

Contracts and Cliques:

An Organizational Response to Short-Term Labor Market Uncertainties

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ABSTRACT

Sociological studies of economic transactions offer valuable insights into the role of networks in managing transaction partners' uncertainty but leave aside the role of contracts in whose shadow networks often operate. The paper explores a specific labor market setting in which both incentive contracts and informal relationships help a telemarketing firm deal with uncertainties of labor supply. The analysis shows that when agents work without contracts, the cohesion of the workplace's informal network positively affects the length of an agent's work spell. The effect increases with the number of the agent's ties to the network and mitigates the negative impact of limited work hours and income targets that agents may be guided by in their quitting decisions. However, when an agent is under contract, the role of the informal structure is negligible. I conclude that in this context networks work as a substitute rather than a complement to contractual relationships.

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INTRODUCTION

The role of contracts and their relational underpinnings and counterparts in managing economic uncertainties has preoccupied sociologists since the early years of the discipline (Durkheim 1893, Weber 1922). MacAulay's landmark article recasts classical arguments in terms of "the functions and dysfunctions of using contract to solve exchange problems" (MacAulay 1963: 56) in an effort to present a more thorough view of the topic. However, the vast sociological literature shaped by MacAulay's insights focuses almost entirely on the dysfunctions rather than functions, being preoccupied by non-contractual relations and ignoring contracts almost entirely. By and large, there is a consensus in the literature that contracts are often costly, inefficient, and incomplete, and that networks remedy these problems (Granovetter 1985, Powell 1990). A large stream of empirical research specifically explores networks of relationships as substitutes for contracts (Dore 1983, Uzzi 1997). However, contracts themselves, if present at all, remain in the background. To be fair, macro-institutional studies of the contract (e.g., Streeck 1992) and the relationship between the contract, market, and hierarchy (e.g., Stinchcombe 1985) enrich our understanding of the contract's place in the economy. Overall, though, MacAulay's assertion that sociologists' understanding of the topic remains incomplete is valid now as it was forty years ago, only this time the missing half is the contract rather than the network. Past approaches have not revealed the overall institutional structure of a given market nor have they shown how interactions between formal and informal arrangements can mutually reinforce or undermine each other (cf., Nee and Ingram 1998).

This paper fills the void by exploring a specific labor market setting in which both incentive contracts and informal relationships help a telemarketing firm deal with uncertainties of labor supply. The firm runs a virtual call center where home-based sales agents work as independent contractors. While agents are free to choose when and how much to work, the call center needs a readily available supply of labor sufficient to handle a call volume that varies drastically over time. Rich empirical data allow me to assess the impact of short-term incentive contracts and networks on the length of agents' work spells. The analysis shows that when agents work without contracts, the cohesion of the workplace's informal network positively affects the length of an agent's work spell. The effect increases with the number of the agent's ties to the network and mitigates the negative impact of limited work hours and income targets that agents may be guided by in their quitting decisions. However, when an agent is under contract, the role of the informal structure is negligible. I conclude that in this context networks work as a substitute rather than a complement to contractual relationships. In the section that follows I introduce in detail the empirical setting of the project in order to show how its specific features help address general questions of institutional arrangements arising in response to labor market uncertainties. Keep these details in mind while reading the subsequent section containing the theoretical arguments and testable hypotheses. Since the firm's business is carried out over the Internet, the firm continuously generates vast amounts of data, only a small part of which is analyzed in this paper. A description of the data follows the theoretical discussion and is accompanied by the specifications of the statistical models employed for their analysis. I then present the findings from the analysis, their implications and limitations, and conclude the paper with a discussion of its contributions to the literature and agenda for future research.

THE VIRTUAL CALL CENTER (VCC) AS AN EMPIRICAL SETTING

The subject of this study is a telemarketing firm which I call the Virtual Call Center (VCC) for the purpose of this study. The VCC handles for its clients, vendors of various products, inquiries and purchases that are generated from infomercials broadcast on TV networks. Its entire sales force consists of independent contractors who work from home and process orders over the Internet. The independent contractors are free to determine their work schedules and set their hours. The basic pay is assessed at a fixed rate per minute of time on the phone with callers and typically varies between \$4-10 for an hour of work which includes both time spent on the phone with callers and idle time spent waiting for calls. Agents may receive bonuses that are linked to specific products and are awarded either per minute of on-call time or based on a successful sale. Since an agent sells multiple products, she cannot keep track of bonuses in real time and therefore they do not significantly influence her short-term labor supply decisions. The average utilization rate, the percentage of the work time spent on the phone with callers, is about 50% in the period we study.

To motivate performance, the firm makes sales agents compete against each other. To accomplish this, the VCC continuously monitors performance by product and uses this data to assign agents their positions in the queue for receiving calls. Better performers have priority, regardless of the number of calls they have already processed. Remuneration is determined entirely by the time an agent spends on the phone with callers and thereby is closely linked to her priority in the queue, in particular, when the call volume is not sufficient to keep busy all the agents currently available.

The VCC purposefully emphasizes that it helps its agents develop and sustain their own home-based businesses and sees itself exclusively as a match-maker between producers and sellers of their products. In this regard, the firm steps into an uncharted territory and therefore has to think carefully about how to frame its structure and activities to make them

compliant with the existing labor laws. Consequently, the process of attracting and selecting new agents is called “certification” to avoid any association with hiring. Since training is a major signal of an employment relationship, the Center emphasizes that it seeks and certifies candidates who are already capable of providing a professional level of service and do not require training in sales skills. At the same time, it has to equip new agents with the knowledge of its firm-specific technology and product-specific requirements and sales techniques. The process set up for this purpose is called “agent development” and includes computer-assisted tests and quizzes as well as electronically distributed manuals.

Whenever the conventional descriptions of the VCC’s organizational structure do not fit the labor law, they are promptly replaced. For example, initially the VCC assigned to each agent an agent supervisor who was supposed to monitor her performance, provide help, and resolve conflicts. When it was noticed that the term “agent supervisor” is incompatible with a market-like relationship, it was replaced with “agent facilitator.” The agents’ status as independent contractors, their work-at-home arrangements, a competitive environment, and the way the firm frames its mission and core activities indicate an arm’s-length employment relationship.

Agents sign a standard Independent Contractor Agreement which states clearly that agents control their own schedule, are free to devote as much or as little time performing services as they determine to be in their best interests, and may not be required to devote themselves full-time to the VCC. The firm cannot terminate an agent’s contract on the basis that she worked too little in the short-run, although it has a policy that allows it to terminate an agent who remains inactive for two months. In practice this means that agents depart voluntarily unless they commit specific violations of the firm’s rules and policies.

To ensure a sufficient number of agents working at any given point in time, the VCC uses a voluntary contract that allows workers to preserve scheduling flexibility. Each

Thursday, the firm forecasts the call volume for one week from Friday to the next Thursday, determines the corresponding number of agents required, and opens that week's schedule for a voluntary sign-up. An agent who signs up for a specific 30-minute block commits herself to working on that block for at least 25 minutes. In exchange for the commitment, the firm puts that agent ahead in the queue for processing calls. An agent is allowed to cancel the contract at any time up to 30 minutes before the start of that block but remains responsible for the block until another agent takes it over. If an agent breaks two commitments in a row, she loses any other commits for the rest of that day, gets her commit budget cut, and receives a less favorable call priority until she completes 50 blocks in a row. This arrangement has essential features of an incentive contract: it describes the transaction, specifies contingencies, and envisages incentives and sanctions to induce compliance (c.f., MacAulay 1963:56). For discussion purposes, I distinguish below between agents under contract and free agents, the latter category being reserved for those who do not have a contract for the block of time under consideration.

THEORETICAL ARGUMENTS

Whether to keep the supply of labor in-house or buy it in the spot market is a textbook case for new institutional economics. Applying Williamson's (1975) framework, a firm should consider three criteria: the degree to which the supply of labor is uncertain, the firm's frequency of labor use, and whether any firm-specific investment in the labor force is required. Most firms have difficulty recruiting qualified workers on short notice, need labor for their core production continuously, and have firm- and product-specific knowledge and skills to teach new workers. Not surprisingly, firms typically hire workers, rather than contract them on the spot market, and set specific work hours in employment contracts, agreements with trade-unions, or firm-wide rules and regulations. In short, a traditional

hierarchical organization appears to be the optimal governance mechanism for managing labor supply.

Whether this logic was valid in the past, it is on a collision course with current developments in the American economy. Under the pressure of global competition, firms aggressively cut their labor costs in two ways: they increasingly rely on contingent labor, in particular, temporary workers and independent contractors (e.g., Barker and Christensen 1998; Cappelli 1999) and adopt a virtual organizational form which turns office and factory workers into teleworkers who perform their functions and communicate with colleagues from remote locations, often from their own homes (DeSanctis and Monge 1999; Wellman et. al. 1996). Whatever the efficiency and social welfare consequences of such arrangements are, they drastically increase a firm's labor supply uncertainties, in particular, in the short run, because contingent workers are free to choose their work hours and teleworkers are more difficult to monitor. The problem becomes extremely severe if a firm's product cannot be stored or its production delayed, as it is typically the case in a service dominated economy and even in modern manufacturing characterized by just-in-time inventory systems.

The VCC's business model is a vivid demonstration of this general trend; its whole core labor force is contingent. Since incoming calls cannot be put on hold for but an extremely short period, the firm has to ensure that at any given point in time it has enough agents to handle the call traffic. The traditional fixed work hours are not an option because agents are independent contractors and the company is particularly concerned about making sure that their status is not called into question.

Competitive market logic dictates the use of a price mechanism, increasing the hourly wage when the demand for labor is high and decreasing it when it is low. According to the positive wage elasticity argument of neo-classical labor economics, there exists a positive relationship between hours of work supplied and transitory changes in wages (ref). At the

VCC, wages increase and decrease automatically with the call traffic, because agents are paid a fixed rate per minute on call. If the positive wage elasticity argument is applicable to the VCC case, its agents should be willing to stay longer on the job as the wage increases and quit sooner as it decreases. I apply this argument to a 30-minute block, the basic time unit that the VCC uses for scheduling:

Hypothesis 1a. The length of an agent work spell on a block is positively associated with the agent's hourly wage prior to the block.

However, there are two factors that can undermine or even reverse the effect of wages as an incentive. First, the amount of time a worker allocates to the job is typically limited; other demands or tiredness may force her to quit before the end of the block. If so, we should observe the following pattern:

Hypothesis 1b. The length of an agent work spell on a block is negatively associated with the amount of time a worker spends on the job before the current block.

Second and most important, workers' choices of workload can be reference-dependent. In other words, workers often make such choices contingent on specific goals they strive to achieve such as an income or output. If a goal is achieved, workers are much less inclined to continue work even in the presence of strong monetary incentives (for review, see Chip, Larrick, and Wu 1999; Tversky and Kahneman 2000). This observation leads to the prediction directly opposite to the one of the neoclassical model:

Hypothesis 1c. The length of an agent's work spell on a block is negatively associated with the agent's hourly wage prior to the block.

The empirical literature on the validity of the neoclassical proposition versus the reference-dependent preferences is growing in volume and sophistication, and the debate is not resolved yet (Camerer, Babcock, Loewenstein, and Thaler 1997; Farber 2004, 2005; Goette, Huffman, and Fehr 2004; Oettinger 1999). The implication for our discussion is straightforward: if workers do set income or other goals, the use of monetary incentives for managing the short-term uncertainty in labor supply may backfire as workers meet their goals faster and quit when the call volume is high, or stay on the job when the call volume is low and thereby become discouraged in the long-run.

The three hypotheses outlined above demonstrate the difficulties the VCC faces in managing its labor supply by a price mechanism alone, even if it is logistically possible. One needs some institutional support structure that would make workers' behavior more predictable. The conventional tool for accomplishing this goal is a formal contract that commits a worker to a fixed work schedule. The danger is that such a contract can compromise the worker's status as an independent contractor. Because the legal definition of the independent contractor varies across states, American firms stay on the side of caution while applying it to avoid even a remote possibility of litigation, which could potentially result in a court order to pay large sums of money in settlements and benefits. As a rule of thumb, firms rely on the common law agency test whose central question is "Who has control?" or, in courts' parlance, "the extent of the actual supervision exercised by a putative employer over the 'means and manner' of the workers' performance" (Horne, Williamson, and Herman 2000: 4-5). Since independent contractors do expect to enjoy autonomy, flexibility, and control (Kunda, Barley, and Evans 2002), they are likely to view a rigid work

schedule as a direct assault on their status, which puts the firm at risk of litigation. Even if the chances of litigation are low, the introduction of such a schedule may undermine the major competitive advantage on the labor market that the firm professes -- its ability to offer flexible work hours.

These are the reasons why the VCC adopts instead the short-term contract described above under which an agent voluntarily commits herself to working specific blocks during the following week in exchange for a priority in the queue for calls. If the sanctions for violating the contract are strong enough to make an agent interested in keeping her word, the following hypothesis should hold:

Hypothesis 2. An agent under contract stays longer on a block than a free agent.

Moreover, a well-structured contract may bring an additional benefit of reducing the adverse effects of limited work hours and reference-dependent preferences discussed above:

Hypothesis 3. If there are negative effects of the accumulated work hours and the prior hourly wage on the length of an agent's work spell on a given block, they are smaller for an agent under the contract than for a free agent.

Despite these benefits, the contract described does not solve the problem of uncertainty entirely. Since agents are not paid for their idle time, the contract alone effectively turns the firm's uncertainty about labor supply into agents' uncertainty about the call volume, which may adversely affect the labor supply in the long-run. Therefore, the firm limits the number of contracts for each block to make sure that the expected call volume will keep the agents under contract sufficiently busy. Agents respond to this measure by hoarding

as many contracts as they can get and therefore force the firm to ration the number of contracts per agent made in a given week, too. If an agent wants to work more than her allocated budget allows, she has to work standby. My interviews at the firm show that a number of agents prefer to work standby because it allows them to stop at any time to rest, take care of a child, and so forth. The preference for standby is particularly common when the call volume is large and therefore having a priority for receiving calls is less important. As more agents decide to not commit, the contractual arrangement becomes less effective and the firm needs additional safeguards that induce agents to stay longer. This is where the sociological literature on non-contractual relationships points to a concrete candidate: informal networks (Coleman 1988, Granovetter 1985, Powell 1990, Uzzi 1997).

It is puzzling, however, where an informal network between the VCC and its agents may come from. The firm maintains arm's-length relationships with its agents and does not offer any long-term incentives that would induce loyalty and trust, the key ingredients of embedded relationships. On the contrary, in its communication with agents the VCC constantly emphasizes that they are independent contractors who run their own home businesses and are encouraged to work with other firms, even the VCC's competitors. In fact, if the firm wanted to nurture closer relationships with its agents, it would not be able to do so for legal reasons. Since the independent contractor status is so murky, any long-term arrangements, even informal ones, carry the risk of being interpreted as evidence of employment by the courts.

A closer look at the different ways that agents operate at the VCC suggests an answer. To address their immediate work-related difficulties, the firm set up a chat room where agents can get help from Agent Facilitators (AF), a group of the VCC's full-time employees, all of whom are former agents themselves. Simultaneously with logging in to start a block, the agent enters the chat room and can observe what is going on there. When a problem

arises, she brings it to the attention of the AF on duty who responds with clear instructions about how to proceed. Created primarily for business purposes, the chat room is also used as a venue for socializing. Idle agents engage in conversations covering a wide range of issues such as children, dieting, diseases and treatments. The firm's rules require them to stop such discussions when the flow of business questions picks up and forbids conversations about other business opportunities and pay issues, as well as conversations with a religious or sexual theme. Beyond that, agents are free to socialize and, as a result, establish new friendships. Over time, agents start recognizing and greeting each other and eventually may extend their interactions beyond the chat room using more private channels such as phone, email, instant messaging, and even face-to-face meetings if the distance allows. At the same time, they continue meetings in the chat room as the only venue where remote group interactions on the job are possible. More cohesive groups of friends emerge and become persistent as the choice of work schedule is influenced, among other things, by the agents' friendship ties.

The emergence of such networks may have a number of unintended work-related consequences. First, a leisure component is introduced into the virtual work environment. Idle agents may find intrinsic value in the time spent socializing in the chat room. The warmer and more welcoming the environment in the chat room is, the more pronounced this effect should be. Since cohesive groups, conventionally called cliques, are most capable of creating such an environment, I suggest the following hypothesis:

Hypothesis 4. The more cohesive the network of agents present in the chat room on a given block, the longer a free agent's work spell is on that block.

Moreover, the increases in the length of the work spell are not uniform across agents but higher for those who are more strongly connected to the clique in the chat room:

Hypothesis 5. The effect of the chat room network's cohesion on a free agent's work spell on the block increases with the strength of the agent's connection to the network.

Socialization in the chat room should help an agent renew her energy between calls and relieve the anxiety and frustration that communication with shoppers often produces. As a result, agents may feel less tired than after the same amount of work done without the support of the online community. In addition, an agent should be more likely to stay on the shift even after her productivity goals have been achieved. Even if an agent wants to quit, she may be interested in ongoing conversations in the chat room or may feel uncomfortable about leaving while others stay. In short, a chat room network should increase labor supply the same way the formal contract does, by mitigating the possible negative effects of limited work hours and reference-dependent preferences:

Hypothesis 6. If there are negative effects of the accumulated work hours and current hourly wage on a free agent's work spell on a given block, they are smaller, the stronger is the cohesion of the chat room network on that block.

The punchline of the arguments presented so far is that formal contracts and informal networks can act in parallel to help a firm achieve the same objective, longer continuous work hours put in by agents. The informal network keeps agents on the job longer when the formal contract is not there. Is there any place for the chat room network in the presence of the contract? In light of some indications of the suboptimality of the contractual arrangement

discussed above, the answer should be positive, albeit the effects of the chat room network should be less pronounced when the contract is involved:

Hypothesis 7. The effects proposed in Hypotheses 4-6 for free agents should hold for agents under contract, albeit smaller in magnitude.

DATA AND MODEL

A complete log of agents' activities for August 2005 is the main data source for this study. The log is organized by agent-block and contains, among other things, information about the length of time the agent worked on the block and received calls, as well as whether she was under contract.

The second data source is the complete log of the chat room conversations from January 2004 to July 2005. I use as long period as possible in order to maximize the likelihood of the accurate identification of the chat room relationships among agents. The identification relies on the propensity of contacts to greet each other by name. I single out all the statements with such greetings and assume that two agents are on friendly terms if they reciprocally addressed each other by name more than once over a time period longer than one week. The one week interval may take place at any time within the nineteen month observation window, since, once established, such relationships are maintained not only in the chat room but by phone, email, instant messaging, and even face-to-face in the case of geographic proximity.

Using information from the activities log, I construct the dependent variable **'the work spell'** which is the fraction of the block the agent actually worked. In other words, it is a limited dependent variable which varies from 0 to 1 and reflects that fact that the length of time worked cannot exceed the duration of the block equal to 30 minutes.

The following independent variables are constructed to address the hypotheses presented above:

Accumulated Time Worked is equal to the sum of the work periods on the same day prior to the current period.

Hourly Wage prior to the block is calculated by adding up the amounts of time spent on the phone with clients prior to the current period and dividing the result by the accumulated time worked.

Personal Network Size is the number of people in the agent's chat room network who work with her on the current block.

Network Density is the density of the network of the agents working on the current block.

While carrying out the analysis I control for the wage on the current block. At the first glance, this wage has to be added to the value of the independent variable **Hourly Wage** defined above. However, since it is proportional to the time an agent spends on calls with shoppers and since an agent cannot hang up until she finishes talking to the shopper, this wage approximates too closely the work spell within short time periods such as one block and thereby obfuscates the relationship of interest.

The additional controls are: the **Remaining Blocks Under Contract** for the same day measured in hours, the block's time of day: **Morning** from 00:10 am to 8:10 am, **Day** from 8:10 am to 5:10 pm, and **Evening** from 5:10 pm to 00:10 am. The ten-minute difference from the top of the hour synchronizes agents' schedules with the typical schedule of a TV commercial.

I use generalized estimating equations for panel data which allows for a limited dependent variable and adjusts standard errors, taking into account the interdependencies among observations of the same agent (StataCorp 2003). The equations are estimated by the

method of iteratively weighted least squares (IRLS). Fixed effects take care of the unobserved individual characteristics of agents.

FINDINGS

Let us begin by comparing the work done by free agents versus agents under contract. The sample consists of 265,312 blocks of time, each block having 30 minutes, handled by 2,283 agents over a one-month period. The work performed on 156,542 blocks or 59% of the sample was performed by agents under contract and free agents worked the remaining 108,770 blocks or 41% of the sample.

From looking at the descriptive statistics in Table 1, it is immediately clear that the presence of a contract makes a very significant difference. While the average work spell of free agents is about 12.5 minutes, it goes up to almost 29 minutes, or pretty much a complete block, for agents under contract. Because the difference is so dramatic, Hypothesis 2 can be safely accepted and I do not test it further with one regression model for the whole sample, but run separate models for free agents and agents under contract to explore more refined differences pertaining to the effects of the independent variables defined in the previous section.

Table 1 about here

The average hourly wage under contract is more than twice as much than without a contract, \$8.45/hour vs. \$3.90/hour, respectively. However, the median wages for the two groups, not reported in the table, are much closer, \$6.47 and \$ 8.08 respectively. Thus, the difference in the means is primarily due to a larger heterogeneity of the free agents population. The group of free agents includes a larger portion of new agents who do not yet

have a track record with the firm and therefore are assigned a low priority in the queue for calls, as well as agents for whom this job is a secondary source of income. This observation is further supported by the fact that the standard deviations of all the four variables related to work time and wages are significantly larger for free agents than for agents under contract.

Agents working under contract encounter on average four members of their chat room network which is slightly more than the 2.5 average for the free agents, probably because agents typically contract for more regular work hours and coordinate their schedules with their friends. Since free agents and agents under contract work on the same blocks, it is not surprising that the density of the chat room network an agent is exposed to does not vary much across the two groups.

The dramatic difference in the length of work spells suggests that the effects specified in Hypotheses 1a-1c should manifest themselves much clearer in the case of free agents. The estimates in Table 2 show that both the accumulated work hours and the prior hourly wage have a significant negative effect on the fraction of the block the agent works. These findings support Hypotheses 1b and 1c and reject Hypothesis 1a.

Table 2 about here

The introduction of network variables in Model 2 improves the fit but indicates that an agent's number of contacts per se does not increase her work spell. On the contrary, the relevant coefficient is negative and significant which suggests that multiple acquaintances are probably acquired by working short periods on different blocks. In support of Hypothesis 4, an agent works longer when the density of the chat room network is higher. In terms of substantive significance, for a free agent with median values of the variables in Model 2, the work spell on a block increases from 9.6 to 13.2 minutes as the density of the chat room

network increases from the minimum of .03 to the maximum of .43. According to Model 3 the affect varies with the number of an agent's connections to the network as Hypothesis 5 predicts.

Model 4 tests whether the positive effect of network density outweighs agents' reference-dependent preferences for quitting. The coefficients for the interactions of the accumulated work hours and prior average hourly wage with the network density are positive and statistically significant. As the density increases, the negative effects of reference-dependent preferences weaken. As Hypothesis 6 proposes, informal networks act as a quasi-institution, substituting for a formal contract, at least when agents for whatever reason do not enter into one.

Table 3 about here

When agents do enter into a contract, the picture is very different, as the results in Table 3 show. Here the accumulated work hours are positively associated with the length of the working spell in contradiction to Hypothesis 1b. Together with the positive and greater magnitude effect of the remaining blocks under contract, this finding indicates that agents who contract to work longer hours are more likely to complete each single block, although an additional analysis is necessary to fully justify this claim. By contrast, the negative effect of the prior hourly wage persists albeit halved in magnitude. Overall, the effects predicted by Hypotheses 1a-1c are negligible in substantive terms. This is not surprising, since as the reader might recall, the average length of work spells on the blocks under contract is very close to the maximum and therefore there is not much variation to be explained by other factors.

The three network variables included in Models 3 and 4 do not make a statistically significant difference under the contract either independently or in interactions with the accumulated work hours and the prior average hourly wage. We can conclude that the informal chat room network is irrelevant when a contract is in place, which goes against Hypothesis 7.

DISCUSSION AND CONCLUSIONS

Summarizing the findings presented above, one can conclude that in the VCC setting informal relationships work as a substitute rather than complement to the formal contract. When agents work without contracts, the cohesion of the workplace's informal network positively affects the length of an agent's work spell. The effect increases with the number of the agent's ties to the network and mitigates the negative impact of limited work hours and income targets that agents may be guided by in their quitting decisions. However, when an agent is under contract, the role of the informal structure is negligible.

The last conclusion should not be interpreted as evidence against the theories of embeddedness and relational contracts but as a reminder about their scope conditions. The contract under consideration is simple; it does not have many unspecified contingencies which transaction partners feel comfortable leaving unresolved because of mutual loyalty and trust. The contract can be simple primarily because the firm has strong leverage vis-à-vis sales agents. Its economic underpinning is the fact that the firm does not pay agents for idle time on the job but only for time spent on calls. Since it costs the firm nothing to keep agents waiting, the contract transfers uncertainty from the firm to agents virtually free of charge for the firm. Yet, the advantage is apparent only in the short run. In the long run, such short-term incentive contracts may lead to high labor turnover and even a shortage of qualified agents.

Consequently, when agents' utilization is likely to be particularly low, the VCC shares the costs in the form of a guaranteed minimum pay, bonuses, and so forth.

A future study should explore the mechanisms that make the contract work. Does it change agents' behavior or do they self-select into adopting it. My preliminary observations suggest that both processes are at work. The self-selection mechanism is more likely to hinge on agents' family circumstances that change within a day and thereby dictate the use of different arrangements. For example, mothers may prefer to remain free agents when their children are at home so they can quit and take care of them as the need arises.

The role of informal relationships as a substitute rather than compliment to the short-term incentive contract does not need to be the only role under any circumstances. For example, a natural disaster in an area that has a large number of agents may create a high short-term uncertainty in labor supply that is difficult to resolve on a contractual basis quickly and with reasonable costs. The social ties of agents to the firm can be of great help in such situations. As the emerging literature on robustness of organizational structures shows, this opportunity becomes a reality only if such ties are maintained and exercised in the course of routine everyday activities (Dodds, Watts, and Sabel 2003). The chat room is critical in that regard.

Another issue which this study sheds new light on is the nature of relationships that support economic transactions. In empirical studies, they are often endogenous to the transactions of interest. The relationships between New York garment makers and their subcontractors emerge in the process of their collaboration (Uzzi 1996); the relationships among investment banks take shape in the process of joint investment activities (Podolny 1993), etc. The chat room network evolves spontaneously and its effects are a byproduct of social interactions rather than economic activities. Moreover, the firm generally keeps agents at arm's-length, emphasizing their status as independent contractors, and does not expect any

benefits from socialization processes taking place in the chat room. The fact that some benefits nevertheless appear demonstrates how economic utility emerges as a byproduct of unrelated social interactions.

The ability of chat room relationships to mitigate the negative effects of reference-dependent preferences is another important contribution of the paper that brings a sociological perspective to a problem that has until now been actively studied exclusively by economists and psychologists. The idea of socially contingent economic motives is a cornerstone of economic sociology (Sorensen 1994) but its careful empirical investigation is still rare.

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Table 1a. Performance of Agents on 30-Minute Blocks: Continuous Variables

	<u>Free Agent</u>				<u>Contract</u>			
	Mean	Min	Max	St. Dev.	Mean	Min	Max	St. Dev.
Work Time (min)	12.4	0.02	30	11.6	28.9	0.02	30	3.02
Fraction of Block Worked	0.41	0	1	0.38	0.96	0	1	0.10
Hourly Wage	3.89	0	15	5.38	8.45	0	15	3.85
Accumulated Time Worked Prior to Current Block within Same Day	2.93	0	22.31	2.55	2.83	0	21.06	2.41
Average Hourly Wage for Accumulated Time Worked	6.44	0	15	3.78	7.70	0	15	3.62
Remaining Blocks under Contract for Same Day	1.24	0	20	1.82	2.38	0	20	2.25
Number of Contacts	2.50	0	119	7.07	4.10	0	182	9.74
Density of Chat Room Network	0.08	0.03	0.43	0.04	0.075	0.03	0.43	0.03
Number of Cases		108,770				156,542		

Table 1b. Performance of Agents on 30-Minute Blocks: Discrete Variables

	<u>Free Agent</u>		<u>Contract</u>	
	Number	Percentage	Number	Percentage
Time of Day:				
Morning	20,570	18.9	37,598	24.0
Daytime	58,362	53.7	93,540	59.7
Evening	29,636	27.2	23,801	15.2
Weekend	20,825	19.1	31,987	20.4
N	108,770		156,542	

Table 2: Generalized Linear Model of a Work Spell on a 30-Minute Block for Free Agents. Population Size: 2,261 Agents on 108,770 Blocks.

	Model 1	Model 2	Model 3	Model 4	Model 5
Accumulated Time Worked Prior to Current Block	-.020 (-3.88)**	-.020 (-3.89)**	-.020 (-3.90)**	-.036 (-5.10)**	-.036 (-5.09)**
Average Hourly Wage for Accumulated Time Worked	-.067 (-19.95)**	-.066 (-19.56)**	-.066 (-19.56)**	-.078 (-16.20)**	-.078 (-16.19)**
Number of Contacts		-.007 (-4.09)**	-.011 (-2.31)*	-.009 (3.80)**	-.010 (-2.55)*
Density of Chat Room Network		1.344 (7.23)**	1.257 (7.25)**	.601 (0.45)	.480 (0.48)
Number of Contacts * Density of Chat Room Network			.270 (3.76)**		.159 (2.39)**
Accumulated Time Worked * Density of Chat Room Net				.178 (2.80)*	.177 (2.77)*
Average Hourly Wage * Density of Chat Room Net				.136 (3.34)**	.143 (3.45)**
Hourly Wage on Block	.041 (32.95)**	.041 (33.02)**	.042 (33.04)**	.041 (33.02)**	.041 (33.03)**
Remaining Blocks under Contract for Same Day	.009 (1.48)	.011 (1.71)	.011 (1.71)	.011 (1.73)	.011 (1.72)
<u>Time of Day (Daytime):</u>					
Morning	.149 (6.29)**	.093 (3.81)**	.093 (3.81)**	.091 (3.73)**	.090 (3.72)**
Evening	.116 (6.66)**	.046 (2.35)*	.046 (2.29)*	.042 (2.11)*	.040 (2.02)*
Weekend	.083 (4.18)**	.098 (5.06)**	.098 (5.05)**	.101 (5.23)**	.101 (5.22)**
Constant	-.279 (-8.66)**	-.348 (-8.73)**	-.347 (-8.72)**	-.237 (5.39)**	-.233 (-5.29)**
Wald X ² change (DF)		40.1(3)**	5.68(1)**	1.34(2) [†]	4.1(1)**

Z-scores are in parenthesis.

Significance levels: * < 0.05; ** < 0.001

[†] Compared to Model 2

Table 3. Generalized Linear Model of a Work Spell on a 30-Minute Block for Agents Under Contract. Population Size: 1,897 Agents on 156,542 Blocks.

	Model 1	Model 2	Model 3	Model 4	Model 5
Accumulated Time Worked Prior to Current Block	.029 (5.10)**	.029 (5.03)**	.029 (5.03)**	.020 (1.67)	.020 (1.68)
Average Hourly Wage for Accumulated Time Worked	-.034 (-10.55)**	-.034 (-10.46)**	-.034 (-10.45)**	-.036 (-5.28)**	-.036 (-5.29)**
Number of Contacts		.000 (0.21)	.001 (0.52)	.000 (0.22)	.0013 (0.55)
Density of Chat Room Network		.538 (1.26)	.566 (1.30)	.007 (0.01)	.021 (0.03)
Number of Contacts * Density of Chat Room Network			-.020 (-0.49)		-.020 (-0.51)
Accumulated Time Worked * Density of Chat Room Net				.117 (0.80)	.116 (0.79)
Average Hourly Wage * Density of Chat Room Net				.028 (0.34)	.031 (0.37)
Hourly Wage on Block	.082 (20.43)**	.082 (20.08)**	.082 (20.08)**	.083 (20.14)**	.083 (20.14)**
Remaining Blocks under Contract for Same Day	.080 (11.67)**	.081 (11.68)**	.081 (11.68)**	.081 (11.77)**	.081 (11.76)**
<u>Time of Day (Daytime):</u>					
Morning	.144 (4.54)**	.119 (3.59)**	.119 (3.58)**	.118 (3.55)**	.118 (3.54)**
Evening	.048 1.75	.012 (0.37)	.010 (0.32)	.007 (0.24)	.006 (0.19)
Weekend	-.176 (-7.66)**	-.163822 (-7.24)**	-.164 (-7.24)**	-.163 (-7.20)**	-.163 (-7.21)**
Constant	2.626 (64.00)**	2.612 (48.82)**	2.612 (48.81)**	2.654 (35.40)**	2.655 (35.35)**
Wald X ² change (DF)		22.7(3)**	0.3(1)	10.4(2)**	0.2(1)

Z-scores are in parenthesis.

Significance levels: * < 0.05; ** < 0.001

† Compared to Model 2