

The Gift of the Living Wage: Reciprocity and Wage Spillovers in an Experimental Labor Market

Erich Cromwell

Florida State University

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Abstract

Living wage laws are a common local government policy to mandate higher wages for a subsection of the labor market. Advocates of these policies suggest the higher mandated wage will lead to greater effort contrary to predictions made by reciprocity models. This paper employs a gift exchange game - where effort is not contractible - to examine worker effort response and possible wage spillovers from a living wage law. The main result shows the greatest influence on effort is the wage offered - regardless of the context of any manager wage restriction. Therefore, effort increases as the mandated wage increases from a typical minimum wage to the higher living wage. Additionally, wage spillovers in the living wage environment push unaffected managers to offer higher wages than otherwise offered in a market with only a single minimum wage.

Keywords: living wage, minimum wage, gift exchange, reciprocity, experiment

JEL Classification: C92, J31, J38, J41

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1 Introduction

In many urban areas, low-wage workers earn too little income to afford the local cost of living. To counteract this dilemma, advocates have proposed raising wage floors to a “living wage.” Living wage ordinances are a direct result of this campaign to reduce both urban poverty and income inequality. There are two key elements of living wage ordinances. First, these laws impose a wage floor above the prevailing state or federal minimum wage. The exact level is set to ensure that full-time hourly workers do not earn less than the poverty level. The second feature is that, unlike minimum wage laws, living wage laws are applied only to a subset of the local labor market. The laws are most commonly limited to apply only to city contractors. Direct recipients of public spending, it is argued, should not be permitted to intensify the wage gap in the city. The type of employers affected by living wages varies by law and city, often extending beyond city contractors to include companies receiving “business assistance” and, in a few cases, municipalities themselves. Although living wage ordinances have evolved over time, the de facto effect of the laws - two minimum wages in the same city - remains constant.

Living wage ordinances trace their origin to the city of Baltimore, where an alliance between a labor union and religious organizations saw the first living wage become law in 1994. Since that time, more than 140 U.S. jurisdictions have passed living wage laws, including large cities such as New York, Los Angeles, and Chicago. Living wage ordinances continue to be proposed each year. Since 2011, new living wage ordinances have been adopted in Oakland, CA, and Ithaca, NY, while variants have failed in Chicago and Washington, D.C.¹ Due to other recent changes in local and federal policy, there are other special cases where two minimum wages may apply in the same labor market. City-wide minimum wage laws such as those passed in San Francisco, CA, Santa Fe, NM, and Seattle, WA, effectively create the same differential across each of these regional labor markets (Dube, Naidu, & Reich 2007). Similarly, when neighboring states do not share the same minimum wage, counties on the state border create the same wage discontinuity (Dube, Lester, & Reich 2010). Finally, the 2014 Executive Order from President Obama that raises the minimum wage for federal contractors presents a similar minimum wage discontinuity in labor markets where federal contractors are employers. In each of these cases (like living wage ordinances), there are two different minimum wages in the same local labor market.

Unlike minimum wage laws that apply to large geographic areas, living wage laws create an exogenous wage gap within a city. Past research has examined potential impacts of these ordinances including changes in worker performance at living wage businesses, the change in wages at businesses not directly affected by the law, and the overall change in labor supply. This paper uses laboratory experiments to study the changes

¹Unlike most living wage laws, these laws targeted large “box-store” businesses such as Wal-Mart.

that occur with living wage ordinances at the business level and across the market.

Throughout the living wage movement, one argument has been used repeatedly to encourage its passage: increased worker performance. Pollin & Luce (1998) argue that “when workers receive a higher wage, a firm benefits in many ways, including reduced labor turnover, better quality of work, better cooperation with management, more flexibility in the operation of a business, and higher overall morale” (p. 150). Henry Ford demonstrated this benefit, they argue, when he raised wages for his employees in 1913, leading to a reduction in turnover and absenteeism. The success of Ford’s higher wages reinforces the standard gift exchange argument originally presented by Akerlof (1982). When wages are above the market rate, the higher wages (the gift) induce workers to reciprocate in the form of higher effort. Since first tested by Fehr, Kirchsteiger, & Riedl (1993), many laboratory experiments have confirmed the existence Akerlof’s gift exchange (Fehr et al. 1998, Fehr & Gächter 2000, etc.). As intentions are the foundation of gift exchange, Ford’s voluntary wage increase may not apply to any wage floor legislation. Involuntary wage increases, like those imposed by living wage laws, may not produce higher worker performance. Therefore, a crucial question remains unanswered. When a living wage law mandates higher wages, do workers respond as if this was a voluntary wage increase? If workers respond positively, then many businesses may benefit from proposed living wage ordinances.

The empirical living wage literature finds, unsurprisingly, that city-wide average wages increase following the enactment of a living wage law (Neumark & Adams 2003a). The surprising result is that the wage elasticity exceeds the estimated percent of affected workers. Therefore, wages are increasing for all low-wage workers, even those that do not work for a business affected by the ordinance. This spillover suggests that, beyond the direct effect of mandated higher wages for some workers, living wage ordinances alter norms throughout the local labor market. The extent to which living wage laws change norms is unclear given the aggregate data in the empirical research. Neumark & Adams (2003b) concede that it is not possible to identify even the precise distribution of direct wage increases (mandated by the law) and indirect wage increases (the “living wage spillover”). This side effect demonstrates that a living wage policy not only changes the wages at targeted businesses, but alters the entire local labor market.²

Due to restrictions in city-level data and other endogenous variation, laboratory experiments represent an ideal avenue to examine the potential effects of living wage laws. Related experimental literature draws from research on the effect of minimum wages in a gift exchange game. Despite the use of living wages in many metropolitan areas, no experiment has examined the behavioral effects in a living wage market or how these may differ from those in a minimum wage market. This research provides some insight and clues for altered behavior when any wage floor is present.

²See also Adams & Neumark (2005) and Neumark, Thompson, & Koyle (2012) for other empirical work on the living wage.

Two experiments have looked at variations in worker effort decisions when a minimum wage is present. Charness & Brandts (2004) find that worker effort in a gift exchange market decreases in the presence of a minimum wage. In a similar experiment, Owens & Kagel (2010) find that the introduction of a minimum wage raises both average wages and average effort levels. As living wage laws are distinct from minimum wage laws because they only directly apply to select businesses, workers may respond to both the wage and the type of employer offering the wage.

Experimental research has found that the minimum wage creates a spillover effect that causes some wages in the market to be set above the minimum (Falk, Fehr, & Zehnder 2006, Owens & Kagel 2010).³ While the results on minimum wages highlight the potential for unforeseen consequences to a wage floor, the “minimum wage spillover” is different than the “living wage spillover” found by Neumark & Adams (2003a). The minimum wage spillover fits into Akerlof’s more traditional explanation that employers are simply attempting to induce workers to reciprocate higher efforts. The living wage spillover refers to increases in wages for workers beyond those affected by a living wage ordinance. It is unclear whether this indirect effect stems from fairness concerns or an attempt to induce greater worker effort.

To best examine all the potential for changes due to living wage laws, laboratory experiments provide a suitable environment for controlled market variation and perfect identification of desired variables. This research uses a gift exchange market to model incomplete labor contracts by placing subjects in the roles of workers and managers. Labor market conditions are altered to test for changes in wages offered by managers and effort response from the workers.

When analyzing worker effort response, I find effort is greater for the living wage than the minimum wage despite both being the lowest possible wage offer. While intentions are found to play a role as wage offers move away from the lower boundary, the greatest influence on effort is the wage offered - regardless of the context of any manager wage restriction. Similar to results from Brandts & Charness (2004), I find that worker effort is less for any manager with a wage restriction (minimum wage or living wage) compared to managers with no wage restrictions (no minimum wage). Additionally, I find evidence of both minimum wage and living wage spillovers. Specifically, the living wage spillover contributes to greater overall effort in living wage markets since average wages are greater than in the standard minimum wage markets.

The paper is organized as follows. Section 2 describes the experimental design and procedure. Section 3 reviews behavioral predictions for the experiment. Section 4 presents results. Finally, Section 5 concludes and provides a discussion of the findings.

³ This mirrors the finding by Card & Krueger (1994) of fast food workers in New Jersey.

2 Experimental Design & Procedure

This experiment is a variation of the gift exchange game from Brandts & Charness (2004) using payoffs from Owens & Kagel (2010). Payoffs in this gift exchange game are both symmetric and linear. This simplifies the payoffs for both managers and workers and holds the marginal benefit and marginal costs of both wage and effort constant. Most critically, these payoffs provide a transparent analysis for understanding the fairness preferences of both roles. The design of the experiment is discussed first in detail, followed by the treatments. Finally, procedures are described.

2.1 Design

In order to test the impact of a living wage law environment, the experiment is designed to capture the potential impacts of the policy in a gift exchange game. Like standard gift exchange games, subjects are divided into managers and workers. Managers and workers engage in a market phase to endogenously match and determine wages. Each period of the game begins in the market phase followed by an effort phase. Each session is divided into three stages with each stage consisting of 10 periods. Therefore, each session lasts 30 periods.

In the market phase, managers offer employment contracts that last for one period at a given wage. Wages are restricted to integers on the interval $[0, 100]$. Workers can accept any of these contract offers. All contracts are viewed by all workers and all managers. Managers are permitted to make as many wage offers as desired in the market stage, but cannot cancel current offers. In each market there are 10 managers and 12 workers. As a manager can only hire up to one employee, this ensures that two workers will be unemployed each period. Therefore, exogenous unemployment is 16.67%.

As contracts are made, all participants observe the number of managers and workers still participating in the market. The market phase lasts for 90 seconds or until all possible contracts have been completed. If a manager has not formed a contract at the conclusion of 90 seconds, a contract is randomly formed with an unhired worker.

After the market phase, managers and workers that have formed a labor contract enter the effort phase. In the effort phase, hired workers select the effort for that given period. Like wages, effort choices are integers on the interval $[0, 100]$. During the effort phase, managers answer questions about predicted worker performance.⁴ The two unhired workers wait for the effort phase to end without making any decisions.

At the conclusion of the effort phase, all managers and workers receive payoffs. The worker's payoff, π_W ,

⁴Specifically, managers choose a predicted effort value and rank how confident they feel about their decision.

for a given period is:

$$\pi_W = \begin{cases} 100 - e + 5w & \text{if worker accepted a labor contract} \\ 100 & \text{if unemployed} \end{cases}$$

The manager's payoff, π_M , for a given period is:

$$\pi_M = 100 - w + 5e$$

The manager and worker are given feedback on the contract (wage and effort) as well as payoffs for both roles before proceeding to the next period.

Unlike bilateral gift exchange games, the inclusion of the market stage allows for both managers and workers to have some knowledge of the prevailing wage in the labor market. As some managers are required to pay a higher minimum wage (the living wage), common knowledge of all wage offers is an important element for understanding direct and indirect effects of the wage policy. Since the experiment uses payoffs from Brandts & Charness (2004) and Owens & Kagel (2010) results can be directly compared to these previous minimum wage studies.

2.2 Treatments

The experiment features four treatments. Treatments vary manager wage restrictions and the number of affected managers in the market. To precisely analyze the effect of a wage restriction like a living wage, managers in different treatments will face either (1) no minimum wage, (2) a minimum wage, \underline{w} , or (3) a living wage, \underline{w}^L , where $0 < \underline{w} < \underline{w}^L$.

To control for sessions effects, markets are introduced within the experiment through the three stages that each last 10 periods.⁵ Therefore, all treatments begin in the same market, the no minimum wage market, and vary the types of markets in Stages 2 and 3. In the **No Minimum Wage** treatments, subjects remain in a no minimum wage market for all 3 stages where the full range of wages, $[0, 100]$, are possible.⁶ For the **Minimum Wage 50** treatment, all managers begin in the no minimum wage market in Stage 1 and then are in the minimum wage 50 market for Stages 2 and 3, where wage offers are limited to the range

⁵ Additionally, this mimics the natural changes to minimum wages in labor markets when changes to existing minimum wages are made.

⁶ Alternatively, this can be thought of as a minimum wage of zero.

Table 1: Treatment Summary Table

	No MW Treatment	MW 50 Treatment	MW 75 Treatment	LW Treatment
Stage 1 Market	No MW	No MW	No MW	No MW
Stage 2 Market	No MW	MW 50	MW 50	MW 50
Stage 3 Market	No MW	MW 50	MW 75	MW 50 & LW 75

Table 2: Market Summary Table

	No MW Market	MW 50 Market	MW 75 Market	LW Market
Minimum wage	$\underline{w} = 0$	$\underline{w} = 50$	$\underline{w} = 75$	$\underline{w} = 50$
Living wage				$\underline{w}^L = 75$
Minimum wage managers	$m = 10$	$m = 10$	$m = 10$	$m = 6$
Living wage managers				$m^L = 4$

[50, 100]. In the **Minimum Wage 75** treatments, managers are in the no minimum wage market in Stage 1, the minimum wage 50 market for Stage 2, and the minimum wage 75 market for Stage 3, where wage offers are restricted to [75, 100]. Finally, in the **Living Wage** treatment, managers start in the no minimum wage in Stage 1, the minimum wage 50 market in Stage 2, and the living wage market in Stage 3. The living wage market is a hybrid of the minimum wage 50 and minimum wage 75 markets. In the living wage market, four managers must pay the higher minimum wage (the living wage), [75, 100], while the other six managers must continue to pay the lower minimum wage, 50, that was required in Stage 2. Manager types in the living wage market remain unchanged for the entirety of Stage 3. Table 1 summarizes the sequence of the four treatments. Table 2 describes the details of each market type.

As managers proceed through a variety of markets depending on the treatment, analysis focuses on the manager type in the given market circumstances. For simplicity, *NoMW* refer to managers in the no minimum wage market, *MW50* refers to managers in the minimum wage 50 market, *MW75* refers to managers in the minimum wage 75 market, *MW50: LW* refers to managers in the living wage market with a wage floor of 50, and *LW75* refers to managers in the living wage market with a wage floor of 75.

2.3 Procedure

All experimental sessions were conducted in the XS/FS computer lab of Florida State University using the experimental software z-Tree (Fischbacher, 2007) in 2014 (September and October) and 2015 (January, February, May, and June). Subjects were recruited using ORSEE (Greiner 2004). Each session lasted

between 60 and 75 minutes. Subjects were guaranteed \$7 for arriving on time and average earnings were \$17.86 including this show-up fee. A total of 528 subjects were recruited for the 24 sessions.

Instructions were read aloud and presented on the computer terminal for subjects to read.⁷ After instructions are read, all subjects were asked to complete a short comprehension quiz about the payoffs used in the experiment. As the basic rules for all treatments are the same, all subjects participated in the same comprehension quiz.

Roles as managers and workers were randomly assigned at the start of the experiment. Throughout the experiment, subjects are referred to as “managers” and “workers”. Any changes to wage offers allowed by managers were referred to as changes to “manager wage restrictions”. Loaded terms like “minimum wage” and “living wage” are not used during the experiment. Information about the minimum wages, \underline{w} and \underline{w}^L , were highlighted for all subjects at the beginning of each stage in a separate screen immediately before the initial market phase. Additionally, these manager wage restrictions are provided during the market phase to remind subjects which managers faced which wage restriction. IDs are used to differentiate managers who may have different wage restrictions. New IDs are provided at the beginning of each stage to help mitigate reputation effects.⁸

3 Behavioral Predictions

If all subjects are completely rational and self-interested, the unique sub-game perfect-equilibrium of this game is for the workers to exert the minimum effort, $e = 0$, and for managers to offer the lowest possible wage, $w = 0$, $w = \underline{w}$, or $w = \underline{w}^L$, depending on the manager’s wage restrictions. Workers minimize costly effort and managers anticipate this behavior by only offering the lowest possible wage. However, as past experimental evidence has shown, the self-interested prediction fails to explain most behavior in gift exchange games.⁹ Therefore, other predictions are based on models focused on either “fair” outcomes, reciprocal strategy spaces, or a combination of the two.

Outcome-based social preference models, Bolton & Ockenfels (2000) and Fehr & Schmidt (1999), predict that players will avoid unequal outcomes.¹⁰ In other words, each player seeks to ensure that the outcome is equal, or “fair,” for both players. Given the experimental design, heterogeneous wage restrictions do not change the nature of the outcomes for any contract. If these social preferences dominate, there will be no

⁷See the appendix for a full copy of the instructions.

⁸IDs are not changed within the stages in order to prevent confusion of wage restrictions for either managers or workers.

⁹ See, e.g., Fehr et al. (1993), Fehr et al. (1998), Fehr & Gächter (2000).

¹⁰For a thorough overview of other regarding preferences models, see Cooper & Kagel (2009).

difference in effort for an employee hired at \underline{w}^L by a living wage manager who is obligated to offer this wage as a minimum and an employee hired at \underline{w}^L by a non-living wage manager who is obligated to pay a wage lower than \underline{w}^L (\underline{w}). Therefore, a vector of effort choices should exist for all possible wages regardless of manager type.

Beginning with Rabin (1993), other models have analyzed the intentions of the first mover to predict how second movers respond. This and other reciprocity models predict a treatment effect between workers hired by different types of managers. One approach (Charness & Rabin 2002 and Dufwenberg & Kirchsteiger 2004) models players reciprocating based on the kindness (or unkindness) of other players. The ability for the first-mover to be kind depends on the possible actions available in his strategy space. Each effort choice by the worker under this approach is a response to *the strategy space available to each manager*. When some managers are exogenously forced to pay a higher minimum wage (for example, the living wage) the strategy space is restricted. Therefore, holding wage fixed at \underline{w}^L , worker effort is predicted to be lower when working by a living wage managers as compared to a non-living wage managers.

It is unclear from these models how this will relate when offers exceed a given minimum wage by the same amount, v . Will worker effort remain constant for $\underline{w} + v$ and $\underline{w}^L + v$? The model presented by Falk & Fischbacher (2006) suggests that workers will take into account both intentions and equal outcomes. Therefore, subjects will address $\underline{w} + v$ and $\underline{w}^L + v$ differently (unlike the other reciprocity models) because $(\underline{w} + v) < (\underline{w}^L + v)$. While both wage offers may be equally kind (or unkind), the worker will respond with higher effort to the $\underline{w}^L + v$ wage contract because it allows for a more equal outcome.

As contracts are determined endogenously through a market, it is unclear how employees will view offers. Given that the presence of a minimum wage reduces not only the effort response in minimum wage contracts but in all other wage contracts (Brandts & Charness 2004), a living wage could additionally drive down gift exchange behavior. Because living wage managers must offer at least the living wage, \underline{w}^L , workers may view this minimum offer as equally unkind as other offers at the lower minimum wage, \underline{w} . However, because there exist other wage offers below the living wage, \underline{w}^L , in the market, workers may view the living wage offer as a “kind” offer. Essentially, workers may choose to respond to *the strategy space of the entire labor market* rather than a single manager. Since the strategy space of the first-mover determines the response of the second-mover in reciprocity models, different market environments may allow for a living wage \underline{w}^L to be viewed as above the lower bound of the strategy space for all managers.

4 Results

4.1 Descriptive Statistics

Table 3 reports wage and effort information by the manager type in Stage 3. Recall that the no minimum wage (NoMW), minimum wage of 50 (MW50), and minimum wage of 75 (MW75) managers all refer to markets where the wage restriction applies to all managers. This contrasts with the minimum wage of 50 managers (MW50: LW) and living wage of 75 managers (LW75) who interact with each other in the living wage market. Table 3 contains results from 5 sessions of each treatment (NoMW, MW50, MW75, and LW). Since the LW treatment exogenously splits the number of managers, there are fewer observations for each of these types.

Recall that during Stage 1, all managers and workers have received the exact same set of instructions and interacted in the same experiment. However, treatments already differ significantly. Managers who will eventually be in the MW50 treatment in Stage 3 are offering wages and receiving effort significantly lower than all other treatments.¹¹ Managers who will be in the NoMW treatment in Stage 3 are offering wages and receiving efforts significantly above all other treatments.¹² As a result, various controls are used to capture these initial differences in the treatments during regression analysis. These controls are described in detail in the Effort Response section.

Additionally, Table 3 shows the differences in managers offering wages at both the upper and lower boundaries in Stage 3. Despite similar wage floors existing for some managers (MW50 compared to MW50: LW and MW75 compared to LW75), a consistent pattern of minimum and maximum wage offers does not exist. Due to spillover effects occurring from the treatments, wage offers are not distributed in the same way for manager types with identical wage restrictions. This is discussed in further detail in the Wage Spillover subsection below.

Figures 1 and 2 illustrate how both wages and efforts change over time for each Stage 3 manager type. Here differences in Stage 1 behavior can be seen clearly. Managers in the MW50 treatment begin the experiment in Period 1 with low wages and effort and the low choices continue through the remainder of Stage 1. Using a two-sided Wilcoxon rank sum test, MW50 wages in the first period are significantly less than

¹¹ Using a two-sided Wilcoxon rank sum test, both average wages and efforts for MW50 managers are significantly less than all other manager types in Stage 1 ($p < 0.01$).

¹² Comparisons are made using a two-sided Wilcoxon rank sum test. NoMW managers have significantly higher wages and efforts than all other manager types in Stage 1 ($p < 0.01$).

Table 3: Descriptive Statistics by Manager Type in Stage 3

		NoMW	MW50	MW75	MW50: LW	LW75
Stage 1	Average Wage	63.58	39.98	57.06	50.66	50.83
	Average Effort	37.22	18.72	32.35	25.42	26.83
	% Min Wage*	2.17	1.00	0.67	2.22	0.42
	% Max Wage	24.67	15.33	14.00	12.22	8.75
Stage 2	Average Wage	77.65	69.44	73.62	74.87	72.58
	Average Effort	47.31	27.48	39.03	39.58	33.26
	% Min Wage*	1.33	35.50	20.00	17.50	22.50
	% Max Wage	41.00	25.67	21.83	26.67	19.58
Stage 3	Average Wage	80.49	72.77	87.32	79.30	85.20
	Average Effort	51.62	28.68	45.20	37.99	37.49
	% Min Wage*	4.00	30.83	24.83	21.39	31.67
	% Max Wage	45.50	30.17	30.67	35.28	19.17
<i>N</i> per stage		600	600	600	360	240

*The minimum wage refers to the minimum for that manager type in that stage.

NoMW ($p < 0.01$), MW75 ($p < 0.01$), MW50: LW ($p = 0.07$), and LW75 ($p = 0.03$) managers. Similarly, efforts provided to MW50 managers are significantly less than NoMW ($p < 0.01$), MW75 ($p < 0.01$), MW50: LW ($p = 0.04$), and LW75 ($p = 0.08$) managers in the first period.

Figures 1 and 2 illustrate how both wages and efforts change over time. The jumps observed in both figures represent treatment changes rather than “restart effects”. Both Figures 1 and 2 show the lack of a significant time trends within any individual stage.

Figure 3 displays the Wage-Effort Curve by manager type. Average efforts are reported for wages for each manager type in Stage 3.¹³ The gray bars highlight the points where various wage restrictions apply for certain manager types. Observations are only reported for Stage 3. It is clear that worker effort response is highly dependent on the wage of the labor contract. When the wages are equal to 50, NoMW managers receive greater effort than both MW50 and LW50 managers. MW50 and LW50 managers receive effectively the same effort response when the wage is equal to 50. At the focal wage around the higher wage restriction, 75, NoMW managers once again receive higher effort than all other manager types. At the maximum, NoMW managers receive nearly the same average effort as MW75 managers. These effects are examined in greater detail in the Effort Response subsection below.

4.2 Effort Response

The key question for minimum wage policy is how the workers respond to higher, *mandated* wages. The basic reciprocity models predict workers will respond to one minimum wage offer with the same effort regardless of the actual wage offered. Essentially, all minimum offers are equally unkind and deserve an

¹³Wages are grouped into blocks of five as: 0-4, 5-9, 10-14, and so on with wages of 100 in their own group.

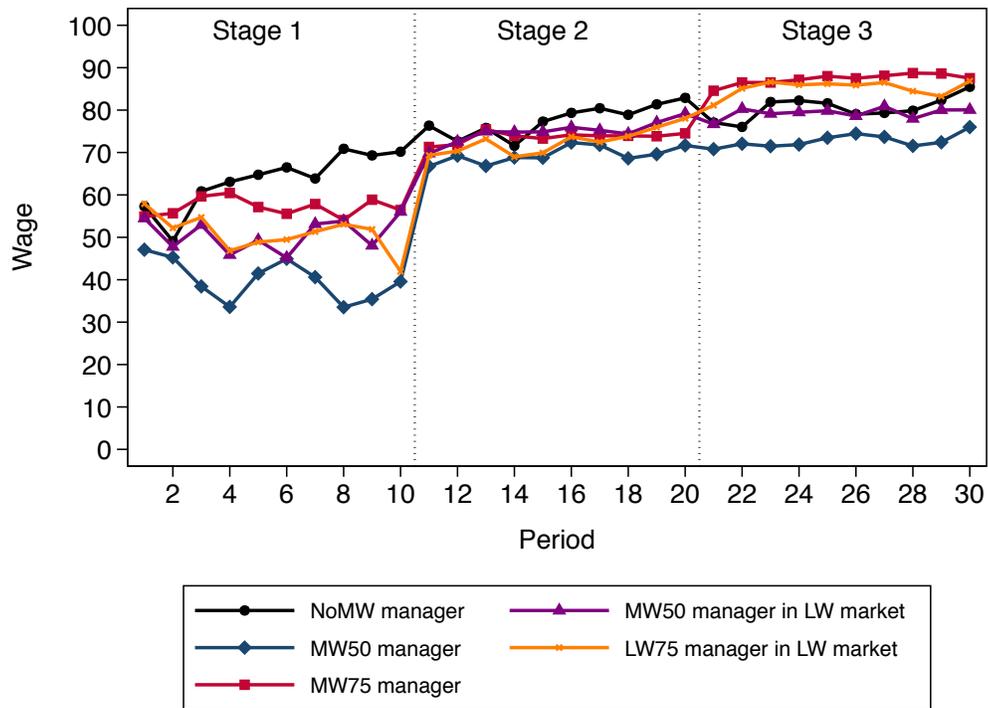


Figure 1: Average Wages over Time by Manager Type

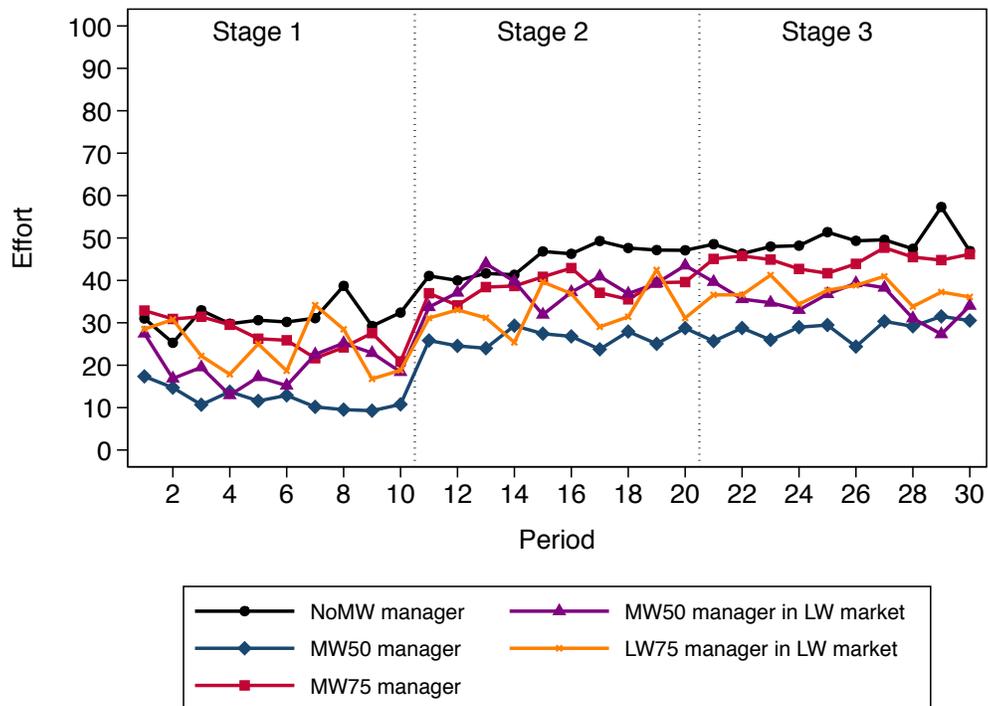
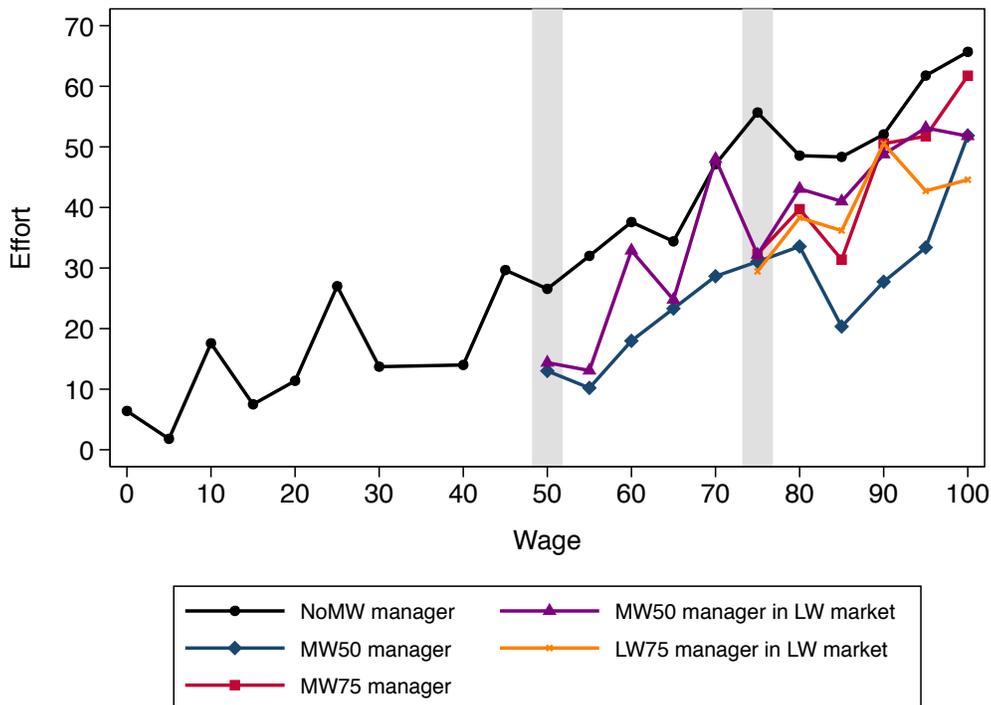


Figure 2: Average Effort over Time by Manager Type

Figure 3: Wage-Effort Curve by Manager Type



equally unkind response. In the experiment there are three possible minimum wage offers at 0, 50, and 75. Accordingly, NoMW managers must offer a wage of at least 0, MW50 and MW50: LW managers must offer a wage of at least 50, and MW75 and LW75 managers must offer a wage of at least 75.

Because treatments varied significantly in Stage 1, several groups of control variables are included in regression models to capture these initial differences for each manager type. Four variables are added within as “Period 1 controls”: wage of the worker in period 1,¹⁴ a dummy variable if the worker was unemployed in period 1, the average wage in period 1 (by session), and the average effort in period 1 (by session). These controls capture the initial differences in each session that begin in the first period of play. Similarly, average wage in Stage 1 (by session) and average effort in Stage 1 (by session) are included as “Stage 1 controls”. Six variables are used to capture variation in worker behavior in Stage 1 as “Worker Type controls”. The “Zero Effort Worker” variable contains the percentage of contracts in which the worker provided an effort choice of zero in the first stage regardless of wage. The “Fair Worker” variable contains the percentage of contracts in Stage 1 where the worker provided an effort choice equal to the wage. The “No Profit Worker” variable contains the percentage of contracts in Stage 1 where the worker provided an effort choice that resulted in a

¹⁴Note that the Period 1 wage is session average if the worker was unemployed. As an alternative, the value was replaced with zero. Results are the same for either method. As unemployed workers observe all the wage offers, the session average is used.

Table 4: Descriptive Statistics for Control Variables by Manager Type

		NoMW	MW50	MW75	MW50: LW	LW75
Period 1 Controls	Period 1 Wage	57.55	46.93	54.71	55.59	56.07
	Period 1 Unemployed	0.16	0.16	0.16	0.16	0.16
	Period 1 Average Wage	57.28	47.07	54.90	55.87	55.87
	Period 1 Average Effort	32.24	18.16	32.78	27.78	27.78
Stage 1 Controls	Stage 1 Average Wage	63.58	39.98	57.06	50.73	50.73
	Stage 1 Average Effort	31.34	14.48	28.31	21.54	21.54
Worker Type Controls (Percents)	Zero Effort Worker	16.81	35.55	11.41	17.85	18.24
	Fair Worker	22.21	12.09	17.10	18.76	17.55
	No Profit Worker	12.59	11.34	15.65	17.81	17.07
	Profit Worker	38.94	29.43	45.31	35.12	36.65
	Nice Worker	5.262	6.796	6.483	6.296	6.717
	Unemployed	15.78	15.78	15.84	16.12	15.88

loss for the manager ($e < \frac{1}{5}w$), but effort was not equal to zero. The “Profit Worker” variable contains the percentage of contracts in Stage 1 where the worker provided an effort choice that resulted in a profit for the manager ($e > \frac{1}{5}w$). The “Nice Worker” variable contains the percentage of contracts in Stage 1 where the worker provided an effort choice strictly greater than the wage. Finally, the “Unemployed” variable contains the percentage of periods a worker was unemployed in Stage 1 (out of the 10 periods).

Table 4 contains summary statistics for each group of control variables. Both the Period 1 and Stage 1 controls reflect similar results about each manager type reported in Table 3.¹⁵ The Worker Type Controls show the difference in behavior of the MW50 treatment in the first ten periods. Here, the percent of workers with contracts who choose a zero effort (36%) more than doubles all other treatments. Additionally, only 12% of contracts Stage 1 of the MW50 treatment had “fair workers”.

Tobit regressions on effort are used to analyze the worker effort response under the different wage conditions. A tobit model is selected as workers are restricted to selecting an effort choices between 0 and 100. Table 5 reports the regression results by examining manager types where NoMW is the omitted variable and MW50, MW75, MW50: LW, LW75 are dummy variables for the other four manager types. All models include unreported time dummies to control for the variation in time between treatments and analyze Stage 3 results only. Regardless of the specification, the regressions show that all managers with wage restrictions received less effort than the NoMW managers. When all controls are added to the model, no other manager types are significantly different.¹⁶

Result 1: *No Minimum Wage managers receive a higher effort response than all other manager types*

¹⁵Note that the Stage 1 Average Wage and Effort variables are means of session averages. Therefore, values reported in Tables 3 and 4 vary slightly.

¹⁶Coefficients compared using a two-sided t-test.

for the same offered wage.

Result 2: *Managers types with a wage restriction receive equal effort for the same offered wage.*

To test the reciprocity prediction, a *wage above floor* variable is generated to compare the distance above the wage floor. Wage above floor is equal to the wage of the contract less the minimum required wage offer as determined by the manager type. If worker's response is based only on the wage and wage restrictions are irrelevant, then wage above floor should be a redundant variable. Table 6 reports the results for the reciprocity analysis.¹⁷ Both MW50: LW and LW75 are dummy variables for those manager types. In Model 2, wage squared is included to test if wage above floor captures any non-linearity in the model. It does not, and is dropped from the more detailed models. Even as various controls are added to the model, wage above floor remains significant in every model.

Result 3: *Effort is increasing with the offers above the wage floor of a manager. This supports the reciprocity prediction that responses are dependent on both the wage and the restrictions of the manager.*

The two tobit regressions report the seemingly contradictory results for managers with the wage floor of 50. For MW50: LW managers to receive a higher effort than MW50 managers, the MW50: LW variable should be significant in Models 3-6 in Table 6. However, this is not true because part of the living wage treatment changes the distribution of wages offered by MW50: LW managers. In Stage 3, 31% of MW50 managers offered wage equals 50, whereas only 21% of MW50: LW managers offered the minimum. Therefore, the difference in effort response between the two managers is driven by the greater frequency of higher wages from MW50: LW managers and reflects how a wage spillover interacts with effort response.

4.3 Wage Spillover

There are two types of wage spillovers: minimum wage spillovers or living wage spillovers. The first is caused by increasing the minimum wage. The second is caused by the addition of the living wage (a second and higher minimum wage) within a market. Therefore, the minimum wage spillover occurs on two occasions in the experiment: when adding the minimum wage of 50 and when adding the minimum wage of 75. Figure 4 compares the distributions of NoMW managers in Stage 1 and MW50 managers in Stage 2. The minimum wage spillover is evident since 53.3% of all wage offers from NoMW managers are at or below 50, versus only 25.0% of wage offers from MW50 managers. Wage offers under 70 must be included to find the equivalent percent of wage offers. The effect persists at the extreme as well. Only 16.2% of NoMW managers offer the maximum wage in Stage 1 while 23.8% of MW50 managers offer a 100 wage.

Figure 5 compares wage distributions for MW50 managers in Stage 2 against MW75 managers in Stage 3. Like the change observed when the minimum wage was raised from 0 to 50, a significant minimum wage

¹⁷A model with a squared wage was considered to test for any non-linearity that could be captured by the wage above floor variable. The coefficient for squared wage was insignificant and not included in the table.

Table 5: Tobit Regressions on Effort by Manager Type

	(1)	(2)	(3)	(4)	(5)
Wage	1.22*** (0.11)	1.16*** (0.12)	1.16*** (0.12)	1.08*** (0.10)	1.12*** (0.10)
MW50		-25.04*** (6.38)	-21.23*** (7.22)	-15.76*** (5.87)	-16.45*** (6.23)
MW75		-15.70*** (5.28)	-16.13*** (5.99)	-14.22*** (4.19)	-15.77*** (4.54)
MW50: LW		-17.02*** (6.06)	-15.49** (6.87)	-10.63** (5.24)	-11.99** (5.99)
LW75		-25.50*** (6.28)	-24.15*** (6.76)	-18.83*** (7.14)	-20.38*** (7.55)
P1 Controls	Period 1 Wage		0.14 (0.17)	0.14 (0.17)	0.19 (0.16)
	Period 1 Unemployed		4.01 (7.08)	4.07 (7.08)	3.14 (7.22)
	Period 1 Average Wage		-0.29 (0.35)	-0.18 (0.33)	-0.28 (0.36)
	Period 1 Average Effort		0.38 (0.44)	-0.04 (0.39)	0.04 (0.44)
S1 Controls	Stage 1 Average Wage			-0.52*** (0.20)	-0.49** (0.23)
	Stage 1 Average Effort			1.35*** (0.20)	1.37*** (0.27)
WT Controls	Zero Effort Worker				0.65* (0.38)
	Fair Worker				0.48 (0.42)
	No Profit Worker				0.84* (0.48)
	Profit Worker				0.57 (0.38)
	Unemployed				0.09 (0.19)
	Nice Worker				0.78** (0.40)
Constant	-59.13*** (9.31)	-39.12*** (11.03)	-43.43*** (15.25)	-39.98*** (11.20)	-103.94*** (40.12)
<i>N</i>	2400	2400	2400	2400	2400
Log-likelihood	-8917.1	-8880.2	-8874.1	-8855.4	-8828.7

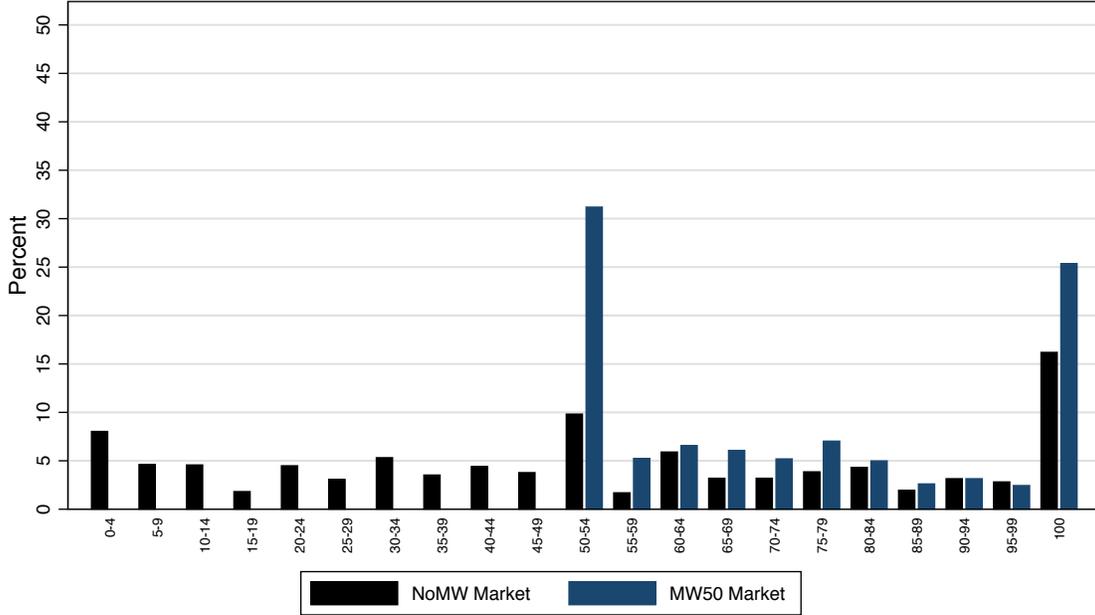
Notes: All regressions include unreported period dummies. Three (***) , two (**), and one (*) stars indicate statistical significance at the 1%, 5%, and 10% levels respectively. Standard errors, reported in parentheses, have been corrected for clustering at the session level. Results are for Stage 3 only.

Table 6: Tobit Regressions on Effort with Reciprocity

	(1)	(2)	(3)	(4)	(5)
Wage	1.22*** (0.11)	0.98*** (0.15)	0.96*** (0.15)	0.90*** (0.11)	0.91*** (0.12)
Wage above floor		0.25*** (0.07)	0.24*** (0.09)	0.20*** (0.06)	0.22*** (0.07)
MW50: LW		-1.40 (6.18)	-0.75 (6.36)	1.40 (4.18)	0.85 (4.70)
LW75		-4.09 (7.14)	-3.63 (6.72)	-1.87 (6.14)	-2.09 (6.66)
P1 Controls	Period 1 Wage		0.14 (0.17)	0.14 (0.17)	0.18 (0.16)
	Period 1 Unemployed		3.88 (7.05)	4.01 (7.07)	3.07 (7.19)
	Period 1 Average Wage		-0.41 (0.33)	-0.26 (0.31)	-0.35 (0.34)
	Period 1 Average Effort		0.67* (0.39)	0.10 (0.36)	0.15 (0.41)
S1 Controls	Stage 1 Average Wage			-0.50** (0.23)	-0.48* (0.25)
	Stage 1 Average Effort			1.40*** (0.23)	1.41*** (0.28)
WT Controls	Zero Effort Worker				0.65* (0.38)
	Fair Worker				0.49 (0.42)
	No Profit Worker				0.86* (0.47)
	Profit Worker				0.58 (0.38)
	Unemployed				0.09 (0.19)
	Nice Worker				0.79** (0.39)
Constant	-59.13*** (9.31)	-48.08*** (9.98)	-50.64*** (13.02)	-44.17*** (9.31)	-108.37*** (39.24)
<i>N</i>	2400	2400	2400	2400	2400
Log-likelihood	-8917.1	-8893.3	-8878.9	-8857.0	-8830.2

Notes: All regressions include unreported period dummies. Three (***) , two (**), and one (*) stars indicate statistical significance at the 1%, 5%, and 10% levels respectively. Standard errors, reported in parentheses, have been corrected for clustering at the session level. Results are for Stage 3 only.

Figure 4: Wage Distributions of No Minimum Wage and Minimum Wage 50 Managers



spillover occurs when the minimum is raised from 50 to 75. For MW50 managers, 61.0% of all wages are at or below 75, while for MW75 managers 24.8% of all wages are at 75. The minimum wage spillover is so significant that wage offers less than or equal to 99 from MW75 managers only account for 69.3% of all wage offers. The number of maximum offers increases from 23.8% of MW50 offers to 30.6% of MW75 offers.

Result 4: *A minimum wage spillover occurs in minimum wage markets both when it is raised from 0 to 50 and it is raised from 50 to 75.*

Figure 6 displays wage distributions for MW50 managers in Stage 2 with wage distributions for MW50: LW and LW75 managers in Stage 3. In the living wage market overall, only 12.8% of all wages are at the market minimum of 50 as compared to 25.0% of wages from MW50 managers. Examining the managers who can offer a wage at 50, only 21.4% of MW50: LW managers offer a wage exactly at the floor. At the other wage boundary, 23.8% of MW50 managers offer wages equal to 100 (the maximum), versus 35.3% for MW50: LW managers. Despite the same possible range of wage offers (50-100), MW50: LW managers consistently offer higher wages than MW50 managers because of the presence of the living wage at 75. Thus, the living wage spillover pushes wages up for managers who are not directly affected by the change. Using a two-sample Kolmogorov-Smirnov test, the wage distributions for MW50 and MW50: LW managers are found to be significantly different ($p = 0.00$).

Result 5: *A living wage spillover occurs in the living wage market increasing wages for the Minimum*

Figure 5: Wage Distributions of Minimum Wage 50 and Minimum Wage 75 Managers

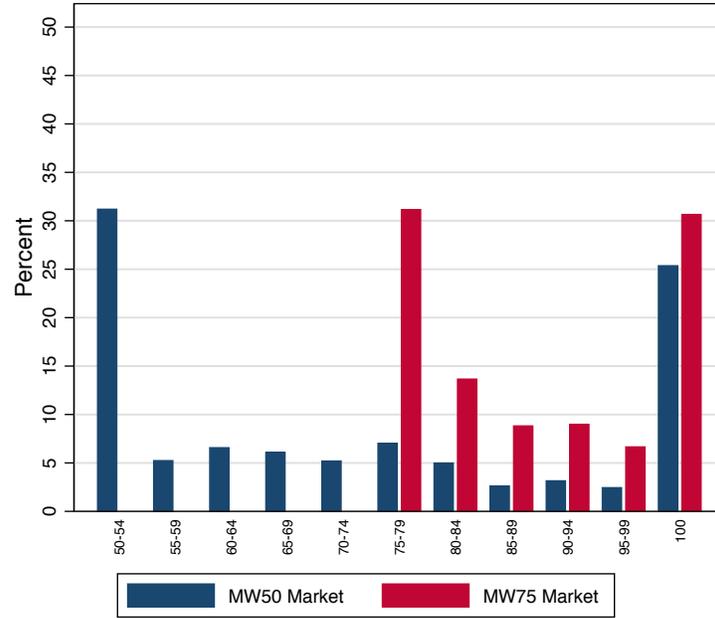


Figure 6: Wage Distributions of Minimum Wage 50, Minimum Wage 50: Living Wage Market, and Living Wage Managers

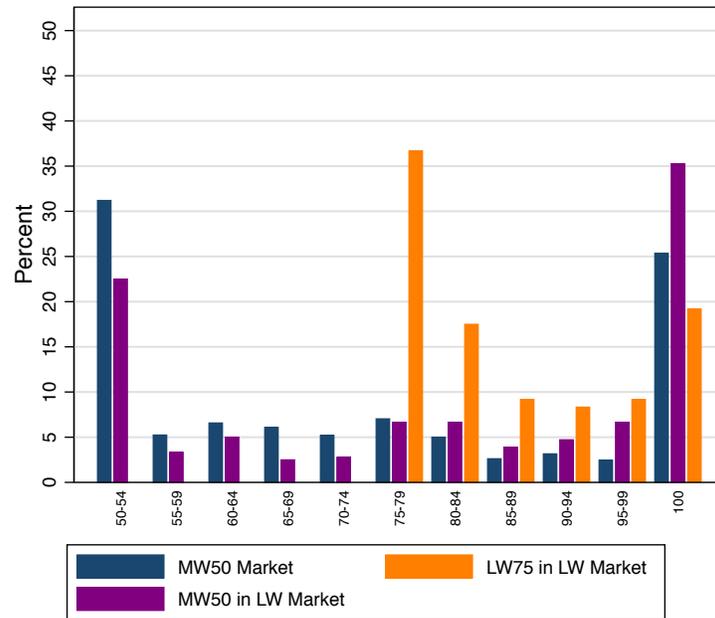
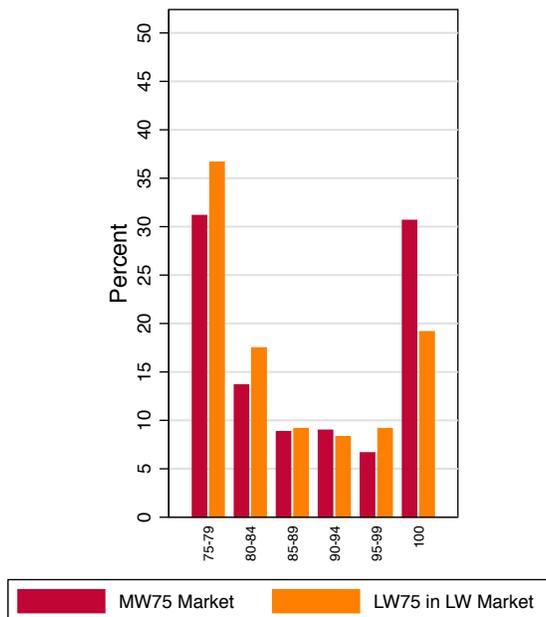


Figure 7: Wage Distributions of Minimum Wage 75 and Living Wage Managers



Wage 50: Living Wage Market managers with the unchanged wage floor at 50.

While the minimum wage spillover significantly increased wages for MW50 and MW75 managers, the increase is minimal for LW managers. Figure 7 shows the wage distributions for both MW75 and LW75 managers with wages bound between 75 and 100. Where the minimum wage spillover pushed MW75 managers to increased offers at the maximum wage, the same effect does not exist for LW75 managers who remained closer to the wage floor at 75. In fact, 51.3% of wages from LW75 managers were at or below 80, which only accounted for 41.7% of MW75 manager wages. Comparing the distributions using a two-sample Kolmogorov-Smirnov test for equality of distribution functions finds the two wage distributions significantly different ($p = 0.01$).

Result 6: *No minimum wage spillover exists for Living Wage Managers (75) as compared against the spillover for Minimum Wage Managers (75). Therefore, the minimum wage spillover is about avoiding the market minimum rather than the individual minimum.*

5 Discussion

Local governments in the United States have increasingly used living wage laws as a public policy to raise wages for low-income workers. While proponents claim that increased wages will also increase worker effort, behavioral models predict different outcomes. By examining labor markets where effort can be identified in a laboratory, this research considers the behavioral response to living wage legislation by both labor and

management. Results suggest that workers primarily respond to the wage offered, but that offers above a wage restriction lead to a higher effort response. Therefore, models that incorporate both the fairness outcome and the strategy space of the manager best predict worker behavior in this experiment. Overall, wage restrictions compared to the no minimum wage treatments revealed that most nuances of the restriction are ignored by most workers. Given that all U.S. labor markets operate with some sort of a wage floor, the increased effort response for the living wage suggests that wage is the key determinant of an effort decision. In practical terms, the higher “effort” of living wage workers means less turnover and lower training costs for these living wage businesses as marginal effort does not typically vary for these positions.

Additionally, the experiment finds strong evidence of wage spillover. First, there is evidence of a minimum wage spillover where the minimum wage pushes the wages slightly above the minimum rather than exactly equal to the minimum. Second, there is evidence of a living wage spillover where unaffected minimum wage managers in the living wage market (MW50: LW) raise their wages to respond to the changing market.

Further studies may consider examining behavior when contracts are exogenously bilateral instead of taking place within a market setting. Knowledge of the other market wages (and restrictions) can further examine the sensitivities of behavior around wage restrictions. Additionally, this experiment examined only one possible split of minimum and living wage managers in a market. Results of both the spillover and effort response may change as the prevalence of living wage managers changes in the market.

As income inequality concerns rise, public policy makers are considering both increases to current minimum wages and the creation of living wage laws. Proponents suggest living wage legislation as one way to decrease poverty without impacting the broader labor market. This experiment suggests that worker effort should increase as a result of living wage legislation. However, since living wage spillovers also have the effect of the raising wages of non-mandated employers, the law is likely to raise wages in the entire labor market. Therefore, many narrowly defined living wage laws have influences beyond those directly mentioned in the statute.

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Appendix: Experimental Instructions

Instructions were read prior to the start of the experiment. Instructions for Stage 1 were identical for all treatments. Instructions vary by treatment before Stages 2 and 3.

Initial Instructions

Thank you for participating in today's experiment.

I will read through a script to explain to you the nature of today's experiment as well as how to navigate the computer interface with which you will be working.

General Instructions

This is an experiment in decision-making. In addition to a \$7 payment that you receive for your participation, you will be paid an amount of money that you accumulate from a series of tasks that will be described to you in a moment. The exact amount you receive will be determined during the experiment and will depend on your decisions and the decisions of others. You will be paid privately, by check, at the conclusion of the experiment. All monetary amounts you will see in this experiment will be denominated in points. All points that you earn during the experiment will be converted into dollars at the end of the experiment. The exchange rate is:

$$800 \text{ Points} = 1 \text{ dollar}$$

The experiment consists of three stages, and each stage influences your final payment. You will receive detailed instructions for each stage of the experiment before beginning that stage.

If you have any questions during the experiment, please raise your hand and wait for an experimenter to come to you. Please do not talk, exclaim, or try to communicate with other participants during the experiment. If you have not already done so, please turn off your cell phone. Participants intentionally violating the rules may be asked to leave the experiment and will not receive any payment.

Instructions for the Task

The experiment will consist of three Stages, Stage 1, Stage 2, and Stage 3. Stage 1 lasts for 10 periods. You will first receive instructions for Stage 1. You will then receive instructions for Stage 2 and Stage 3 prior to each Stage.

Prior to the experiment, you were randomly divided into 2 groups: managers and workers. There are 10 managers and 12 workers in the experiment. Each of the 10 managers has an identification number

(manager1, manager2, ..., manager10). Each of the 12 workers has an identification number (worker1, worker2, ..., worker12). Each player keeps his role for the entire duration of the experiment. You will be informed of your role and identification number before the start of the task. At the beginning of each stage, you will be given a new identification number. For example, in Stage 1, you may be Worker 1. In Stage 2, you may be Worker 6. Notice, your role will not change - only your identification number.

In each period of the experiment every manager can form a labor contract with a worker. The worker earns profits when his wage returns exceeds his choice of effort. The manager earns profits when the wage she pays is less than the return on effort from her worker.

In each period, procedures are as follows:

1. Each period commences with a market phase that lasts for 90 seconds. During this phase managers can submit wage offers which can be accepted by workers. When submitting an offer a manager has to specify the wage she offers to pay.

A manager can submit as many offers as desired in each period. Once submitted, offers can be accepted at any time. Each worker can conclude one wage contract in each period. Each manager can conclude one wage contract per period. As there are 10 managers and 12 workers in total, at least two workers will not have a wage contract in each period.

2. After the market phase, every worker who has a wage contract has to determine the effort level he provides to his manager in the effort phase.

Once every worker has chosen his effort level, earnings for the given period are determined. Subsequently, the next period starts. Each period adds to your earnings in the stage. Earnings of all 3 stages will be summed up at the end of the experiment, converted into dollars and paid out in check with your participation payment.

The Market Phase

Each period begins with a market phase. During the market phase the managers can offer wage contracts to the workers. Each manager can submit as many wage offers as she wishes. When a wage contract is accepted the worker is considered “hired” for that period. Workers can only be hired by one manager. Each wage contract lasts for one period.

In the top left corner of the market phase screen you will see the current period of the experiment. In the top right corner of the screen you will see the time remaining in this market phase, displayed in seconds. The market phase in each period lasts 90 seconds. When this time is up the market phase is over, and no further offers can be submitted or accepted in this period. In order to submit offers, managers have to enter the desired wage on the right hand side of the screen.

Wage offers are communicated to all participants in the market. All workers see all wage offers on their

screens. Any worker can accept this wage offer. All managers see all wage offers on their screens as well.

The wage must be submitted into the field “Wage”. The wage offer must be an integer between 0 and 100:

$$0 \leq \text{Wage} \leq 100$$

After a manager has entered a wage offer, click the “Submit” button to submit it. After managers click “Submit” the offer will be displayed to all workers and managers. Managers can make as many offers as desired. Once an offer has been submitted it cannot be deleted.

Wage offers are on the left side of the market phase screen under the heading “Wage Offers”. All wage offers in the current market phase will be displayed here. All managers and workers can see which manager submitted the offer and which wage she offered.

Managers can submit as many wage offers as desired in a given period. Each offer can be accepted at any time during the market phase. As soon as an offer is accepted, the manager is informed which worker accepted the offer and what offer has been accepted. In the bottom left corner of the manager’s screen the identification number of the worker who accepted the offer will be displayed with the wage. Additionally, once an offer is accepted all other offers from the manager are cancelled.

After concluding a contract, managers will continue to see the screen of the market phase until it is over.

During the market phase, workers can accept wage offers from managers. Workers cannot make offers or respond to a specific offer. To accept an offer, workers click on the wage offer and then click “Accept.” Each worker can accept at most one wage contract in a given period.

In the bottom right corner of the screen, all subjects are informed of the participants in the market. In the table with the title “Managers that have left market” you can see 10 fields. Once a manager has accepted an offer, an “X” will appear in the field below her identification number. In the table with the title “The following workers have already accepted a wage contract” you can see 12 fields. Once a worker has accepted an offer, an “X” will appear in the field below his identification number.

The market phase is over as soon as one of the following occurs:

- 90 seconds have elapsed
- All managers have concluded wage agreements

If a manager has not formed a wage contract at the end of the market phase, a contract will be randomly formed with an unhired worker at the lowest possible wage.

The Effort Phase

After the market phase, all workers who have a wage contract determine which effort they will supply to their manager. Effort has to be an integer between 0 and 100:

$$0 \leq \text{Worker Effort} \leq 100$$

While the workers with wage contracts determine effort, managers answer questions about predicted worker performance. These answers do not affect payoff. Any worker without a contract waits for the experiment to proceed to the next phase.

Manager Wage Restrictions

Managers will have restrictions on the possible wages that can be offered. Prior to the start of Stage One all subjects are informed of the manager wage restrictions on the “Manager Wage Restrictions” screen. The restrictions will be given based on the manager identification number in a box on this screen. This screen will be shown at the start of every stage. The first row of the box gives the manager ID number. The second row of the box defines the wage restriction using brackets. The first number is the lowest possible wage that can be offered. The second number is the highest possible wage that can be offered. Wage offers between these two numbers are possible as well.

Additionally, during the market phase, a box marked “Manager Wage Restrictions” will display the range of wages that a manager may offer to a worker. It will be located on the right side of the market phase screen.

Manager Earnings

Manager earnings depend on the wage supplied to the worker and the effort chosen by the worker. If the manager forms a wage contract, earnings depend on the wage paid and the effort of the hired worker. Earnings equal 5 times the worker effort choice minus the wage plus 100 points. Earnings can be expressed as:

$$\text{Total Earnings} = 5 * (\text{Effort}) - \text{Wage} + 100$$

Worker Earnings

Worker earnings depend on the wage supplied to the worker and the effort chosen by the worker. If the worker is hired, earnings equal 5 times the wage minus the effort choice plus 100 points. Earnings can be expressed as:

$$\text{Total Earnings} = 5 * (\text{Wage}) - \text{Effort} + 100$$

If a worker is not hired during a market phase the worker earns an income of 100 points in this period.

The earnings of all managers and workers are determined in the same way. Each manager can therefore calculate the earnings of her worker and each worker can calculate the earnings of his manager. In addition, managers and workers are informed of the identification number of his partner in a given period.

Feedback Screen

You will be informed about your earnings and the earnings of your partner on a separate “feedback screen.” On the screen the following information will be displayed:

- Worker ID
- Manager ID
- Wage paid
- Effort choice by worker
- The earnings of the worker in this period
- The earnings of the manager in this period

If you do not have a wage contract in a given period, you will be informed of your earnings for the period.

After the feedback screen has been displayed, the period is finished. Thereafter the market phase of the following period starts. If the next period begins a new stage, stage instructions will be given. Once you have finished reading the feedback screen please click on the “Continue” button.

Comprehension Questions

To make sure that everyone understands the instructions, we will now ask you to answer questions about some hypothetical scenarios. You will receive a sheet with a summary of payments at this time. The next screen contains the questions. After you have answered the questions correctly, please click on the “Continue” button.

Following the comprehension questions, Stage One, which lasts for 10 periods, will start. At the conclusion of Stage One, instructions will be given for Stage Two.

Stage Two and Three Instructions vary based on the treatment.

NoMW Treatment Instructions:

Stage Two Instructions

Stage Two has the same rules as Stage One. Stage Two lasts for 10 periods.

In Stage Two, your role is the same as in Stage One. However, everyone has been given a new ID. This ID is different than your ID in Stage One. The new ID is not based on any decisions in Stage One and was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. All manager wage restrictions are the same as in Stage One.

At the conclusion of Stage Two, instructions will be given for Stage Three.

Stage Three Instructions

Stage Three has the same rules as Stage Two. Stage Three lasts for 10 periods.

In Stage Three, your role is the same as in Stage Two. However, everyone has been given a new ID. This ID is different than your ID in Stage One and Stage Two. The new ID is not based on any decisions in Stage One or Stage Two. This ID was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. All manager wage restrictions are the same as in Stage Two.

MW50 Treatment Instructions:

Stage Two Instructions

Stage Two has the same rules as Stage One. Stage Two lasts for 10 periods.

In Stage Two, your role is the same as in Stage One. However, everyone has been given a new ID. This ID is different than your ID in Stage One. The new ID is not based on any decisions in Stage One and was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. Manager wage restrictions have changed for all managers. Please consider the changes before proceeding to the Market Phase.

At the conclusion of Stage Two, instructions will be given for Stage Three.

Stage Three Instructions

Stage Three has the same rules as Stage Two. Stage Three lasts for 10 periods.

In Stage Three, your role is the same as in Stage Two. However, everyone has been given a new ID. This ID is different than your ID in Stage One and Stage Two. The new ID is not based on any decisions in Stage One or Stage Two. This ID was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. All manager wage restrictions are the same as in Stage Two.

LW Treatment Instructions:

Stage Two Instructions

Stage Two has the same rules as Stage One. Stage Two lasts for 10 periods.

In Stage Two, your role is the same as in Stage One. However, everyone has been given a new ID. This ID is different than your ID in Stage One. The new ID is not based on any decisions in Stage One and was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. Manager wage restrictions have changed for all managers. Please consider the changes before proceeding to the Market Phase.

At the conclusion of Stage Two, instructions will be given for Stage Three.

Stage Three Instructions

Stage Three has the same rules as Stage Two. Stage Three lasts for 10 periods.

In Stage Three, your role is the same as in Stage Two. However, everyone has been given a new ID. This ID is different than your ID in Stage One and Stage Two. The new ID is not based on any decisions in Stage One or Stage Two. This ID was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. Manager wage restrictions have changed for some managers. Please consider the changes before proceeding to the Market Phase. Remember that Manager IDs have changed from Stage Two.

MW75 Treatment Instructions:

Stage Two Instructions

Stage Two has the same rules as Stage One. Stage Two lasts for 10 periods.

In Stage Two, your role is the same as in Stage One. However, everyone has been given a new ID. This ID is different than your ID in Stage One. The new ID is not based on any decisions in Stage One and was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. Manager wage restrictions have changed for all managers. Please consider the changes before proceeding to the Market Phase.

At the conclusion of Stage Two, instructions will be given for Stage Three.

Stage Three Instructions

Stage Three has the same rules as Stage Two. Stage Three lasts for 10 periods.

In Stage Three, your role is the same as in Stage Two. However, everyone has been given a new ID. This ID is different than your ID in Stage One and Stage Two. The new ID is not based on any decisions in Stage One or Stage Two. This ID was drawn prior to the start of the experiment. Your new ID is displayed below and will be visible during both the Market Phase and the Effort Phase throughout the stage.

On the next screen, manager wage restrictions are reviewed. Manager wage restrictions have changed for all managers. Please consider the changes before proceeding to the Market Phase.