** (0.085)
Age	0.012*** (0.001)	0.022*** (0.001)	-0.012*** (0.001)	-0.022*** (0.001)
Trade Union Member	0.993*** (0.019)	1.150*** (0.021)	-0.969*** (0.019)	-1.145*** (0.021)
Employer offers Pension	0.322*** (0.023)	0.533*** (0.024)	-0.217*** (0.022)	-0.479*** (0.024)
Married	-0.166*** (0.028)	-0.064** (0.028)	0.152*** (0.027)	0.074*** (0.027)
Living as Couple	-0.168*** (0.031)	-0.157*** (0.031)	0.159*** (0.031)	0.153*** (0.031)
Widowed	-0.371*** (0.131)	0.207** (0.084)	0.363*** (0.127)	-0.176** (0.084)
Divorced	0.078 (0.049)	-0.049 (0.043)	-0.071 (0.048)	0.065 (0.043)
Higher Level Education	0.578*** (0.025)	0.935*** (0.029)	-0.439*** (0.024)	-0.849*** (0.028)
Medium Level Education	0.292*** (0.026)	0.430*** (0.029)	-0.150*** (0.026)	-0.345*** (0.028)
Health Problems	-0.001 (0.017)	0.043** (0.019)	0.004 (0.017)	-0.035* (0.019)
No. of Children	0.031*** (0.010)	0.125*** (0.013)	-0.032*** (0.010)	-0.127*** (0.012)
Renter	-0.049 (0.030)	-0.146*** (0.033)	0.070** (0.030)	0.174*** (0.033)
Medium Firm	0.210*** (0.023)	0.123*** (0.024)	-0.233*** (0.023)	-0.126*** (0.024)
Large Firm	0.245*** (0.024)	0.188*** (0.025)	-0.271*** (0.023)	-0.198*** (0.025)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.104*** (0.054)	-2.471*** (0.062)	1.878*** (0.054)	2.307*** (0.061)
Mills Ratio	-0.039 (0.708)	-0.172 (0.221)	0.506** (0.213)	0.673*** (0.185)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table A5
Satisfaction with Hours Worked Equations with Heckman Selection

	Public		Private	
	Males	Females	Males	Females
Age	-0.006 (0.006)	-0.016*** (0.003)	-0.001 (0.001)	-0.003 (0.002)
Trade Union Member	-0.850* (0.461)	-0.637*** (0.149)	-0.057 (0.089)	-0.296** (0.122)
Employer Offers Pension	0.009 (0.182)	-0.002 (0.101)	0.039* (0.023)	-0.082** (0.041)
Married	-0.149 (0.092)	0.129*** (0.044)	-0.062** (0.031)	-0.110*** (0.035)
Living as Couple	-0.089 (0.101)	0.100* (0.056)	-0.136*** (0.032)	-0.049 (0.037)
Widowed	0.876*** (0.323)	0.045 (0.116)	0.381*** (0.135)	0.196* (0.117)
Divorced	-0.060 (0.101)	0.035 (0.067)	0.003 (0.057)	-0.257*** (0.055)
Higher Level Education	-0.454* (0.269)	-0.961*** (0.128)	-0.121*** (0.037)	-0.310*** (0.071)
Medium Level Education	-0.211 (0.148)	-0.346*** (0.080)	-0.021 (0.026)	-0.061 (0.039)
Health Problems	-0.126*** (0.036)	-0.156*** (0.030)	-0.101*** (0.018)	-0.154*** (0.023)
No. of Children	-0.004 (0.025)	-0.057** (0.023)	-0.052*** (0.011)	-0.012 (0.019)
Renter	0.025 (0.072)	0.188*** (0.063)	0.011 (0.029)	0.080** (0.038)
Medium Firm	-0.148 (0.111)	-0.106** (0.041)	-0.070*** (0.025)	-0.120*** (0.029)
Large Firm	-0.216* (0.126)	-0.049 (0.046)	-0.005 (0.029)	-0.150*** (0.035)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	7.641*** (1.511)	7.477*** (0.521)	5.395*** (0.056)	5.544*** (0.079)
Age	0.012*** (0.001)	0.022*** (0.001)	-0.012*** (0.001)	-0.022*** (0.001)
Trade Union Member	0.992*** (0.019)	1.150*** (0.021)	-0.970*** (0.019)	-1.145*** (0.021)
Employer offers Pension	0.321*** (0.023)	0.532*** (0.024)	-0.217*** (0.022)	-0.480*** (0.024)
Married	-0.166*** (0.028)	-0.065** (0.028)	0.152*** (0.027)	0.074*** (0.027)
Living as Couple	-0.169*** (0.031)	-0.157*** (0.031)	0.159*** (0.031)	0.152*** (0.031)
Widowed	-0.373*** (0.131)	0.205** (0.084)	0.361*** (0.127)	-0.170** (0.083)
Divorced	0.076 (0.049)	-0.051 (0.043)	-0.070 (0.048)	0.065 (0.043)
Higher Level Education	0.578*** (0.025)	0.933*** (0.029)	-0.439*** (0.024)	-0.850*** (0.028)
Medium Level Education	0.292*** (0.026)	0.428*** (0.029)	-0.151*** (0.026)	-0.346*** (0.028)
Health Problems	-0.001 (0.017)	0.043** (0.019)	0.004 (0.017)	-0.035* (0.019)
No. of Children	0.031*** (0.010)	0.126*** (0.013)	-0.032*** (0.010)	-0.127*** (0.012)
Renter	-0.048 (0.030)	-0.146*** (0.033)	0.070** (0.030)	0.173*** (0.033)
Medium Firm	0.210*** (0.023)	0.125*** (0.024)	-0.232*** (0.023)	-0.126*** (0.024)
Large Firm	0.245*** (0.024)	0.189*** (0.025)	-0.271*** (0.023)	-0.197*** (0.025)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.105*** (0.054)	-2.471*** (0.062)	1.877*** (0.054)	2.309*** (0.061)
Mills Ratio	-0.838 (0.631)	-0.487** (0.214)	0.033 (0.203)	0.399** (0.175)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table A6

Real Wage and Satisfaction Equations with Heckman Selection (Men and Women)

	Real Wage		Satisfaction with Work Itself	
	Public	Private	Public	Private
Age	0.007*** (0.001)	0.009*** (0.000)	-0.002 (0.002)	0.005*** (0.001)
Trade Union Member	0.141** (0.063)	0.020 (0.024)	-0.520*** (0.198)	-0.362*** (0.074)
Employer Offers Pension	0.020 (0.032)	0.201*** (0.007)	-0.146 (0.101)	-0.023 (0.021)
Married	0.042*** (0.011)	0.135*** (0.007)	0.144*** (0.035)	0.141*** (0.021)
Living as Couple	0.032** (0.013)	0.119*** (0.007)	-0.038 (0.043)	0.033 (0.022)
Widowed	-0.084*** (0.032)	-0.091*** (0.028)	0.359*** (0.103)	0.283*** (0.084)
Divorced	0.003 (0.017)	0.052*** (0.012)	-0.040 (0.055)	0.115*** (0.038)
Higher Level Education	0.468*** (0.042)	0.398*** (0.011)	-0.282** (0.133)	-0.112*** (0.035)
Medium Level Education	0.160*** (0.025)	0.142*** (0.007)	-0.179** (0.080)	-0.064*** (0.021)
Health Problems	-0.026*** (0.007)	-0.053*** (0.004)	-0.186*** (0.023)	-0.117*** (0.014)
No. of Children	0.052*** (0.004)	0.067*** (0.003)	0.023* (0.013)	0.028*** (0.008)
Renter	-0.202*** (0.014)	-0.214*** (0.007)	0.102** (0.045)	0.037* (0.022)
Medium Firm	0.055*** (0.012)	0.082*** (0.006)	-0.140*** (0.037)	-0.220*** (0.017)
Large Firm	0.102*** (0.012)	0.162*** (0.006)	-0.225*** (0.038)	-0.315*** (0.019)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	1.893*** (0.200)	1.749*** (0.013)	6.820*** (0.631)	5.375*** (0.040)
Age	0.012*** (0.001)	-0.012*** (0.001)	0.012*** (0.001)	-0.012*** (0.001)
Trade Union Member	1.064*** (0.013)	-1.050*** (0.013)	1.063*** (0.013)	-1.050*** (0.013)
Employer offers Pension	0.427*** (0.016)	-0.348*** (0.016)	0.428*** (0.016)	-0.348*** (0.016)
Married	-0.087*** (0.019)	0.084*** (0.019)	-0.087*** (0.019)	0.085*** (0.019)
Living as Couple	-0.117*** (0.021)	0.111*** (0.021)	-0.118*** (0.021)	0.111*** (0.021)
Widowed	0.267*** (0.065)	-0.238*** (0.064)	0.268*** (0.065)	-0.237*** (0.064)
Divorced	0.148*** (0.031)	-0.135*** (0.031)	0.149*** (0.031)	-0.134*** (0.031)
Higher Level Education	0.702*** (0.018)	-0.590*** (0.018)	0.703*** (0.018)	-0.590*** (0.018)
Medium Level Education	0.372*** (0.019)	-0.258*** (0.019)	0.373*** (0.019)	-0.258*** (0.019)
Health Problems	0.059*** (0.012)	-0.054*** (0.012)	0.060*** (0.012)	-0.054*** (0.012)
No. of Children	0.013* (0.007)	-0.015** (0.007)	0.013* (0.007)	-0.015** (0.007)
Renter	-0.100*** (0.022)	0.124*** (0.022)	-0.100*** (0.022)	0.124*** (0.022)
Medium Firm	0.133*** (0.016)	-0.144*** (0.016)	0.133*** (0.016)	-0.145*** (0.016)
Large Firm	0.138*** (0.016)	-0.155*** (0.016)	0.139*** (0.016)	-0.155*** (0.016)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.082*** (0.039)	1.886*** (0.039)	-2.082*** (0.039)	1.886*** (0.039)
Mills Ratio	-0.009 (0.086)	-0.050 (0.044)	-0.561** (0.272)	0.290** (0.134)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table A7
Satisfaction Equations with Heckman Selection (Men and Women)

	Satisfaction With Pay		Satisfaction With Job Security	
	Public	Private	Public	Private
Age	0.014*** (0.003)	0.003*** (0.001)	0.003 (0.003)	-0.011*** (0.001)
Trade Union Member	0.543** (0.237)	-0.106 (0.086)	0.234 (0.234)	-0.566*** (0.084)
Employer Offers Pension	0.599*** (0.121)	0.277*** (0.025)	0.746*** (0.119)	0.153*** (0.024)
Married	0.007 (0.042)	0.157*** (0.025)	0.046 (0.040)	0.066*** (0.024)
Living as Couple	-0.072 (0.052)	0.049* (0.026)	0.050 (0.050)	0.055** (0.025)
Widowed	0.351*** (0.125)	0.234** (0.097)	0.096 (0.119)	-0.007 (0.095)
Divorced	-0.192*** (0.067)	-0.020 (0.044)	-0.012 (0.064)	-0.000 (0.043)
Higher Level Education	0.488*** (0.160)	0.139*** (0.040)	0.328** (0.157)	-0.257*** (0.039)
Medium Level Education	0.190** (0.096)	0.058** (0.025)	0.170* (0.094)	-0.083*** (0.024)
Health Problems	-0.057** (0.028)	-0.150*** (0.016)	-0.088*** (0.027)	-0.103*** (0.015)
No. of Children	0.054*** (0.015)	0.002 (0.009)	0.003 (0.015)	-0.030*** (0.009)
Renter	-0.267*** (0.054)	-0.156*** (0.025)	-0.253*** (0.052)	0.026 (0.024)
Medium Firm	0.070 (0.044)	-0.103*** (0.020)	0.061 (0.043)	-0.226*** (0.019)
Large Firm	-0.078* (0.046)	0.025 (0.022)	-0.073* (0.044)	-0.335*** (0.022)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	2.304*** (0.755)	4.491*** (0.047)	4.463*** (0.744)	5.935*** (0.046)
Age	0.012*** (0.001)	-0.012*** (0.001)	0.012*** (0.001)	-0.012*** (0.001)
Trade Union Member	1.063*** (0.013)	-1.050*** (0.013)	1.064*** (0.013)	-1.050*** (0.013)
Employer offers Pension	0.428*** (0.016)	-0.347*** (0.016)	0.428*** (0.016)	-0.348*** (0.016)
Married	-0.086*** (0.019)	0.085*** (0.019)	-0.085*** (0.019)	0.084*** (0.019)
Living as Couple	-0.117*** (0.021)	0.111*** (0.021)	-0.117*** (0.021)	0.111*** (0.021)
Widowed	0.268*** (0.065)	-0.237*** (0.064)	0.269*** (0.065)	-0.239*** (0.065)
Divorced	0.149*** (0.031)	-0.134*** (0.031)	0.150*** (0.031)	-0.134*** (0.031)
Higher Level Education	0.703*** (0.018)	-0.590*** (0.018)	0.703*** (0.018)	-0.589*** (0.018)
Medium Level Education	0.373*** (0.019)	-0.258*** (0.019)	0.373*** (0.019)	-0.257*** (0.019)
Health Problems	0.059*** (0.012)	-0.054*** (0.012)	0.060*** (0.012)	-0.054*** (0.012)
No. of Children	0.013* (0.007)	-0.015** (0.007)	0.012* (0.007)	-0.015** (0.007)
Renter	-0.100*** (0.022)	0.124*** (0.022)	-0.101*** (0.022)	0.124*** (0.022)
Medium Firm	0.133*** (0.016)	-0.145*** (0.016)	0.132*** (0.016)	-0.145*** (0.016)
Large Firm	0.138*** (0.016)	-0.155*** (0.016)	0.137*** (0.016)	-0.155*** (0.016)
Regional Dummies	Yes	Yes	Yes	Yes
Constant	-2.084*** (0.039)	1.886*** (0.039)	-2.080*** (0.040)	1.887*** (0.039)
Mills Ratio	0.850*** (0.325)	-0.008 (0.156)	0.233 (0.321)	0.433*** (0.151)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Satisfaction Equations with Heckman Selection (Men and Women)

	Satisfaction With Working Hours	
	Public	Private
Age	-0.011*** (0.003)	-0.002** (0.001)
Trade Union Member	-0.779*** (0.219)	-0.195** (0.079)
Employer Offers Pension	-0.012 (0.111)	-0.012 (0.023)
Married	0.013 (0.038)	-0.070*** (0.023)
Living as Couple	0.020 (0.047)	-0.090*** (0.024)
Widowed	0.012 (0.114)	0.323*** (0.090)
Divorced	-0.075 (0.061)	-0.102** (0.040)
Higher Level Education	-0.751*** (0.147)	-0.207*** (0.037)
Medium Level Education	-0.289*** (0.088)	-0.033 (0.023)
Health Problems	-0.168*** (0.026)	-0.114*** (0.015)
No. of Children	-0.015 (0.014)	-0.051*** (0.009)
Renter	0.123** (0.049)	0.034 (0.023)
Medium Firm	-0.103** (0.041)	-0.093*** (0.018)
Large Firm	-0.069* (0.042)	-0.059*** (0.021)
Regional Dummies	Yes	Yes
Constant	7.534*** (0.697)	5.450*** (0.043)
Age	0.012*** (0.001)	-0.012*** (0.001)
Trade Union Member	1.064*** (0.013)	-1.050*** (0.013)
Employer offers Pension	0.427*** (0.016)	-0.348*** (0.016)
Married	-0.086*** (0.019)	0.085*** (0.019)
Living as Couple	-0.117*** (0.021)	0.111*** (0.021)
Widowed	0.268*** (0.065)	-0.237*** (0.064)
Divorced	0.149*** (0.031)	-0.134*** (0.031)
Higher Level Education	0.702*** (0.018)	-0.590*** (0.018)
Medium Level Education	0.372*** (0.019)	-0.258*** (0.019)
Health Problems	0.060*** (0.012)	-0.054*** (0.012)
No. of Children	0.013* (0.007)	-0.015** (0.007)
Renter	-0.100*** (0.022)	0.124*** (0.022)
Medium Firm	0.133*** (0.016)	-0.145*** (0.016)
Large Firm	0.138*** (0.016)	-0.155*** (0.016)
Regional Dummies	Yes	Yes
Constant	-2.081*** (0.039)	1.886*** (0.039)
Mills Ratio	-0.668** (0.300)	0.278* (0.143)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table B1
Differential Correlations (for both men and women)

	$\hat{y}_{it}$	$\hat{s}_{it(PAY)}$	$\hat{s}_{it(SEC)}$	$\hat{s}_{it(WORK)}$	$\hat{s}_{it(HOURS)}$
$\hat{y}_{it}$	1.000				
$\hat{s}_{it(PAY)}$	-0.022 (0.000)	1.000			
$\hat{s}_{it(SEC)}$	-0.261 (0.000)	0.875 (0.000)	1.000		
$\hat{s}_{it(WORK)}$	-0.062 (0.000)	-0.746 (0.000)	-0.719 (0.000)	1.000	
$\hat{s}_{it(HOURS)}$	-0.160 (0.000)	-0.828 (0.000)	-0.825 (0.000)	0.717 (0.000)	1.000

The p values are given in brackets ().

Table B2
Differential Correlations (for men)

	$\hat{y}_{it}$	$\hat{s}_{it(PAY)}$	$\hat{s}_{it(SEC)}$	$\hat{s}_{it(WORK)}$	$\hat{s}_{it(HOURS)}$
$\hat{y}_{it}$	1.000				
$\hat{s}_{it(PAY)}$	0.645 (0.000)	1.000			
$\hat{s}_{it(SEC)}$	-0.908 (0.000)	-0.442 (0.000)	1.000		
$\hat{s}_{it(WORK)}$	0.893 (0.000)	0.622 (0.000)	-0.877 (0.000)	1.000	
$\hat{s}_{it(HOURS)}$	0.808 (0.000)	0.633 (0.000)	-0.785 (0.000)	0.904 (0.000)	1.000

The p values are given in brackets ().

Table B3
Differential Correlations (for women)

	$\hat{y}_{it}$	$\hat{s}_{it(PAY)}$	$\hat{s}_{it(SEC)}$	$\hat{s}_{it(WORK)}$	$\hat{s}_{it(HOURS)}$
$\hat{y}_{it}$	1.000				
$\hat{s}_{it(PAY)}$	0.700 (0.000)	1.000			
$\hat{s}_{it(SEC)}$	0.515 (0.000)	0.748 (0.000)	1.000		
$\hat{s}_{it(WORK)}$	0.216 (0.000)	0.389 (0.000)	0.577 (0.000)	1.000	
$\hat{s}_{it(HOURS)}$	-0.712 (0.000)	-0.497 (0.000)	-0.508 (0.000)	-0.002 (0.607)	1.000

The p values are given in brackets ().

Table B4
Probit results for transition into Public and Private Sectors

	Public	Private

	Males	Females	Males	Females
$\hat{y}_{it}$	-2.148*** (0.706)	-1.269*** (0.437)	-1.063 (0.876)	1.514** (0.594)
$\hat{s}_{it(SEC)}$	-0.470** (0.184)	0.347** (0.166)	0.123 (0.219)	0.315 (0.244)
$\hat{s}_{it(WORK)}$	0.579*** (0.213)	0.890*** (0.331)	0.067 (0.242)	-0.089 (0.468)
$\hat{s}_{it(HOURS)}$	-0.937*** (0.283)	-0.608** (0.244)	-0.032 (0.335)	0.611* (0.360)
Employer offers Pension (t)	0.239 (0.151)	0.192 (0.143)	0.343* (0.185)	-0.201 (0.188)
Age (t-1)	0.001 (0.003)	0.001 (0.005)	-0.007* (0.004)	-0.012* (0.006)
Pension (t-1)	-0.220*** (0.060)	-0.267*** (0.062)	-0.409*** (0.079)	-0.342*** (0.077)
Trade Union Member (t-1)	-0.068 (0.076)	0.234*** (0.077)	0.035 (0.082)	0.209** (0.083)
Married (t-1)	-0.254*** (0.086)	-0.237*** (0.086)	-0.061 (0.099)	-0.121 (0.109)
Living as Couple (t-1)	-0.128 (0.087)	-0.215*** (0.081)	-0.103 (0.110)	0.065 (0.102)
Widowed (t-1)	0.076 (0.437)	-0.367 (0.333)	0.021 (0.509)	-0.363 (0.332)
Divorced (t-1)	0.145 (0.164)	-0.128 (0.129)	-0.122 (0.189)	-0.020 (0.149)
Higher Level Edu (t-1)	0.058 (0.079)	0.274** (0.110)	-0.132 (0.101)	-0.221 (0.153)
Medium Level Edu (t-1)	0.074 (0.071)	0.172** (0.088)	-0.024 (0.096)	-0.084 (0.116)
Health Problems (t-1)	0.016 (0.053)	0.112** (0.054)	-0.053 (0.063)	0.141** (0.066)
No. of Children (t-1)	0.101*** (0.033)	0.051 (0.037)	-0.001 (0.040)	0.026 (0.041)
Renter (t-1)	0.143** (0.072)	0.267*** (0.090)	0.197** (0.099)	0.070 (0.131)
Medium Firm (t-1)	-0.018 (0.069)	-0.109* (0.066)	0.077 (0.096)	0.123 (0.091)
Large Firm (t-1)	-0.089 (0.074)	-0.299*** (0.079)	0.209** (0.095)	0.150 (0.101)
Regional Dummies (t-1)	Yes	Yes	Yes	Yes
Constant	-2.151*** (0.452)	-3.723*** (0.420)	-2.551*** (0.537)	-1.848*** (0.641)
Pseudo R^2	0.076	0.107	0.096	0.117

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level. Note on differential*****.

Table B5

Probit results for Transition – Caring and Non Caring Jobs (Men and Women)

	Public	
	Caring	Non Caring
$\hat{y}_{it}$	-1.343 (0.834)	-1.123 (0.734)
$\hat{s}_{it(SEC)}$	0.084 (0.191)	0.048 (0.175)
$\hat{s}_{it(WORK)}$	1.248*** (0.390)	1.428*** (0.368)
$\hat{s}_{it(HOURS)}$	-1.168*** (0.357)	-1.112*** (0.321)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table B6

Probit results for Transition – Government Sub-sectors (Men and Women)

	Central Government	Local Government	NHS And Higher Education

$\hat{y}_{it}$	-1.029 (0.982)	0.078 (0.756)	-2.798*** (0.814)
$\hat{s}_{it(SEC)}$	0.164 (0.233)	0.045 (0.175)	-0.136 (0.190)
$\hat{s}_{it(WORK)}$	1.299*** (0.493)	1.325*** (0.367)	0.947** (0.391)
$\hat{s}_{it(HOURS)}$	-0.811* (0.425)	-0.893*** (0.334)	-1.395*** (0.352)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level.

Table B7

Probit results for Transition into Public Sector– Income (Men and Women)

	Lowest 25th Percentile (<£910.00/month)	Highest 25th Percentile (>£1833.33/month)
$\hat{y}_{it}$	-2.447** (1.105)	-0.433 (1.152)
$\hat{s}_{it(SEC)}$	0.471* (0.268)	0.017 (0.273)
$\hat{s}_{it(WORK)}$	1.574*** (0.513)	1.069* (0.589)
$\hat{s}_{it(HOURS)}$	-1.046** (0.504)	-0.763 (0.488)

The standard errors are given in brackets (). *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, and * indicates significance at a 10% confidence level. ^ indicates significance at a 10.2% confidence level.

APPENDIX TO CHAPTER 2

Figure1. Transition from private to public sector (Men)
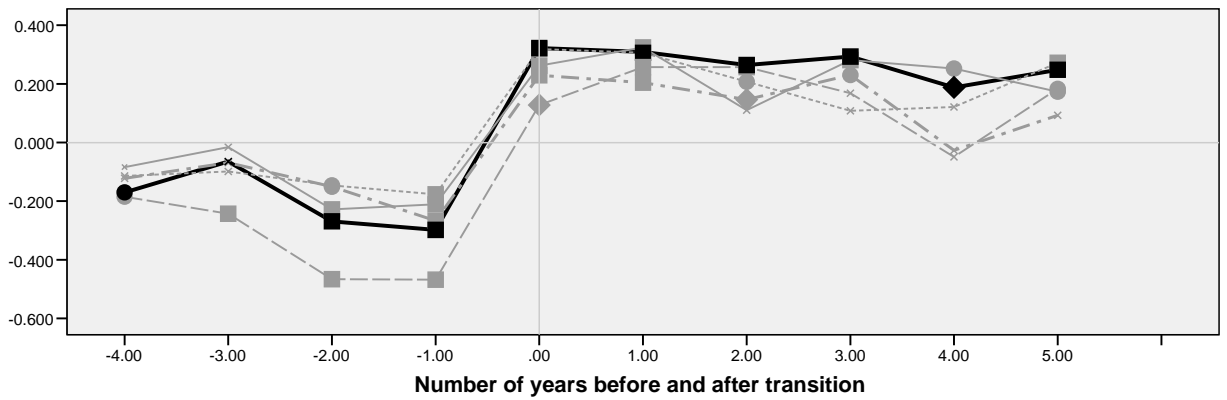
Figure 2. Transition from private to public sector (Women)
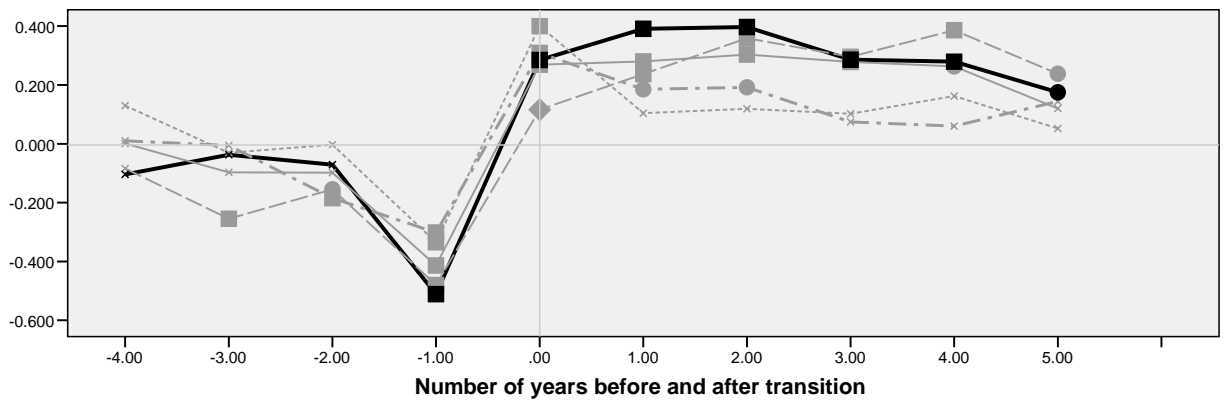
□ Significant at 1%		Overall Job Satisfaction
○ Significant at 5%		Satisfaction with Work
◇ Significant at 10%	Itself	
		Satisfaction with Pay
		Satisfaction with Job
	Security	
		Satisfaction with
	Working Hours	

Figure 3. Transition from public to private sector (Men)

Number of years before and after transition
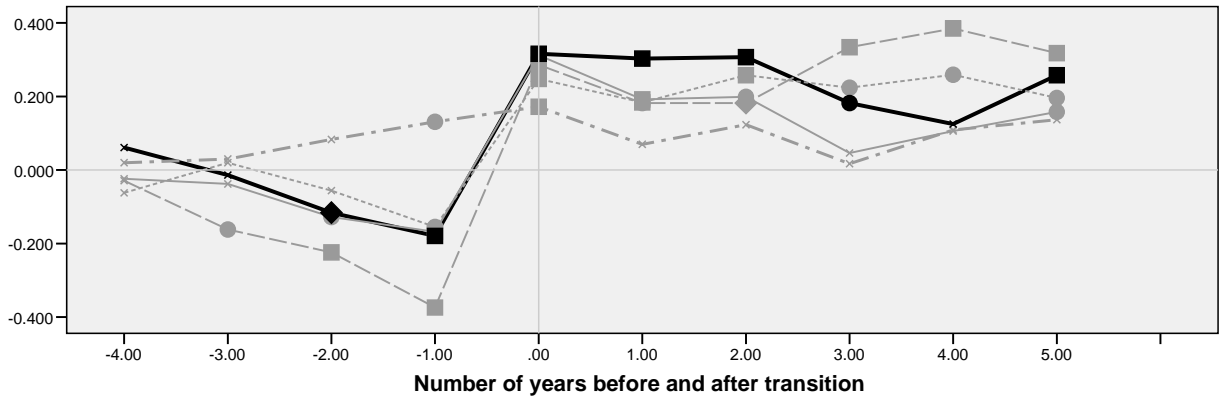
Figure 4. Transition from public to private sector (Women)

Number of years before and after transition
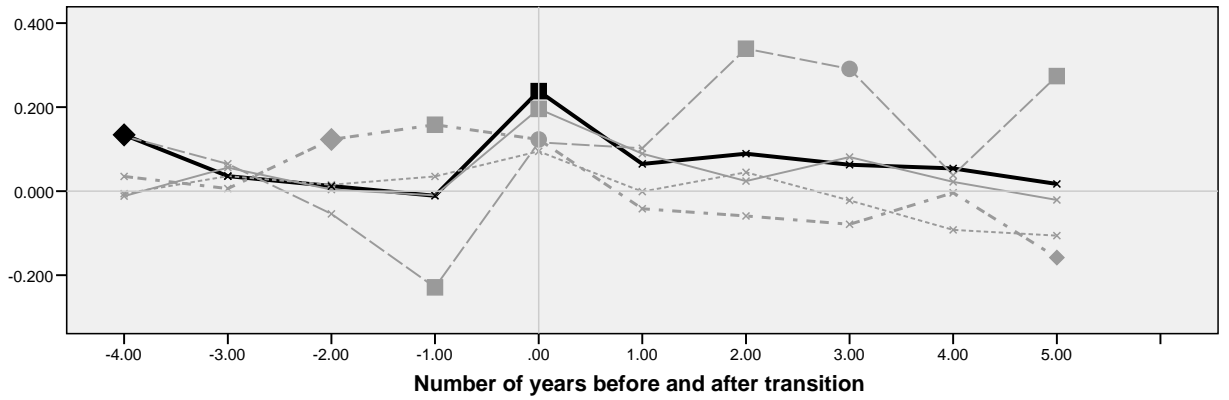
Figure 5. Transition from public sector to new public sector job (Men)

Number of years before and after transition

115
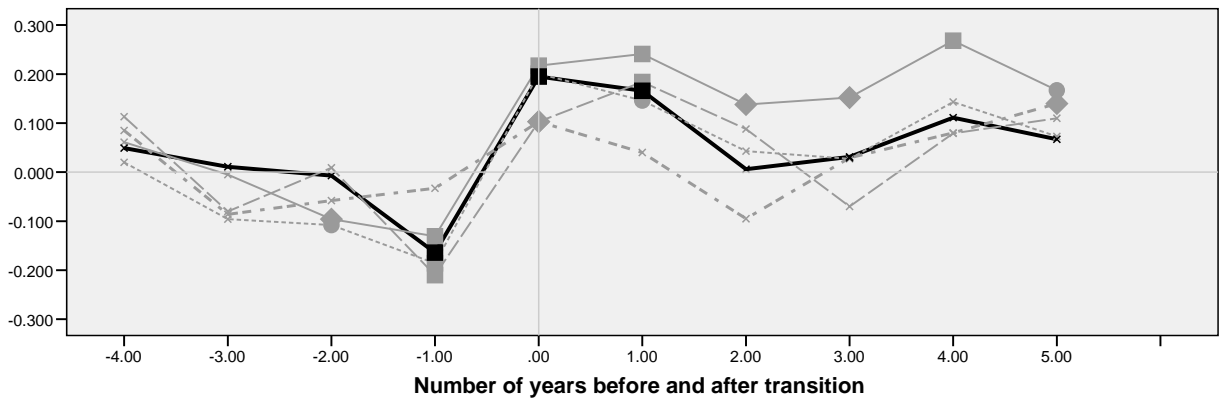
Figure 6. Transition from a public sector job to a new public sector job (Women)

Number of years before and after transition
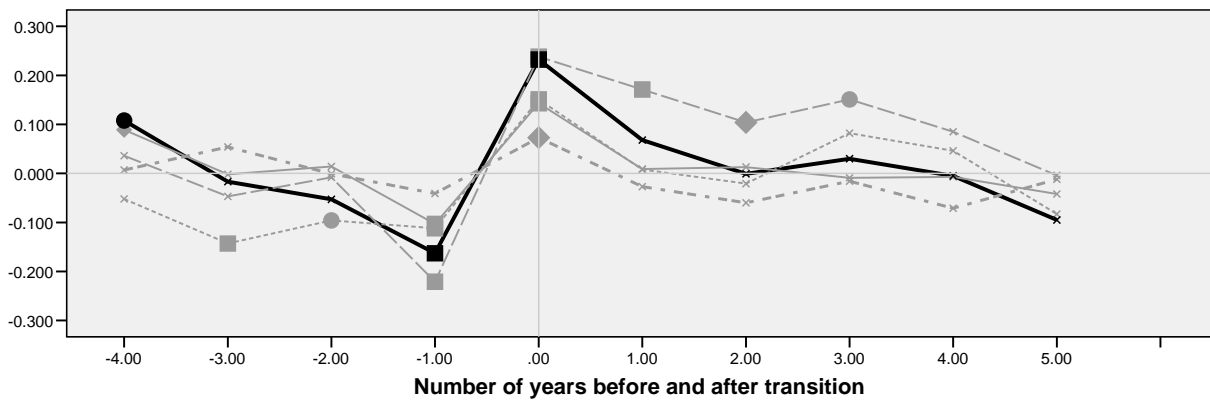
Figure 7. Transition from private sector job to new private sector job (Men)

Number of years before and after transition

116
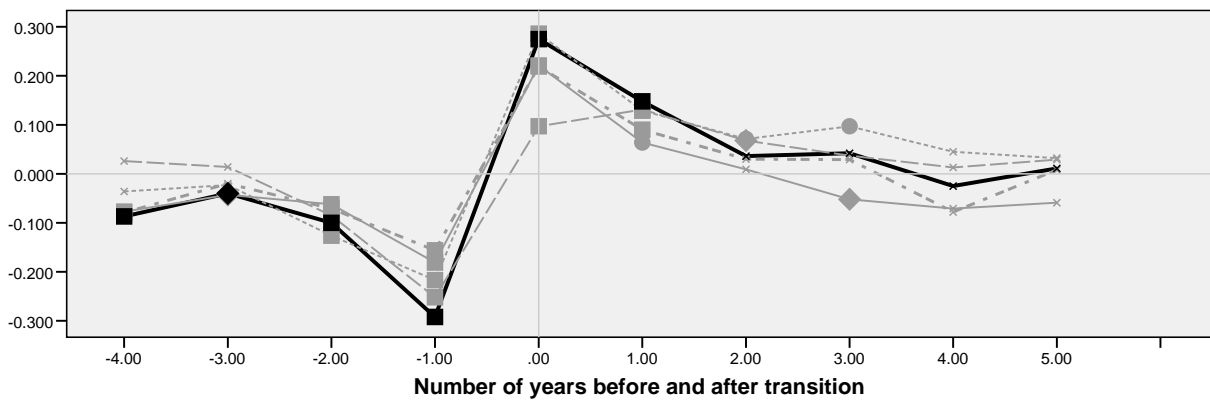
Figure 8. Transition from private sector job to new private sector job (Women)

Number of years before and after transition
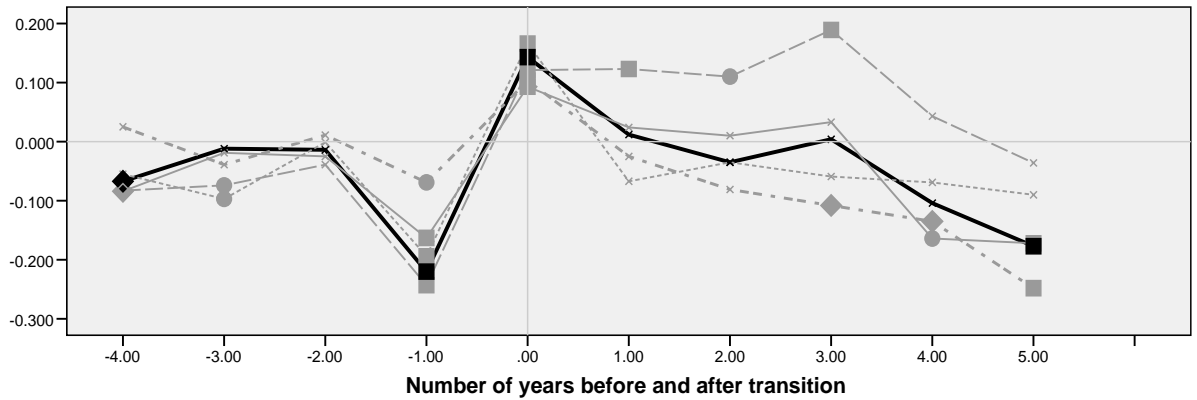
Table 1

Number of observations of Lags and Leads

	Entry into Public Sector from Private Sector		Entry into Private Sector from Public Sector		Entry into New Public Sector Job from Public Sector Job		Entry into New Private Sector Job from Private Sector Job	
	Males	Females	Males	Females	Males	Females	Males	Females
Leads								
3-4 years hence	225	245	295	253	386	601	2,682	1,157
2-3 years hence	295	290	356	295	489	771	3,284	1,513
1-2 years hence	339	351	393	354	581	910	3,905	1,897
Within the next year	457	496	487	472	744	1,230	5,159	2,706
Lags								
0-1 years	449	495	493	479	744	1,234	5,213	2,791
1-2 years	298	325	391	358	499	820	2,930	1,537
2-3 years	232	232	220	177	367	600	1,898	943
3-4 years	167	183	162	122	267	403	1,223	573
4-5 years	108	125	125	90	187	264	820	385
5 or more years	352	293	450	281	499	579	1,942	781

117

Table 2
The Distribution of Job Satisfaction Measures

MALES

Rank	Overall Job Satisfaction		Satisfaction With The Work Itself		Satisfaction With Pay		Satisfaction With Job Security		Satisfaction With Hours Worked	
	Count	%	Count	%	Count	%	Count	%	Count	%
1	796	1.75	827	1.82	1,962	4.32	1,725	3.80	1,118	2.46
2	1,443	3.18	1,237	2.72	2,480	5.46	1,540	3.39	1,631	3.59
3	3,437	7.57	2,908	6.41	6,597	14.53	3,541	7.80	4,929	10.86
4	4,369	9.62	4,145	9.13	4,393	9.68	4,471	9.85	5,843	12.87
5	11,046	24.33	9,840	21.68	11,681	25.73	8,713	19.19	10,412	22.94
6	19,722	43.44	19,002	41.86	14,966	32.97	16,157	35.59	16,033	35.32
7	4,584	10.10	7,438	16.38	3,318	7.31	9,250	20.38	5,431	11.96
Total	45,397	100.00	45,397	100.00	45,397	100.00	45,397	100.00	45,397	100.00

FEMALES

Rank	Overall Job Satisfaction		Satisfaction With The Work Itself		Satisfaction With Pay		Satisfaction With Job Security		Satisfaction With Hours Worked	
	Count	%	Count	%	Count	%	Count	%	Count	%
1	522	1.60	526	1.61	1,402	4.28	1,026	3.14	619	1.89
2	887	2.71	838	2.56	1,830	5.59	829	2.53	995	3.04
3	2,142	6.55	2,043	6.24	4,720	14.42	2,196	6.71	3,703	11.31
4	2,072	6.33	2,169	6.63	2,481	7.58	2,259	6.90	2,962	9.05
5	7,192	21.98	6,729	20.56	8,039	24.56	5,632	17.21	7,481	22.86
6	15,500	47.36	14,219	43.45	11,230	34.31	12,355	37.75	12,159	37.15
7	4,412	13.48	6,203	18.95	3,025	9.24	8,430	25.76	4,808	14.69
Total	32,727	100.00	32,727	100.00	32,727	100.00	32,727	100.00	32,727	100.00

Table 3

Mean Overall Job Satisfaction, Satisfaction with Work Itself and Satisfaction with Pay

	Mean Job Satisfaction			*Mean Satisfaction with Work Itself*			*Mean Satisfaction with Pay*		
	Stayers	Changing Job within the next year	In new job for 0-1 years	Stayers	Changing Job within the next year	In new job for 0-1 years	Stayers	Changing Job within the next year	In new job for 0-1 years
Men									
Private to public	5.224	[4.880]***	5.343**	5.372	[5.059]***	5.388	4.783	[4.444]***	[4.777]
Public to private	5.283	[4.965]***	[5.172]**	5.417	[5.090]***	[5.347]	4.709	[4.515]***	4.793
Public to public	5.235	[5.173]	5.380***	5.360	[5.317]	5.469**	4.633	[4.591]	4.910***
Private to private	5.259	[4.978]***	5.328***	5.411	[5.194]***	5.456**	4.739	[4.568]***	4.952***
Women									
Private to public	5.376	[4.940]***	5.541***	5.440	[5.109]***	5.638***	4.796	[4.393]***	5.028***
Public to private	5.455	[5.388]	[5.405]	5.541	[5.508]	[5.499]	4.892	[4.867]	4.948
Public to public	5.452	[5.394]*	5.638***	5.550	[5.500]	5.647***	4.854	[4.802]	5.072***
Private to private	5.403	[5.180]***	5.418	5.478	[5.275]***	[5.427]**	4.761	[4.616]***	4.954***

Notes: Mean satisfaction scores less than the corresponding mean satisfaction for stayers are given in square parentheses, i.e. []. ***indicates significance at a 1% confidence level, **indicates significance at a 5% confidence level, and *indicates significance at a 10% confidence level for difference with job stayers mean satisfaction.

Table 3 Continued
Mean Overall Job Satisfaction, Satisfaction with Work Itself and Satisfaction with Pay

	Mean Satisfaction with Job Security			*Mean Satisfaction with Hours Worked*		
	Stayers	Changing Job within the next year	In new job for 0-1 years	Stayers	Changing Job within the next year	In new job for 0-1 years
Men						
Private to public	5.262	[4.757]***	[5.209]	5.003	[4.930]	5.372***
Public to private	5.409	[4.791]***	[5.158]***	5.203	5.232	[5.120]*
Public to public	5.324	[5.280]	5.464**	5.229	[5.133]**	5.204
Private to private	5.290	[5.013]***	[5.243]**	5.054	[4.863]***	5.082
Women						
Private to public	5.465	[5.028]***	5.446	5.186	[5.071]**	5.535***
Public to private	5.579	[5.269]***	[5.357]***	5.158	5.405***	5.265*
Public to public	5.546	[5.428]***	5.724***	5.208	[5.169]	5.231
Private to private	5.511	[5.237]***	[5.440]**	5.239	[5.109]***	[5.222]

Notes: Mean satisfaction scores less than the corresponding mean satisfaction for stayers are given in square parentheses, i.e. []. ***indicates significance at a 1% confidence level, **indicates significance at a 5% confidence level, and *indicates significance at a 10% confidence level for difference with job stayers mean satisfaction.

Table 4
Fixed effect satisfaction regressions - transitions into the public sector

	Males					Females				
	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked
Leads										
3-4 years hence	-0.170**	-0.084	-0.114	-0.185**	-0.122	-0.104	0.001	0.130	-0.084	0.010
	(0.078)	(0.078)	(0.087)	(0.091)	(0.084)	(0.076)	(0.077)	(0.086)	(0.087)	(0.080)
2-3 years hence	-0.065	-0.016	-0.099	-0.243***	-0.069	-0.037	-0.097	-0.031	-0.255***	-0.006
	(0.070)	(0.070)	(0.077)	(0.081)	(0.075)	(0.071)	(0.071)	(0.080)	(0.081)	(0.074)
1-2 years hence	-0.269***	-0.228***	-0.146**	-0.466***	-0.151**	-0.071	-0.098	-0.003	-0.155**	-0.185***
	(0.066)	(0.066)	(0.073)	(0.076)	(0.070)	(0.065)	(0.066)	(0.074)	(0.074)	(0.068)
Within the next year	-0.298***	-0.211***	-0.177***	-0.468***	-0.267***	-0.511***	-0.414***	-0.335***	-0.480***	-0.302***
	(0.057)	(0.057)	(0.063)	(0.066)	(0.061)	(0.056)	(0.056)	(0.063)	(0.063)	(0.058)
Lags										
0-1 years	0.322***	0.262***	0.319***	0.128*	0.229***	0.285***	0.269***	0.400***	0.116*	0.309***
	(0.063)	(0.064)	(0.071)	(0.074)	(0.068)	(0.061)	(0.062)	(0.070)	(0.070)	(0.064)
1-2 years	0.309***	0.324***	0.306***	0.257***	0.204***	0.391***	0.280***	0.104	0.237***	0.185**
	(0.073)	(0.073)	(0.081)	(0.085)	(0.078)	(0.072)	(0.073)	(0.082)	(0.082)	(0.076)
2-3 years	0.264***	0.110	0.207**	0.257***	0.146*	0.397***	0.303***	0.119	0.359***	0.192**
	(0.081)	(0.081)	(0.090)	(0.094)	(0.087)	(0.082)	(0.083)	(0.093)	(0.094)	(0.086)
3-4 years	0.293***	0.281***	0.108	0.168	0.230**	0.286***	0.278***	0.102	0.296***	0.074
	(0.094)	(0.094)	(0.104)	(0.109)	(0.100)	(0.091)	(0.092)	(0.104)	(0.104)	(0.096)
4-5 years	0.188*	0.252**	0.121	-0.049	-0.027	0.279***	0.263**	0.162	0.386***	0.060
	(0.114)	(0.114)	(0.127)	(0.132)	(0.122)	(0.108)	(0.109)	(0.122)	(0.123)	(0.113)
5 or more years	0.248***	0.173**	0.272***	0.183**	0.093	0.175**	0.120	0.052	0.238**	0.144
	(0.081)	(0.081)	(0.090)	(0.094)	(0.087)	(0.086)	(0.087)	(0.098)	(0.099)	(0.091)

Notes: The standard errors are given in brackets. *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, * indicates significance at a 10% confidence level.

Table 5
Fixed effect satisfaction regressions - transitions into the private sector

	Males					Females				
	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked
Leads										
3-4 years hence	0.061	-0.024	-0.062	-0.029	0.020	0.134*	-0.012	-0.006	0.131	0.035
	(0.069)	(0.069)	(0.076)	(0.080)	(0.073)	(0.076)	(0.077)	(0.086)	(0.087)	(0.080)
2-3 years hence	-0.014	-0.038	0.020	-0.162**	0.030	0.036	0.056	0.036	0.065	0.006
	(0.064)	(0.064)	(0.071)	(0.074)	(0.068)	(0.072)	(0.072)	(0.081)	(0.082)	(0.075)
1-2 years hence	-0.116*	-0.128**	-0.056	-0.224***	0.083	0.012	0.004	0.015	-0.054	0.123*
	(0.061)	(0.061)	(0.068)	(0.071)	(0.065)	(0.066)	(0.067)	(0.075)	(0.075)	(0.069)
Within the next year	-0.179***	-0.168***	-0.155**	-0.374***	0.131**	-0.011	-0.010	0.035	-0.229***	0.158***
	(0.055)	(0.055)	(0.061)	(0.064)	(0.059)	(0.058)	(0.058)	(0.065)	(0.066)	(0.060)
Lags										
0-1 years	0.316***	0.312***	0.248***	0.286***	0.172***	0.238***	0.196***	0.095	0.116	0.123**
	(0.061)	(0.061)	(0.068)	(0.071)	(0.066)	(0.065)	(0.066)	(0.073)	(0.074)	(0.068)
1-2 years	0.303***	0.192***	0.184***	0.182**	0.070	0.065	0.089	-0.001	0.102	-0.042
	(0.064)	(0.064)	(0.071)	(0.074)	(0.068)	(0.068)	(0.069)	(0.077)	(0.077)	(0.071)
2-3 years	0.307***	0.199**	0.258***	0.182*	0.123	0.089	0.024	0.045	0.339***	-0.059
	(0.083)	(0.083)	(0.092)	(0.096)	(0.089)	(0.093)	(0.094)	(0.105)	(0.106)	(0.097)
3-4 years	0.182**	0.046	0.224**	0.334***	0.017	0.063	0.081	-0.022	0.291**	-0.079
	(0.094)	(0.094)	(0.105)	(0.109)	(0.101)	(0.109)	(0.110)	(0.123)	(0.124)	(0.114)
4-5 years	0.125	0.106	0.259**	0.385***	0.109	0.054	0.022	-0.092	0.038	-0.004
	(0.106)	(0.106)	(0.118)	(0.123)	(0.114)	(0.126)	(0.127)	(0.142)	(0.143)	(0.132)
5 or more years	0.258***	0.158**	0.196**	0.318***	0.137*	0.017	-0.021	-0.106	0.274***	-0.158*
	(0.073)	(0.073)	(0.081)	(0.085)	(0.078)	(0.091)	(0.092)	(0.103)	(0.104)	(0.095)

Notes: The standard errors are given in brackets. *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, * indicates significance at a 10% confidence level.

Table 6

Fixed effect satisfaction regressions – transition from public sector job to new public sector job

	Males					Females				
	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked
Leads										
3-4 years hence	0.049	0.061	0.020	0.113	0.085	0.108**	0.089*	-0.052	0.036	0.007
	(0.062)	(0.064)	(0.068)	(0.073)	(0.064)	(0.049)	(0.050)	(0.056)	(0.058)	(0.053)
2-3 years hence	0.011	-0.005	-0.096	-0.080	-0.086	-0.017	-0.002	-0.143***	-0.047	0.054
	(0.055)	(0.057)	(0.060)	(0.065)	(0.057)	(0.043)	(0.044)	(0.049)	(0.051)	(0.046)
1-2 years hence	-0.007	-0.096*	-0.108**	0.009	-0.058	-0.053	0.014	-0.096**	-0.008	-0.001
	(0.050)	(0.052)	(0.055)	(0.059)	(0.052)	(0.040)	(0.040)	(0.045)	(0.047)	(0.042)
Within the next year	-0.164***	-0.131***	-0.186***	-0.210***	-0.033	-0.163***	-0.103***	-0.112***	-0.221***	-0.041
	(0.043)	(0.045)	(0.047)	(0.051)	(0.045)	(0.034)	(0.035)	(0.039)	(0.040)	(0.036)
Lags										
0-1 years	0.195***	0.217***	0.201***	0.103*	0.103*	0.232***	0.143***	0.151***	0.238***	0.073*
	(0.051)	(0.053)	(0.056)	(0.061)	(0.053)	(0.039)	(0.040)	(0.044)	(0.046)	(0.042)
1-2 years	0.166***	0.241***	0.146**	0.184***	0.040	0.068	0.009	0.008	0.171***	-0.027
	(0.061)	(0.063)	(0.066)	(0.072)	(0.063)	(0.046)	(0.047)	(0.053)	(0.055)	(0.050)
2-3 years	0.006	0.138*	0.043	0.088	-0.095	-0.001	0.013	-0.021	0.104*	-0.060
	(0.069)	(0.072)	(0.076)	(0.082)	(0.072)	(0.053)	(0.054)	(0.061)	(0.063)	(0.057)
3-4 years	0.031	0.152*	0.027	-0.070	0.029	0.030	-0.009	0.082	0.151**	-0.016
	(0.080)	(0.083)	(0.088)	(0.095)	(0.083)	(0.064)	(0.065)	(0.073)	(0.076)	(0.069)
4-5 years	0.111	0.268***	0.143	0.079	0.080	-0.005	-0.007	0.046	0.085	-0.071
	(0.094)	(0.097)	(0.103)	(0.112)	(0.097)	(0.078)	(0.079)	(0.089)	(0.092)	(0.083)
5 or more years	0.067	0.167**	0.073	0.110	0.140*	-0.095	-0.042	-0.083	-0.004	-0.012
	(0.082)	(0.084)	(0.090)	(0.097)	(0.084)	(0.068)	(0.069)	(0.077)	(0.080)	(0.072)

Notes: The standard errors are given in brackets. *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, * indicates significance at a 10% confidence level.

Table 7
Fixed effect satisfaction regressions – transition from private sector job to new private sector job

	Males					Females				
	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked	Overall Job Satisfaction	Satisfaction With The Work Itself	Satisfaction With Pay	Satisfaction With Job Security	Satisfaction With Hours Worked
Leads										
3-4 years hence	-0.087***	-0.077***	-0.036	0.026	-0.079***	-0.067*	-0.084**	-0.055	-0.083*	0.025
	(0.025)	(0.025)	(0.028)	(0.029)	(0.027)	(0.039)	(0.040)	(0.044)	(0.044)	(0.041)
2-3 years hence	-0.040*	-0.043*	-0.023	0.014	-0.020	-0.012	-0.019	-0.097**	-0.074*	-0.039
	(0.023)	(0.023)	(0.025)	(0.026)	(0.024)	(0.035)	(0.035)	(0.039)	(0.038)	(0.036)
1-2 years hence	-0.100***	-0.062***	-0.126***	-0.085***	-0.071***	-0.014	-0.025	-0.001	-0.039	0.011
	(0.021)	(0.021)	(0.023)	(0.024)	(0.023)	(0.031)	(0.032)	(0.035)	(0.035)	(0.033)
Within the next year	-0.292***	-0.181***	-0.217***	-0.252***	-0.156***	-0.220***	-0.163***	-0.194***	-0.243***	-0.069**
	(0.018)	(0.019)	(0.021)	(0.021)	(0.020)	(0.027)	(0.027)	(0.030)	(0.030)	(0.028)
Lags										
0-1 years	0.275***	0.221***	0.286***	0.097***	0.219***	0.143***	0.093***	0.166***	0.121***	0.103***
	(0.022)	(0.022)	(0.025)	(0.026)	(0.024)	(0.032)	(0.032)	(0.036)	(0.035)	(0.033)
1-2 years	0.148***	0.064**	0.129***	0.131***	0.090***	0.012	0.024	-0.067	0.123***	-0.025
	(0.027)	(0.027)	(0.030)	(0.031)	(0.029)	(0.039)	(0.039)	(0.044)	(0.043)	(0.041)
2-3 years	0.036	0.009	0.071**	0.068*	0.030	-0.035	0.010	-0.035	0.110**	-0.081
	(0.032)	(0.032)	(0.036)	(0.037)	(0.034)	(0.047)	(0.048)	(0.053)	(0.052)	(0.049)
3-4 years	0.042	-0.052*	0.097**	0.037	0.029	0.004	0.033	-0.059	0.189***	-0.108*
	(0.038)	(0.038)	(0.043)	(0.044)	(0.041)	(0.059)	(0.059)	(0.066)	(0.065)	(0.061)
4-5 years	-0.025	-0.071	0.045	0.013	-0.078	-0.104	-0.164**	-0.069	0.043	-0.135*
	(0.045)	(0.046)	(0.051)	(0.052)	(0.049)	(0.071)	(0.072)	(0.080)	(0.079)	(0.074)
5 or more years	0.011	-0.059	0.032	0.029	0.008	-0.177***	-0.172***	-0.090	-0.036	-0.248***
	(0.040)	(0.040)	(0.044)	(0.046)	(0.043)	(0.064)	(0.065)	(0.072)	(0.071)	(0.067)

Notes: The standard errors are given in brackets. *** indicates significance at a 1% confidence level, ** indicates significance at a 5% confidence level, * indicates significance at a 10% confidence level.

APPENDIX TO CHAPTER 3

Comparative Statics Proof for Conditions (2) and (3)

I consider an example to show that the competent decision maker will step in whenever the project is good and he will not step in when the project is bad. I make some comparative statics analysis to prove this.

I propose an equilibrium where the incompetent decision maker steps in when the project is good and does not step in when the project is bad. I use simulations to show the parameter values where the competent decision maker will always step in when the project is good and not step in when the project is bad.

For good projects, in equilibrium I have;

$$r r_W^i + (1-r) r_0^i > s r_W^n + (1-s) r_0^n. \quad (2)$$

With the left hand side (LHS) = $r r_W^i + (1-r) r_0^i$, this is the expected reputational payoff from stepping in. The right hand side (RHS) = $s r_W^n + (1-s) r_0^n$, this is the expected reputational payoff from not stepping in. In equilibrium, the expected payoff for a competent decision maker from stepping in on a good project must be larger than the reputational payoff from not stepping in.

For bad projects, in equilibrium I have;

$$p r_W^n + (1-p) r_0^n > r_0^i. \quad (3)$$

With the left hand side (LHS) = $p r_W^n + (1-p) r_0^n$, this is the expected reputational payoff from not stepping in. The right hand side (RHS) = r_0^i, is the expected reputational payoff from stepping in. In equilibrium, the expected payoff for a competent decision maker from not stepping in on a bad project must be greater than the expected reputational payoff from stepping in.

I begin by deriving the equilibrium value of z for the following parameter values; $r = 0.6, s = 0.4, \gamma = 0.5, g = 0.5$ and $p = 0.5$. I derive z from the mixed strategy condition of the incompetent decision maker, which is;

$$g[r\gamma_V^i + (1-r)\gamma_0^i] + (1-g)\gamma_0^i = g[s\gamma_V^n + (1-s)\gamma_0^n] + (1-g)[p\gamma_V^n + (1-p)\gamma_0^n]$$

. (4)

For the given parameter values, the equilibrium value of z is illustrated in Figure 9 below. The equilibrium value of z for the stated parameter values is 0.45.

I now check whether the equilibrium strategies of the competent decision maker will hold for the given parameter values ($r = 0.6, s = 0.4, \gamma = 0.5, g = 0.5$ and $p = 0.5$) and for $z = 0.45$. If the project is good,

$$r\gamma_V^i + (1-r)\gamma_0^i > s\gamma_V^n + (1-s)\gamma_0^n. \text{ (2)}$$

For the given parameter values, the LHS of (2) = 0.5716 and the RHS of (2) = 0.4740. Therefore inequality (2) holds true.

If the project is bad,

$$p\gamma_V^n + (1-p)\gamma_0^n > \gamma_0^i. \text{ (3)}$$

For the given parameter values, the LHS of (3) = 0.4805 and the RHS of (3) = 0.3893. Therefore inequality (3) holds true.

Figure 9. Equilibrium value of *z* for given parameter values (LHS=black, RHS=blue).
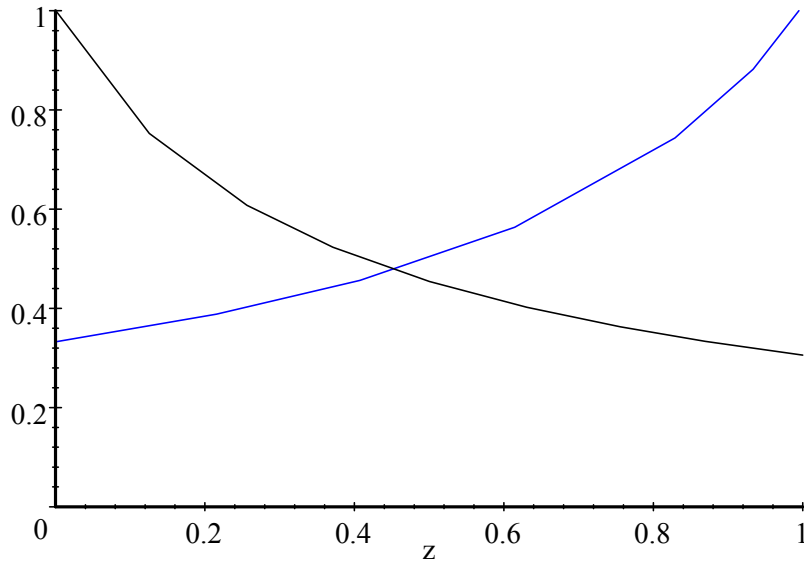
I now continue by investigating whether the equilibrium strategy of the competent decision maker holds true for different parameter values.

I begin by analysing how the LHS and RHS of inequalities (2) and (3) vary with *r*. For the given parameter values ($s = 0.4, g = 0.5, \gamma = 0.5,$ and $p = 0.5$), using equation (4), when *r* takes the values 0.6, 0.7, 0.8, and 0.9 (since I assume $r > s$). This results in *z* having equilibrium values of 0.45, 0.44, 0.41, and 0.36 respectively. At these values, the respective values of the LHS of inequality (2) are 0.57, 0.59, 0.62, and 0.68. The respective values of the RHS of inequality (2) are 0.47, 0.47, 0.45, and 0.43. At these values, the respective values of the LHS of inequality (3) are 0.48, 0.47, 0.46, and 0.44. The respective values of the RHS of inequality (3) are 0.39, 0.34, 0.29, and 0.20. These results show that for the given parameter values, the LHS is greater than the RHS, conditions (2) and (3) hold true for different values of *r*. They also show that increasing values of *r* (and so the larger *r* is over *s*) than the larger the value of the LHS over the RHS. This makes intuitive sense since a large *r* means that the decision maker has a higher probability of achieving outcome *V* on a good project.

I now analyse how the LHS and RHS of inequalities (2) and (3) vary with s. For the given parameter values ($r = 0.6, g = 0.5, \gamma = 0.5,$ and $p = 0.5$), using equation (4), when s takes the values 0.4, 0.3, 0.2, and 0.1 (since I assume $r > s$). This results in z having equilibrium values of 0.45, 0.46, 0.46, and 0.47 respectively. At these values, the respective values of the LHS of inequality (2) are 0.56, 0.56, 0.56, and 0.56. The respective values of the RHS of inequality (2) are 0.47, 0.46, 0.45, and 0.42. At these values, the respective values of the LHS of inequality (3) are 0.48, 0.49, 0.49, and 0.51. The respective values of the RHS of inequality (3) are 0.39, 0.38, 0.38, and 0.38. These results show that for the given parameter values, the LHS is greater than the RHS, conditions (2) and (3) hold true for different values of s. They also show that decreasing values of s (and so the larger r is over s) than the larger the value of the LHS over the RHS. This makes intuitive sense since a large r means that the decision maker has a higher probability of achieving outcome V on a good project. This makes intuitive sense since a smaller s means the private firm is increasingly less likely to achieve outcome V, thus making it more worthwhile for the decision maker to step in.

Overall these comparative statics show that for both inequalities (2) and (3), increasing r or decreasing s (i.e. increasing the value of r over s) results in an increase in the LHS over the RHS of both inequalities. For the given parameter values, the both inequalities clearly hold true.

I now analyse how the LHS and RHS of inequalities (2) and (3) vary with g. For the given parameter values ($r = 0.6, s = 0.4, \gamma = 0.5,$ and $p = 0.5$), using equation (4), when g takes the values 0.1, 0.3, 0.5, 0.7, and 0.9. This results in z having equilibrium values of 0.09, 0.23, 0.45, 0.69, and 0.90 respectively. At these values, the respective values of the LHS of inequality (2) are 0.68, 0.64, 0.57, 0.52, and 0.50. The respective values of the RHS of inequality (2) are 0.47, 0.47, 0.47, 0.49, and 0.49. At these values, the respective values of the LHS of inequality (3) are 0.50, 0.47, 0.48, 0.50, and 0.51. The respective values of the RHS of inequality (3) are 0.31, 0.39, 0.39, 0.41, and 0.47. These results show that for the given parameter values, the LHS is greater than the RHS, conditions (2) and (3) hold true for different values of g. They also show that for increasing values of g, then the smaller the value of the LHS over the RHS.

I now analyse how the LHS and RHS of inequalities (2) and (3) vary with γ. For the given parameter values ($r - 0.6, s - 0.4, g - 0.5,$ and $p - 0.5$), using equation (4), when γ takes the values 0.1, 0.3, 0.5, 0.7, and 0.9. This results in z having equilibrium values of 0.50, 0.47, 0.45, 0.44, and 0.42 respectively. At these values, the respective values of the LHS of inequality (2) are 0.14, 0.37, 0.57, 0.74, and 0.92. The respective values of the RHS of inequality (2) are 0.10, 0.29, 0.47, 0.67, and 0.88. At these values, the respective values of the LHS of inequality (3) are 0.10, 0.29, 0.48, 0.66, and 0.88. The respective values of the RHS of inequality (3) are 0.06, 0.21, 0.39, 0.60, and 0.86. For both inequality (2) and (3), for each increase in γ, the LHS is greater than the RHS. This shows that both inequalities (2) and (3) hold for any given value of γ.

I now analyse how the LHS and RHS of inequalities (2) and (3) vary with p.[38] For the given parameter values ($r - 0.6, s - 0.4, g - 0.5,$ and $\gamma - 0.5$), using equation (4), when p takes the values 0.1, 0.3, 0.5, 0.7, and 0.9. This results in z having equilibrium values of 0.48, 0.46, 0.45, 0.46, and 0.50 respectively. At these values, the respective values of the LHS of inequality (2) are 0.55, 0.57, 0.57, 0.57, and 0.55. The respective values of the RHS of inequality (2) are 0.43, 0.47, 0.47, 0.45, and 0.36. At these values, the respective values of the LHS of inequality (3) are 0.51, 0.48, 0.48, 0.49, and 0.55. The respective values of the RHS of inequality (3) are 0.37, 0.38, 0.39, 0.38, and 0.36. For both inequality (2) and (3), the LHS is always greater than the RHS for all values of p.

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[38] Of course, p (in equation 5) is endogenous and depends on the parameters of the model (such as γ and all the parameters affecting z, i.e. r, s, and g) but we can give values to p for simulation purposes given that p also depends on k and there is always a level of k that makes the value attached to p consistent with the remaining parameter values.

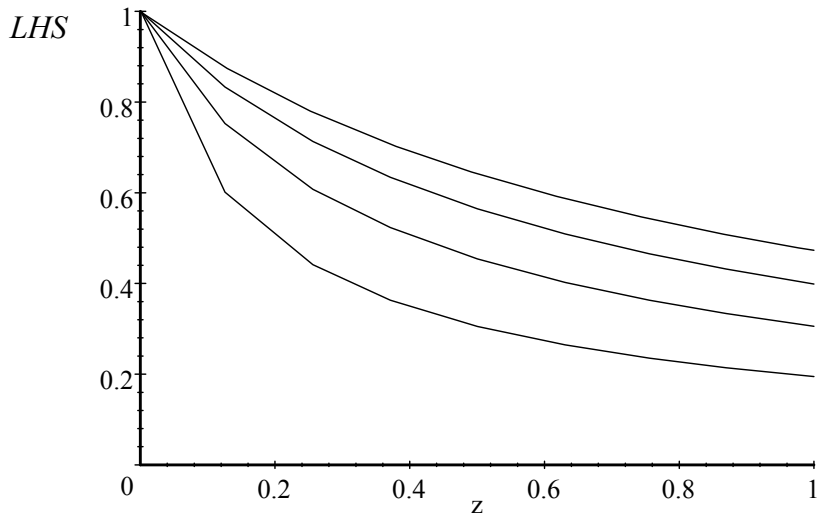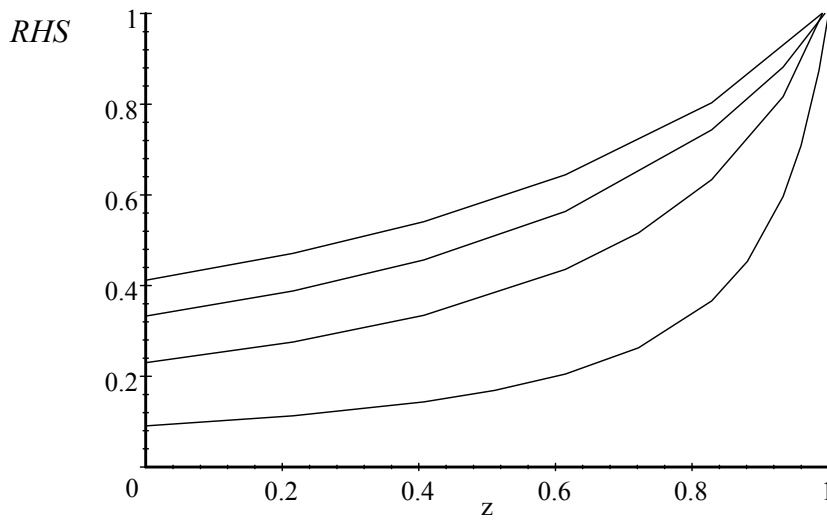**Figure 1. How the expected reputational gain from stepping in (LHS) varies with** *g.*

Figure 2. How the expected reputational gain from not stepping in (RHS) varies with *g*.

────────	$g = 0.9$	
─ ─ ─ ─	$g = 0.7$	$(LHS) = g\left[r\gamma_v^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i$
─ · ─ · ─ · ─	$g = 0.5$	$(RHS) = g\left[s\gamma_v^n + (1-s)\gamma_n^n\right] + (1-g)\left[p\gamma_v^n + (1-p)\gamma_n^n\right]$
·············	$g = 0.3$	

$r=0.6;\ s=0.4;\ p=0.5;\ and\ \gamma=0.5$

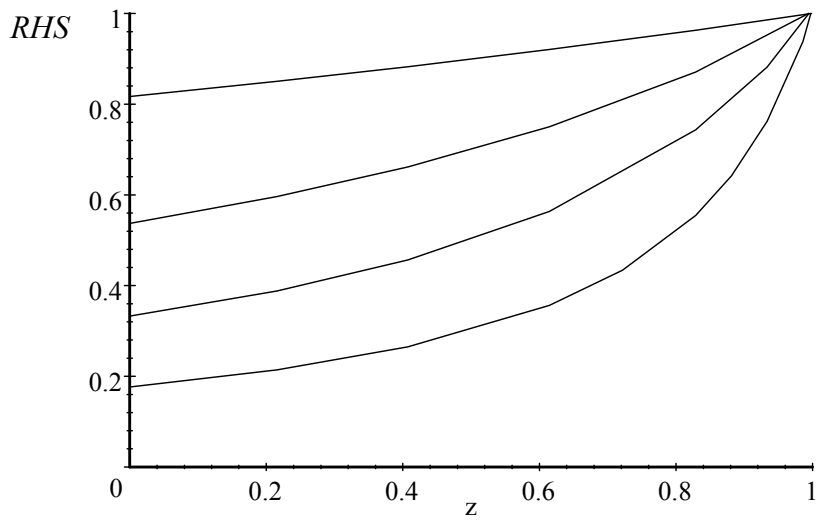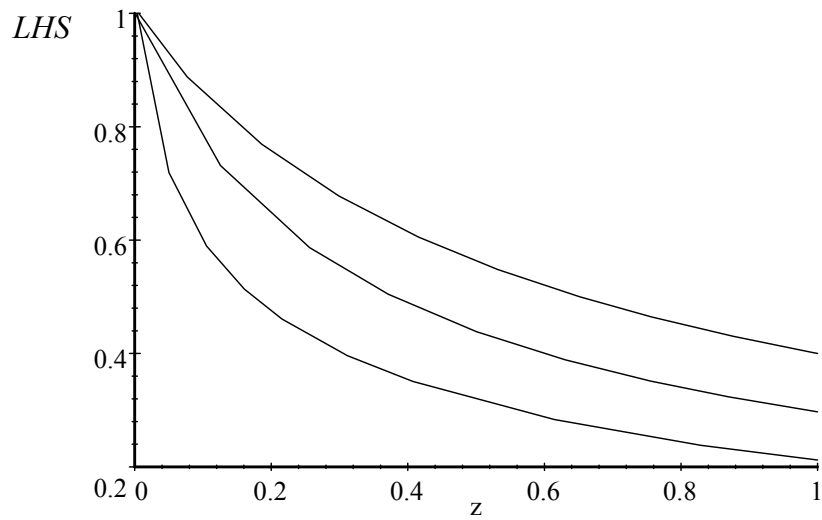**Figure 3. How the expected reputational gain from stepping in (LHS) varies with γ.**
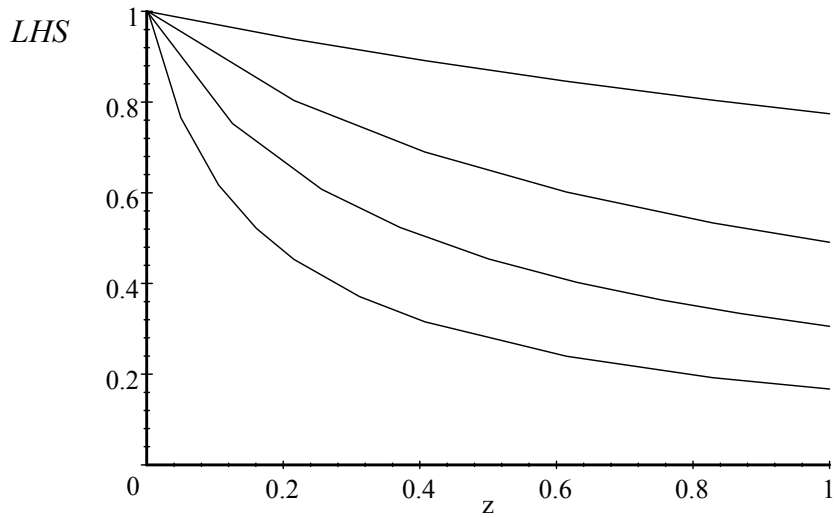
Figure 4. How the expected reputational gain from not stepping in (RHS) varies with γ.

————————	$\gamma = 0.9$	$(LHS) = g\left[r\gamma_v^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i$
— — — —	$\gamma = 0.7$	
— · — · — · —	$\gamma = 0.5$	$(RHS) = g\left[s\gamma_v^n + (1-s)\gamma_n^n\right] + (1-g)\left[p\gamma_v^n + (1-p)\gamma_n^n\right]$
·················	$\gamma = 0.3$	
		$r=0.6;\ s=0.4;\ p=0.5;\ and\ g=0.5$

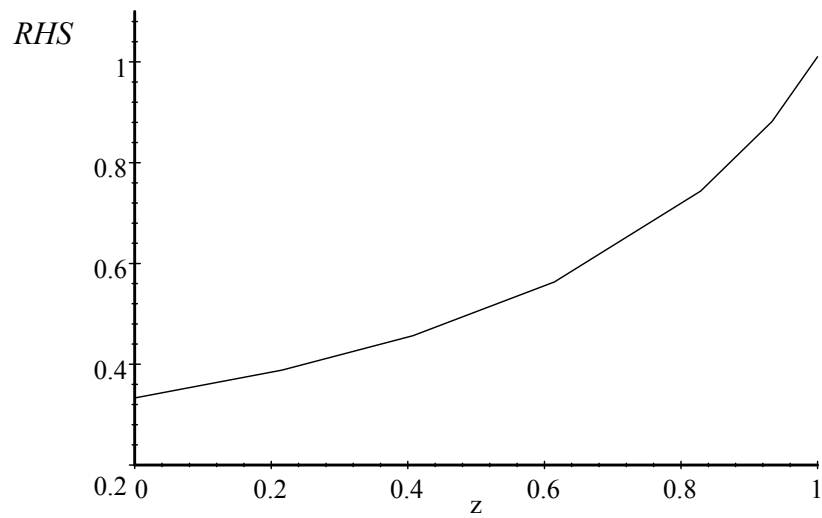**Figure 5. How the expected reputational gain from stepping in (LHS) varies with *r*.**

Figure 6. How the expected reputational gain from not stepping in (RHS) varies with *r*.

————	$r = 0.9$	$(LHS) = g\left[r\gamma_v^i + (1-r)\gamma_0^i\right] + (1-g)\gamma_0^i$
— — — —	$r = 0.7$	
— · — · —	$r = 0.5$	$(RHS) = g\left[s\gamma_v^n + (1-s)\gamma_n^n\right] + (1-g)\left[p\gamma_v^n + (1-p)\gamma_n^n\right]$

$g=0.5; s=0.4; p=0.5; and \gamma=0.5$

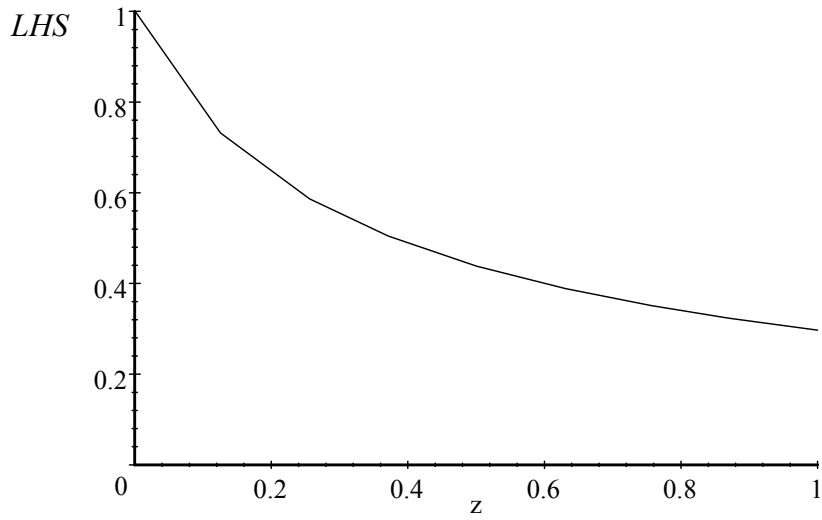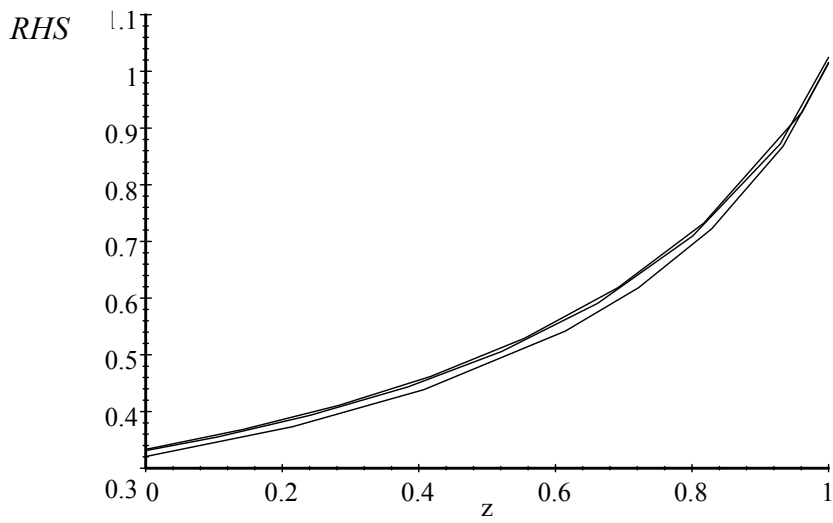**Figure 7. How the expected reputational gain from stepping in (LHS) varies with _s_.**

Figure 8. How the expected reputational gain from not stepping in (RHS) varies with _s_.

– – – –	$s = 0.5$	$(LHS) = g[r\gamma_v^i + (1-r)\gamma_0^i] + (1-g)\gamma_0^i$
– · – · – · –	$s = 0.3$	
———	$s = 0.1$	$(RHS) = g[s\gamma_v^n + (1-s)\gamma_n^n] + (1-g)[p\gamma_v^n + (1-p)\gamma_n^n]$
		r=0.6; g=0.5; p=0.5; and γ=0.5