Essays on Delegated Search and Temporary Work Agencies

Tomas Raattamaa
To my family
Abstract

Paper [I] models a game, where two temporary work agencies (TWAs) compete to fill a vacancy at a client firm (CF). They simultaneously choose how much effort to expend, based on their expectation of how good their opponents best candidate will be. I then show that this will make the TWAs overconfident, as the rational way of judging your own probability of winning is not looking at the opponents expected best, but comparing how much effort your opponent will expend.

Paper [II] examines the misaligned incentives in the temporary work agency sector, where we first look at pure recruiting contracts, that either require payment on delivery, or payment on some specified point in time. We then look at the incentives of recruit-and-rent contracts, where the worker is leased to the client firm. We assume that the better the worker, the higher the probability that the client firm is going to want to hire him/her. If that happens then the TWA will no longer get revenues from said worker, incentivizing the TWA to not always deliver the first match it finds, if it is too good. Lastly we look at how competition can dampen this perverse incentive.

Paper [III] models the waiting behavior that can occur if a TWA is contracted to find a worker for a specific time far in the future; the TWA will postpone effort. This behavior is modeled for two types of TWAs; one that is rational and plans ahead, and another that does not plan ahead at all, but instead only looks at the immediate future. I find that the one that only looks at the immediate future starts exerting effort earlier than the planner. After looking at optimal contracts under perfect monitoring and hidden action I provide two extensions. I first show that for the principal to want to delegate search to a rational TWA, the agent has to be better than the CF, by some factor, as it has to make up in efficiency what the principal loses in moral hazard, when the agent waits longer than the principal would like it to. Lastly I prove that it is profit maximizing for the principal to contract one agent and give it a deadline earlier than when the principal would need the worker, and then replace that agent with a competitor if the first one has not succeeded by that earlier deadline.

Paper [IV] estimates at the effect of family experience on relative transition probability into the temporary work agency sector. Using register data for all of Sweden we run a bias-reduced logistic regression, where we include various factors that affect the probability of young adults (aged 18-34) entering the sector. This paper ties in to the literature on occupational inheritance, as well as the literature on changing social norms. We find that having had a parent, sibling or partner in the TWA sector increases your probability of entering the sector yourself.

Keywords: delegated search, principal-agent, matching, transition probability, temporary work agencies
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“It seems likely that economics has nothing to do with most of the universe. It applies only where some systems husband energy into some stores that they selectively spend in pursuit of outcomes that bring their current states or prospects into closer conformity with their preferences.” (D. Ross, 2014)

I am happy to be part of such a system, and make a dent in it, thanks to all of you.

Umeå, August 2016
Tomas
Contents

This thesis consists of an introduction and the following self-contained papers on the topic of delegated search and temporary work agencies:

**Paper [I]**  

**Paper [II]**  

**Paper [III]**  

**Paper [IV]**  
1 Introduction

“Social behavior, particularly in small groups, is more complex, and norms of behavior that are culturally induced or developed over time play a huge role in shaping societies. However, it would be foolish not to recognize the role of private incentives in motivating behavior in addition to these cultural phenomena.” Laffont and Martinort (2002)

This thesis contains three theoretical papers and one empirical; Paper [IV] uses register-based data to analyze which factors determine if a young adult in Sweden enters the temporary work sector, with a focus on the implications of family experience, and Papers [I]-[III] all present new game-theoretical models on the topic of delegated search, which is the business that temporary work agencies are in. While the theoretical papers are generalizable to a number of other settings, the common theme is that they use the temporary work sector as the main example.

The first studies on games in economic literature were those of Cournot (1838), Bertrand (1883) and Edgeworth (1897), but it was not until Von Neumann and Morgenstern (1944) that a general theory of games was introduced (Fudenberg & Tirole, 1991). A few years later Nash (1950) submitted a paper on what we now know as a Nash Equilibrium. John Nash’s life, and his discovery, has been made into a movie titled A Beautiful Mind, and it has also been the subject of a book titled A Beautiful Math (Siegfried, 2006), which focuses more on the development of the theory.

However, when most people think about economics they do not think about games; instead they think about supply and demand, and may even visualize a diagram where the two curves cross. This is called an equilibrium, as a market for one good strives towards that point. General equilibrium models (that extend to many markets that all strive for equilibrium) were proved in the 1950’s and 1960’s, and interaction in these models happens through the price mechanism. This was soon realized to be limited, and so the economics of information emerged.¹ The paper “Information and the Change in the Paradigm in Economics” (Stiglitz, 2002), based on the lecture Joseph E. Stiglitz delivered when he received the Bank of Sweden Prize in Economic sciences in Memory of Alfred Nobel in 2001, is an easy read on the evolution of the role of information in economics. In short, he (like Salanié, 2005) argues that we have gone from a competitive paradigm to the information paradigm.

One class of problems to solve, that sprung up as an area of research due to this paradigm shift, is agency problems, where we have two actors with conflicting goals. One actor, called the principal, contract another actor, the agent, to perform a task. In the (economic) relationship between the principal and the agent there is often asymmetric information and so the agent can use his private information.

¹Salanié (2005)
to his advantage. This information asymmetry consists of either the principal not knowing the agent’s type (e.g. how good is it at the task at hand?) or it cannot verify the agent’s actions (e.g. will it do exactly what it it contracted to do?). The principal is therefore sometimes called the uninformed party, and the agent the informed party, to make this distinction in the amount of information they possess. Examples of principal-agent (PA) relationships are patient - doctor, voter - politician, house buyer - real-estate agent and client firm - temporary work agency.

The interaction between these two actors is typically modeled as a Stackelberg game where the principal is the leader and the agent is the follower, and they interact by entering into a contractual agreement.

The principal-agent relationship then dictates that there is no bargaining, as the principal offers the agent a contract it can either accept or reject. This “take or leave it” offer is a simplification of the bargaining process that we expect to take place in the real world, because if the agent rejects the contract then the parties will have no further interaction as the game would end. The goal of the principal is therefore to draft a contract that is as favorable as possible for its own ends, with the restriction that the agent must be willing accept said contract.

When this theory evolved we needed to forsake the general equilibrium models, in favor of game theory, and thus the theory of contracts started to form. The move away from general equilibrium was partly due to economists having to model the strategic interaction between the actors, but it was hoped that these new studies could later be integrated into (a better) theory of general equilibrium (Salanié, 2005).

Agency theory originated in the 1970’s and S. A. Ross (1973) is often credited for introducing the terminology, but for longer exposes of the history of Agency theory see Eisenhardt (1989) and Mitnick (2011). Today searching for “agency theory” on Google Scholar yields about 100,000 results, and “principal-agent” about 170,000, so a lot of research has been done in the last 40+ years.

Time in these models can either be modeled as discrete or as continuous, and actions can be taken either simultaneously or sequentially. Each of the three theoretical papers in this thesis has a different setup, but all have temporary work agencies (TWAs) as agents, and the client firm (CF) as the principal; Paper [I] is a simultaneous game where two TWAs compete to provide the best worker, Paper [II] uses discrete time where two or more TWAs search for workers and stop when one has presented a qualified worker to the client firm, and Paper [III] is set in continuous time where the TWA is contracted to supply a qualified worker by a given deadline.

Good introductions to PA theory can be found in Fudenberg and Tirole (1991), Laffont and Martinort (2002) and Salanié (2005) and for a good introduction to continuous-time PA models see Cvitanić and Zhang (2013).

Why should we model the PA relationship?

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2For a history see Löfgren, Persson, and Weibull (2002).
3https://scholar.google.com/
“These informational problems prevents society from achieving the first-best allocation of resources that would be possible in a world where all information would be common knowledge” Laffont and Martinort (2002)

This means that in order to minimize the loss of welfare, stemming from inefficient contracts, or misaligned incentive structures, we need to look at the private incentives, as was proposed in the introductory quote. That quote, however, also alluded to something else, namely the complexity of human behavior interaction. While we of course would like to capture as much as possible of human decision making, it is an undertaking of enormous proportions, and the way economists tackle the problem is by constructing models.

2 Motivating the Theoretical Contributions

The goal of this section is to motivate the use of PA models in this thesis, and their specific contributions, in order to give some context for the modeling choices in Papers [I]-[III], we will in a sense need to go back to basics and describe the foundations of microeconomic modeling.

Positive economics, as opposed to normative, attempts to describe economic phenomena and claims to describe what is, and not what ought; how things are and not how they should be. In order to reach, or at least strive for the objective of living up to the positive claim we need to constantly improve theories and models.

Modeling does, however, come at a cost, and that cost is assumptions. During introductory microeconomics we teach the case of perfect competition, which has some underlying assumptions about the structure of the economy. No economist actually believes that we have perfect competition anywhere, but it is a useful place to start when modeling an economy. It is therefore used as a stepping-stone when giving students some economic intuition of markets, before moving on to the polar opposite market structure monopoly, and later other forms. This incremental approach to knowledge can be argued as necessary for learning, as you need to learn to walk before you can run.

The models used and produced in economics today are built using mathematics, but it hasn’t always been that way.

“Econ developed as a form of philosophy and then added math later, becoming basically a form of mathematical philosophy. [...] In other words, econ is now a rogue branch of applied math.” (Smith, 2015)

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4For a longer discussion see Gabbay, Thagard, Woods, and Mäk (2012)
5Note that when I talk about models and modeling in this section I only refer to theoretical microeconomic modeling, and not macroeconomics or econometrics, although much of the same reasoning would apply.
6With a few exceptions of e.g. computer simulations using agent based modeling, that may gain traction in the future.
It is often argued, by economists, that mathematics is a tool which is used to describe and analyze problems. It is seen as a language used to express relationships and draw logical conclusions about the outcome of interaction, either through a price system on a market or interaction between actors that e.g. form contracts where one party agrees to perform a task for the other, as is the case in this thesis. These mathematical models often must be constrained by assumptions in order to work, and these assumptions, while often reasonable can be very restrictive. Such was the case of the necessary conditions for the First-Order Approach (FOA) to PA problems, which is used in Paper [III]. The FOA replaces incentive compatibility constraints with first order conditions, but when first formulated by Mirrlees (1976) and Rogerson (1985), concerns were raised as to how realistic the necessary conditions were:

"Since Mirrlees (1976) it has been clear that the so-called first-order approach to solving principal agent problems is generally not valid. In spite of this, it seems that the convenience of the approach has often outweighed any reservations as to its validity." Jewitt (1988)

Jewitt (1988) then replaced some assumptions with other conditions which extended the use of FOA7, and more work has been done since to further develop this approach, to make it more general (see e.g. Alvi, 1997; Conlon, 2009; LiCalzi & Spaeter, 2003; Moroni & Swinkels, 2014; Williams, 2008). I will not go into detail on the FOA in this introduction, as my point is only to show that while some models at present appear to be restrictive, it is possible that they can be extended or altered in the future to provide better descriptions of reality. Just like we teach basic concepts to novice students, we too, as researchers, must start somewhere, and walk in order to be able to run.

Now that we have looked at contract theory, and specifically the PA relationship, and the evolution of assumptions in some continuous-time PA models let’s take a step back and examine the way that the actors are most often modeled in this literature, and the rest of neo-classical economics.

In the field of economics there are actors (people, firms, governments etc.) that each maximize what is called an objective function; firms are assumed to maximize profits and individuals maximize utility, or happiness if you will. The individuals that economists model are often what has been called Homo Economicus.8 This “economic man” is assumed to be rational, and can make calculations as to take the actions needed to maximize his or her utility, no matter the complexity of the calculations needed. This way of modeling has provided us insights, but has also been criticized for over half a century.

"Because of psychological limits of the organism (particularly with respect to computational and predictive ability), actual human rationality-striving can at best be an extremely crude and simplified approxima-

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7 This includes removing the assumption of convexity of the distribution function condition.
8 For an early history see Persky (1995).
tion of the kind of global rationality that is implied, for example, by game-theoretical models.” Simon (1955)

While, on one hand we could argue that the models in microeconomics are simplifications of reality, they also make bold assumptions about our cognitive ability. As the mathematical revolution in economics\(^9\) started taking off in the 1940’s, there was an unplanned side-effect:

“The IQ of Homo Economicus became bounded only by the IQ of the smartest economic theorist!” Thaler (2000)

Simon (1955), who was quoted above, questioned whether this way of modeling was “a suitable foundation on which to erect a theory”. He asked if it was supposed to be a theory of how actors do, or how they should behave, both because they are often assumed to possess a wealth of information about their surroundings and also because they are assumed to be able to carry out very complex calculations.

Do we act as this person, as modeled in neoclassical economic theory, or is Homo Economicus a mere imaginary creature, as posited in Yamagishi, Li, Takagishi, Matsumoto, and Kiyonari (2014)? Sometimes we behave in the way that current theory predicts, and other times not. Yamagishi et al. (2014) found that only 30 of 446 residents of relatively wealthy Tokyo suburbs met the behavioral definition of Homo Economicus and Gintis (2000) lists several examples from experimental economics and covers results from laboratory studies of games “against nature and ourselves”.

These studies are divided into experiments in individual choice behavior and in strategic interaction, and the models in this thesis contain ingredients from both of these categories. PA models, by definition, contain strategic interaction, as each player’s decision depends on the decision of the other, so Papers [I]-[III] all model this type of interaction.

The individual choice behaviors are time inconsistency, choice under uncertainty, loss aversion and status quo bias, of which the first two are part of models in this thesis; Paper [I]-[III] all model choice under uncertainty, as the search process for a qualified worker is stochastic – you never know exactly when you are going to find a match (Paper [II] and [III]) – and under competition you do not know if the best worker you expect will find will be better than your competitor’s best (Paper [I]).

Choice under uncertainty usually involves testing logic and heuristics, which are decision rules that are meant to be approximations of the real optimal decision. As we already know that people do not make decisions exactly as HE, we should try to understand how our decisions differ, and why. This means (i) using experiments to find differences between our models and real-world behavior and (ii) adjust our models accordingly.

Are we predictably irrational, as the title of behavioral economist Dan Ariely’s bestselling book\(^{10}\) alludes to? If so, what kinds of mistakes do we make? If we

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\(^{9}\)See Weintraub (2002) for an extensive history.

\(^{10}\)Ariely (2008)
can find these consistencies in mis-judgement, then we have a a fair chance of correcting them. This is how Paper [I] should be seen; as an attempt to describe a possible heuristic that does not work, despite sounding like a good idea. The presented heuristic instead produces overconfidence, consistent with observations in similar laboratory experiments (cf. Sheremeta, 2013). In my model, the use of the heuristic leads to a sub-optimal outcome for the agent, so this contribution could be valuable, because in order to correct bad decisions, we need to understand their mechanics.

Gigerenzer and Brighton (2009) suggests that, in order to make our modeled individuals more realistic, we should replace Homo Economicus with Homo Heuristicus, who would ignore information. The motivation is however not only increasing realism, but also efficiency, since the full calculation of various decisions would require information and time, it may in fact be more efficient to use a simple heuristic. This is an idea that has made it into the mainstream, because in the best-selling book Thinking fast, thinking slow Kahneman (2013) argued that we have two systems of decision making; one that is calculating and one that is instinctive.11

Paper [III] also introduces a heuristic, but also touches on another part of decision making: decisions over time. Somewhat related to cognitive biases, experiments have shown that we do not act rationally when it comes to inter-temporal choice, i.e. decisions over time; we can make choices today that we regret tomorrow, even though we knew the outcome all along. No matter if it comes to partying and staying out late, or not saving for retirement, we know the consequences, yet we still make decisions that we will regret in the future. Economists have been able to model this behavior using something called hyperbolic discounting, which makes an individual care more about the present than the future (see Laibson, 1997). This has led to a large literature on procrastination (Asheim, 2007; Jain, 2009; O’Donoghue & Rabin, 1999a, 1999b, 2001, 2008; Reuben, Sapienza, & Zingales, 2007; Ylmaz, 2015), but there are also other approaches (e.g. Akerlof, 1991).

A paper entitled Read this paper later, where Fischer (2001) develops a model with time-consistent procrastination, where work intensity increases as we get closer to a deadline.

In light of this, Paper [III] introduces an agent that uses a heuristic for deciding when to start expending search effort, with the goal of finding a qualified worker to fill a vacancy by a given deadline. In this model there are two types of agents; one which is rational and immediately makes the full calculation required for an optimal choice, and another that continuously uses a simpler heuristic. As it turns out, the heuristic is does not produce optimal behavior from the agent’s point of view. Paper [III] is, like Fischer (2001), in essence also about time-consistent procrastination, but it in addition also includes a heuristic and is set in a principal-agent framework.12

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11 For textbook introductions to heuristics see Gilovich, Griffin, and Kahneman (2002) and Gigerenzer and Selten (2002).

12 This also entails some assumptions different those in Fischer (2001).


3 The Temporary Work Agency Sector

According to the 2016 Annual Report of CIETT (2016)\(^\text{13}\), the employment and recruitment industry enabled work for 71,9 million people in 2014, making the global penetration rate 1.6%. In 2007 there were 59,400 TWA workers in Sweden (Arrowsmith, 2008), corresponding to 1.3% of the total population\(^\text{14}\) (Andersson-Joona & Wadensjö, 2010), and this has been steadily growing since. The latest estimate from Bemanningsföretagen (2015)\(^\text{15}\) is that there were 74,400 employed in the TWA sector in 2015.\(^\text{16}\)

In Sweden, TWAs are used by both the private and public sector, either for pure recruiting, or recruit-and-rent contracts. It is a relatively young sector, however, as there prior to 1993 was a state monopoly on employment mediation. As a result of Sweden ratifying International Labour Office (ILO) convention no. 34 (the Fee-Charging Employment Agencies Convention) in 1934, TWAs were forbidden by law in the 1935 Employment Mediation Act (SFS1935:113)\(^\text{17}\). In addition, Sweden ratified ILO’s 1949 revised convention no. 96. in 1950. Until the deregulation, the law therefore strictly forebode for-profit labor exchanges, which was, in essence, a ban on employment services.

Up until the law was abolished there were a number of public inquiries, none of which resulted in any major changes to the 1935 law, as TWAs were seen as a threat to the Swedish Model, and were feared to erode unionization and the possibilities of executing effective labor policies (Bergström, Håkansson, Isidorsson, & Walter, 2007; Johnson, 2010).

The deregulation started with the enactment of the 1991 Private Mediation Act. Sweden then revoked the ILO convention no. 96 the following year and in 1993 the deregulation was completed through Government bill Prop.1992/93:218.\(^\text{18}\)

Notably, today the Swedish TWA sector is unique in that there is a collective agreement, which most employees are covered by, and states that TWA employees are guaranteed a wage, even if they are not placed at a client firm. (Bergström et al., 2007; Walter, 2012)

According to Bergström et al. (2007), the reason for the sector’s existence, most often put forth by its representatives, is to satisfy the employers’ need for flexibility (see e.g. CIETT, 2000; Eurociett, 2007), but other reasons cited include the need to adapt to the business cycle, globalization and increased competition. Andersson and Wadensto (2004) provide additional explanations for the existence of a TWA sector. Firstly, combining smaller tasks at various companies to full time employment. The flip side is that the TWA take the one-time cost of finding

\(^{13}\)A trade organization representing the interests of the employment and recruitment industry around the world.

\(^{14}\)For share of TWA workers of total population in various European countries in 2012 see ILO (2015)

\(^{15}\)A Swedish trade organization with over 500 member firms, at time of writing.

\(^{16}\)For graphs of the development over time see Larsson (2014) and Konjunkturinstitutet (2012).

\(^{17}\)Later ammended in 1942 (SFS 1942:209) to clarify the definition of private employment services.

\(^{18}\)For a more detailed history see Walter (2012) and Westéus (2014).
a worker, but may be able to spread out the client firm premium over multiple client firms, the consequence being indirect cost sharing among client firms, which may make contracting a TWA an attractive option, especially for client firms that need a worker for only a short period of time.

There is also the assumption that the TWA may be better at finding a qualified worker, and this comes from arguments of economies of scale and specialization. Lastly, as shown in Autor (2001), since the TWA does the screening, client firm’s risk of making a bad hiring decision is reduced, since there is less uncertainty as to the quality of the person it is getting.

Cost reduction, however, is less likely in Sweden compared to other countries, since collective agreements dictate that the wage of TWA workers cannot be lower than that of regular employees.

As stated in Bergström et al. (2007), indirect costs may be reduced if the client firm can avoid missing its production goal, or a delivery deadline, but there may however be an offset of direct costs in the recruit-and-rent case where the client firm does not need to expend resources on the recruitment process, in the form of announcing the vacancy, interviewing and subsequent administration. Gibelman (2005), however, points out that there, on the other hand, is a contracting cost for negotiating with the TWA, which must also be taken into consideration. Gibelman (2005) also states that there is a lack of empirical evidence that there are cost savings to be had.

So far, all arguments except the one about combining smaller tasks into a full time position have been demand side, i.e. from the client firm’s point of view. The argument put forth for the supply side, i.e. the worker’s point of view, is that TWA work could be a stepping stone into regular employment. This has been investigated for Sweden by Hveem (2013), who, contrary to popular opinion, found no stepping stone effect. In fact, he found a negative regular employment effect, which slowly faded away over a couple of years.

Paper [IV] in this looks at the transition probability into the temporary work sector, with a special focus on family experience. This is tied in with the literature on occupational inheritance, because it is known that it used to be common for farmer’s children to “inherit” the occupation of their parents, but this effect has not been investigated for temporary work agencies. While the paper does not focus on people whose parents have been long-time employees in the sector, it looks at parents, siblings and partners participation in the sector as possible explanatory variables for why individuals may enter the sector themselves.

Bergström et al. (2007) argues that an increase in demand for TWA workers can be explained by the factors mentioned earlier, when the sector is an established part of the economy. If not, then one needs to consider the social and institutional context in which the sector is growing. They argue that the growth of the sector can then be a result of an increased social acceptance for this type of employment.

In the Swedish context, they argue, you need to see this in light of e.g. the norm of permanent posts. Paper [IV] can therefore be seen in the context of family

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19 Industry reports stating this include Bemanningsföretagen (2012) and Silva and Hylander (2012).
connections possibly increasing social acceptance for TWA sector work.

4 Summary of Papers

Paper [I]: Why Beating the Expected Best is a Bad Idea

In Paper [I] I construct a Principal-Agent model, in the form of a game where two temporary work agencies (the agents) compete to provide the best worker for a vacancy at a client firm (the principal).

The agents move simultaneously, meaning that they present their best candidate at the same time. Prior to presenting their respective candidate the agents have to decide how much effort they should expend screening potential hires. They face a trade-off, where additional screening increases their costs, but also their chance of presenting the best worker, thereby winning the contract and securing the prize the principal will pay the winner.

When entering any form of competition all participants should size up their opponents to assess their own chance of winning, so when modeling a game such as this a central concept is that of the contest success function (CSF); it describes the agent’s expectation of its probability of winning. The CSF is thus of vital importance for the agent’s behavior and thus of the actual final outcome. In the paper I present a new CSF called the Fixed Expectation Contest Success Function (FE-CSF); a feasible heuristic which consists of the probability of beating the opponent’s expected best candidate.

There is strategic interaction in this game, as one agent’s decision will depend on the decision of the other. When one of the agents decides how much effort to expend it calculates how good it thinks the best worker its competitor will present, and then decides how effort to expend in order to find someone better.

While this may seem like a reasonable way of thinking, it is not rational, as Tullock (1980) showed that the way you judge your chance of winning is by looking at the effort of the opponent, and then comparing it to yours. I show that if instead of focusing on effort, i.e. the opponents sweat and blood, the agent focuses on the opponent’s best expected worker, then the agent will become overconfident. Then, looking at how this overconfidence affects behavior, i.e. how many workers are screened, I show that the level of effort in symmetric equilibrium will increase, compared to rational Tullock agents.

This result is interesting, as overconfidence is a well-documented phenomenon in economic game experiments (see Sheremeta, 2013, for a review), and the biggest selling point of this paper is that the overconfidence derived (and its size) comes not from an arbitrary term added to the agent’s rational expectations, but from the functional form resulting from the aforementioned heuristic.
Paper [II]: The Misaligned Incentives of Temporary Work Agencies and their Client Firms

This paper looks at the incentive structure in the temporary work sector by modeling a Principal-Agent relationship, when a risk-neutral CF (the principal) contracts one or more risk-neutral TWAs (the agents) to fill a vacancy. Unlike Paper [I], where the agents presented their best worker simultaneously, this model is set in discrete time and search is carried out sequentially. The CF requires a worker with some minimum level of productivity, so in the pool of workers to be screened there are some who are qualified for the position, while others are not. The game ends when a TWA presents a sufficient worker to the CF.

Two types of contracts are analyzed; pure recruiting, where the TWA is hired to find a match which will be hired by the CF, and recruit-and-rent, where the CF will rent the worker from the TWA for some amount of time.

Looking at the pure recruitment contract, we analyze three payment schemes. The first being continuous payment until a match has been found, or the contract expires at some predetermined point in time. As we assume hidden action, there is no incentive for the TWA to exert any effort at all with a contract such as this, as it will be paid no matter what and screening workers to try to find a match will yield no additional revenue.

The second payment scheme we look at is payment on delivery, which ensures that the agent starts searching immediately upon signing the contract. Here we conclude that the TWA will never attempt to find an alternative candidate after having found the first match.

The last payment scheme, which we only briefly look at, is payment at a pre-specified point in time, conditioned on delivery. Our conclusion is that if the TWA cannot, because of liquidity constraints, or does not want to search for the total amount of time until the pre-specified point when it will be rewarded, then it will defer search, as any given search effort will have a lower present value cost the later it is expended. This intuition is only sketched out, and will be the topic of Paper [III].

The second type of contract we analyze is the recruit-and-rent contracts. Here we first look at the incentives when contracting a single TWA, and assume that the better the worker, the higher the chance of him/her transitioning into regular employment at the CF. This means that if the TWA finds a good enough worker, it will may make the decision to spend resources searching for a worse worker, which can be assumed to be rented for a longer period of time.

The last thing we do in the paper is then to look at how incentives are affected by increased competition among TWAs. While a single TWA would ideally like to find a worker as close as possible to the minimum productivity level stipulated by the principal, when competition increases, the TWAs probability of winning with a lower (but still sufficient) productivity worker will decline. We show that the TWAs’ preferred worker gets progressively better as competition increases.
Paper [III]: Think About the Future and Wait

Paper [III] examines the waiting behavior that can occur if a TWA is contracted to find a worker for a specific time far in the future; the TWA will postpone effort, i.e. wait to start searching for a qualified worker.

In the paper I present two types of TWAs; one that is rational and plans ahead, and another that does not plan ahead at all, but instead only looks at the immediate future. I find that the one that only looks at the immediate future stars exerting effort earlier than the planner.

I then proceed to characterize the optimal contract between the CF and the TWA, because the CF will have to find the optimal amount to promise as prize money if the TWA successfully supplies a sufficient worker; if the CF pays to little, then the TWA will not want to exert any effort at all, and if the CF pays too much it will not make a profit itself. This contract is examined first under the assumption that the CF can monitor the TWA, and then under the assumption that it cannot, where the latter is more realistic.

Under the strong assumption of perfect monitoring, the CF can not only decide the prize if the TWA is successful, but also dictate when the agent should start searching, as it can see if the TWA exerts the promised effort. This makes it possible to achieve an efficient contract.

If there is hidden action on the other hand, meaning that the CF cannot monitor the TWA, then writing an efficient contract with a rational TWA is not possible. Even-though the CF could pay exactly the amount it would like the TWA to use for search effort, the TWA will find it profit maximizing to wait a little longer, as not to have to expect to spend all of its expected revenue on search.

I then show that for the principal to want to delegate search to a rational TWA, the agent has to be better than the CF, by some factor, as it has to make up in efficiency what the CF loses in the TWAs moral hazard – when the TWA waits longer than the CF would like it to. Lastly I show that it is profit maximizing for the CF to contract one TWA and give it a deadline earlier than when the CF would need the worker, and then replace that TWA with a competitor if the first one has not succeeded by that earlier deadline.

Paper [IV]: Young Adults in the Swedish Temporary Agency Sector: Implications of Family Experience

A person's first experience of working life is not the individual's actual first job, but rather the perception conveyed by his or her family and other reference groups. This paper ties in to the literature on occupational inheritance, as well as the literature on changing social norms, by investigating the implications of family experience on young adults' relative probability of transitioning into the Temporary Agency Sector. The reason for looking at young people is that the sector has only been deregulated since 1993, as mentioned above, making parental effects hard to motivate looking at for older cohorts.
We specifically focus on the effect of a family member having been in the temporary agency sector; on one hand one could imagine it would make a person less inclined to enter the sector, as our review of the literature shows some negative effects of TWA employment; a wage penalty, worse working conditions, significantly higher risk of feeling depressed and workers in the sector experiencing the lowest degree of autonomy and overall job satisfaction compared to other types of employees (Andersson-Joona & Wadensjö, 2012; Fabiano, Curro, Reverberi, & Pastorino, 2008; Håkansson, Isidorsson, & Strauss-Raats, 2013; Tijdens, van Klaveren, Houwing, van der Meer, & van Essen, 2006). Despite this, the effect was the opposite; Using Swedish register data on young adults (aged 18-34), and controlling for personal characteristics, we find that individuals with family members or partners with work experience from the temporary agency sector are highly over-represented in the sector. Other variables we control for is gender, age group, highest level of education attained, if the person is a second-generation immigrant, lives in a metropolitan municipality, is a student or has children. The peer-groups previous experience is, in fact, found to be among the most influential variables determining the relative probability that an individual will work in the temporary agency sector.

We also look at two sub-groups separately; gainfully employed and students, as we believe there may be important differences between the groups. The results for gainfully employed workers and for the student group do indeed show that there are some other important differences that have not been captured by previous studies. For instance, there are relatively many temporary agency workers in some of the lower age cohorts in the student sample, whereas the gainfully employed show an almost linear decay in the relative probability of being employed in the agency sector as they grow older. A noteworthy result that is very similar in all samples, but quite different to the findings in 1999 by Joona and Wadensjö (2008), is the relatively high education level among the younger cohorts of the temporary agency sector (cf. also Andersson-Joona & Wadensjö, 2012; Petersson, 2013).

The overall results of this study further establish that individuals with an immigrant background are still over-represented in the sector, but also that, in the younger cohorts, there is a predominance of men employed.
References


