Economic Inequality IV:
Unions and Inequality in the Labor Market

April 12, 2017

These notes are based off a presentation by Professor Suresh Naidu (Columbia, Department of Economics) for the section on Economic Inequality in the Mechanism Design for Social Good Reading Group. The notes are taken by members of the reading group with some figures and texts taken from accompanying presentation slides and papers. Please contact the reading group organizers for any questions or comments.

1 Introduction

- Graphs such as the one below suggest that unions and inequality go together. Here, you see two measures of inequality – the top 10% share of income and the top 1% share of income – and union density. Essentially, where you have this U shape in inequality, you have a reverse U shape in union density.

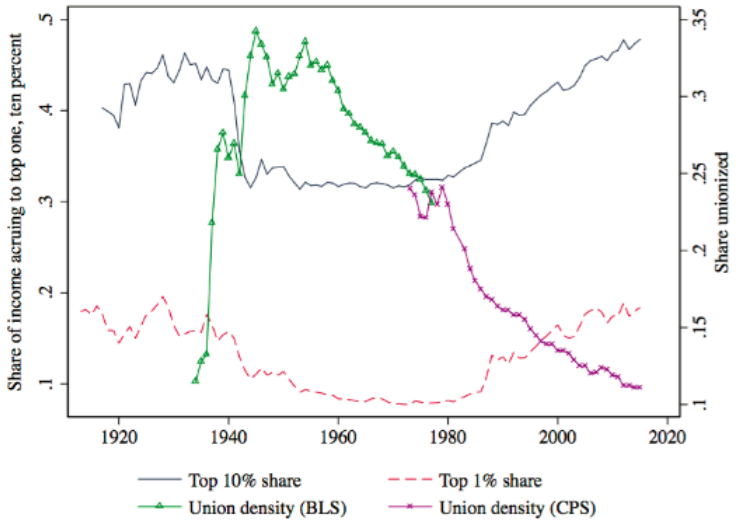


Figure 1: Frequently cited graph on union density and income inequality

- This is of interest to various policy makers and interested groups, which might see unions as one way to combat income inequality. However, it is difficult to interpret this graph as

anything more than suggestive. Part of what we'll talk about is how to unpack this, what does union density mean, and how should we think about the impact of unions on economic inequality and workplace experience.

- For background, the US has a complex union recognition process, which is one of the reasons that union density is low. The process has historically proceeded as follows:

  1. Decide on a bargaining unit, which is a set of co-workers that have about the same status and/or same relationship to work.
  2. Get petition for election signed by at least 30% of the bargaining unit. This petition is to have an election to have a union rather than voting for or against the union itself.
  3. There is an election campaign time period, followed by an election where members of the bargaining union can vote for or against the union through a secret ballot.
  4. If the union wins (over half of the workers vote for the union), then the employer has legal "duty to bargain" with the union.
  5. This eventually leads to a legally-binding contract, with wages schedules, benefits, and rules about things like promotions, scheduling, and non-pecuniary dimensions of work.

1.1 Coase, Marx, and Myerson-Satterthwaite

- There is a very straightforward argument against unions in economics, which is that they are an inefficient monopoly of labor. In essence, you are putting together all the workers who then tell the firm you cannot hire anyone who is not in the union and you have to pay everyone in the union a given wage schedule. They make a take-it-or-leave-it offer to the firm and this lowers the amount of employment, therefore leading to an inefficient outcome.

- There is a big theoretical literature pushing back on this in various ways. We highlight one, which is a version of the Myerson-Sattherwaite theorem, here:

- Suppose you have a set of workers who have a common value of not working at c, and an employer that values the work at v, both of which values we assume to be private.

- Myerson-Sattherwaite says if c and v are private information, then there is no efficient, budget-balanced mechanism.

- From the first welfare theorem of economics: if there was perfect competition, no asymmetric information, no externalities, and so on, then you get an efficient outcome. Therefore, we can use competition to fix this inefficiency, which we get by having many workers and employers on both sides.

- *Question*: why doesn't competition fix this inefficiency? (i.e., both a large number of firms and workers will create competition.)

- *Answer*: the labor market is characterized by pervasive imperfect competition. The labor market transaction, from the point of view of the firms and workers, and especially the latter, so what we see looks more like bilateral bargaining with asymmetric information. Some reasons are:

  - Productivity: "Effective labor" is very difficult to specify.
  - Amenities: Jobs are very noisy, ill-defined bundles of characteristics.
  - High-dimensional space leads to imperfect competition even with many firms.
    * Monopsony is ubiquitous in the labor market.
    * Fundamental transformation includes subjective disutility of work/training, relations with manager and co-workers, commuting time, degree of flexibility, etc

- For all the above reasons, and more, we are in a setting that is not very competitive since the gap between the job that a worker has and the next best one is going to be large.

- *Question*: In a simple model like the original model for Myerson-Sattherwaite theorem, where everyone has complete information, but there is not enough competition on the firm side to get good welfare, do people have an understanding of why this happens and whether unionizing is a good way to address the lack of competition on one side?

- *Answer*: If there is not enough competition and employers have market power, there is a theoretical case to be made that unions can bargain efficiently. It should not be difficult to write down that model and work it out, but I don't know if it has been done.

- *Question*: Is the general motivation for unionization to help make the allocation of workers more efficient or are there also concerns about worker treatment since there is too much competition on the side of the workers and not enough on the firms' side?

- *Answer*: You can have plenty of inequality that is completely consistent with perfect efficiency. For instance, if no one values your work, then you don't get paid very much and that is efficient. You could ask the question of whether you are willing to give up some efficiency to reduce inequality or figuring out some mechanism that preserves efficiency while also reducing inequality. These are all useful questions to ask. In the setting that we are looking at, we are noting that if there is no asymmetric information, no other distortions, then unions are inefficient. This is true under the above model, but we will present an argument for why this is not the right model for the labor market below.

2 Labor Market Mispricing is Ubiquitous

- This section is from an upcoming paper on bunching in the wage distribution, and its implications on the market power of firms, [1].

- There are very few states that collect administrative data on wages. For background, we always knew that when you look at self-reported wages, we tend to notice heavy bunching (e.g, many round dollar wages per hour such as $8 and $10 and very few fractional values like $9.90.) People generally thought that this was survey error – people don't know their true wage and are just reporting approximate values, or that it's a result of left-digit bias.

- States including WA and MN keep records of individual wages from actual pay-checks. This data also shows bunching at round numbers.

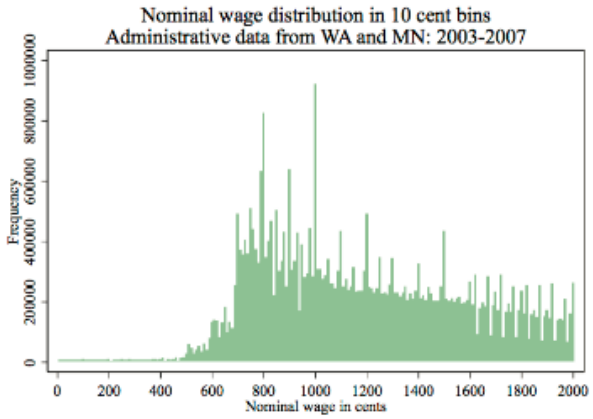


Figure 2: Bunching at arbitrary round numbers

- It is very hard to square bunching of the wage distribution at arbitrary round numbers with a competitive labor market since in a competitive labor market, it is very unlikely that the value of work falls heavily on these round values.
- Side note: there is a truncation around $7 due to minimum wage. We still have some mass below the minimum wage since people are paid commissions.
- *Question*: There are other domains where you see bunching at round numbers. E.g., Matt Backus' work on ebay. Is the explanation for bunching in these various domains similar? Does bunching always mean the same thing?
- *Answer*: No, it doesn't! You also see bunching in rewards on mTurk. You also see bunching in marathon times, but for a very different reason than why you might see bunching in the wage distribution. Bunching can mean different things in different contexts. One complementary case is pricing, where you would frequently see $9.99, since that looks more like 9 dollars than 10 dollars due to the left-digit bias. For the reverse reason, firms, would set wages at $9 rather than $9.99 since this looks more like 9 and is more profitable to the firms. This was part of the reason why, when we started the project, we thought that the bunching of wages might be a result of left-digit bias by workers when they remember their wages.
- For this paper, in order to understand the sources of bunching, we run an experiment on mTurk, specifically looking at the reward distribution. We then use that to test hypothesis about why there might be bunching in the real wage distribution.
- This is a convenient setting since there is no bargaining on mTurk. You post a wage, and workers can take it or leave it, which turns off the mechanisms in Backus' paper where agents signal willingness to bargain.
- In this experiment, we randomize the reward through a round number and see if either people are more willing to accept a job or if people do discontinuously better on a job when you go from 9 to 10 cents. This would be a natural reason why we might see bunching. It would

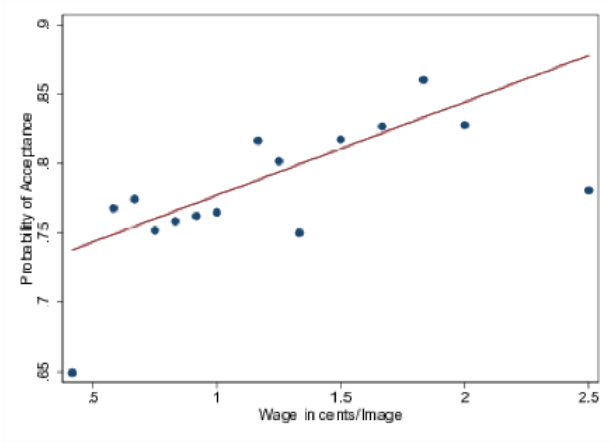


Figure 3: Bunching on mTurk

say, workers look at \$10 and see that being almost as good as \$10.99, and if this were true, you would see a discontinuity in willingness to accept a job at these round numbers.

- The contribution of this paper is to rule this out as an explanation on mTurk.
- We had expected left-digit bias, but an explanation for why we might not see it in this setting as opposed to consumers is that left-digit bias is a costly mistake to make in the work-force since wages are a significant determinant of one's income whereas any given transaction is such a low-stakes scenario that a mistake like left-digit bias wouldn't be as costly.
- The explanation we introduce is instead that firms have a substantial amount of market power. They have wage-setting power, but do not know how to use it very well and make mistakes. Firms have willingness to price at, say, \$10, even though it is actually inefficient for them to do so. But, because they have market power, they can get away with paying \$10, and the market won't punish them very sharply for getting the wage wrong and setting the wage at \$10 instead of \$10.25. If this were a competitive market, then you would get significantly fewer workers at \$10 than at \$10.25.
- *Question*: The experiment above suggests that the firms are the ones setting the wages discretely, and it is not because of labor supply explicitly. Why does this give evidence that firms have a lot of market power?
- *Answer*: If the market was very competitive, then mis-pricing of the wages would be very costly in terms of profits. There is so much more extra mass at round numbers rather than values right above or below that it is unlikely that you are mis-pricing by a small amount. There must be a lot of jobs that are getting mis-priced by a significant amount, and you therefore must not be in this tightly competitive market where a small deviation in wages gets you noticeably more workers. So, either (I) firms have a lot of market power, or (II) they are leaving a lot of money on the table and are not profit-maximizing.
- We went through several online crowd-sourcing papers that accidentally reported the labor supply elasticity, which is about 0.5. (A one percent increase in wages raises the probability

of acceptance by 0.5.) This is an incredibly low number, suggesting that crowd-sourcing platforms are highly non-competitive as labor markets go. When you take the same task and randomize the wage, the probability of accepting does not vary very much with the wage so labor market power on this platform is ubiquitous. When you randomize the wage and look at the labor supply curve, if the market is perfectly competitive, then you would get a horizontal line where you get everybody when you pay more than the market wage and nobody when you pay below. Instead, what we observe here is a gentle slope, which indicates that employers have high market power.

- If employers have high market power on online crowd-sourcing platforms where workers can see every job, we expect to observe the same market power imbalance in physical labor markets where finding another job is a lot harder than it is on a online crowd-sourcing platform.

3 Restoring Efficiency: Add Budget Breaker

- How does this come back to unions? The ideas below are inspired by a paper by Weyl and Zhang [**?**] on Harberger taxation.
- For context, unions often consist of national federations and local chapters. For instance, SEIU is a national union, and also consists of local chapters.
- One way to restore efficiency is to take money out of the system in order to use the Myerson-Sattherwaite theorem. This is done by charging members dues, historically as a percentage tax on wages. The idea is, if the local union chooses a wage, but they don't choose the dues rate (which is set by the national union), then you can set the dues rate such that the union picks the efficient wage to set. Efficiency here means that you don't unnecessarily risk the firm that you are working for going out of business by asking for too high a wage. You can restore efficiency if you tax the wage at the right amount. You are borrowing the argument on Harberger taxation to this setting by giving on side monopoly power, but charge them tax on the price that they set in order to incentivize them not to charge too high a price and inefficiently exploit their monopoly power.
- The literature on unions has often focused on the monopoly side of this and not taken into account that there are dues paid in the background, which can be used to restore efficiency.
- The model: the national union chooses dues rates and local members vote on a take-it-or-leave-it wage-offer to employer (s). Suppose the valuation of the firms staying in business is distributed with $F(v)$. We define efficiency to be probability of staying in business being equal to $F(c)$. If the union local chooses w to maximize

$$\max(w-c)(1-F(w))$$

then firms would close too often, resulting in inefficiency. But instead with appropriate dues rate d, the objective function then becomes:

$$(w-c)(1-F(w)-d)-dc.$$

And, if $d = 1 - F(c)$, then $w = c$, which leads to an efficient solution.

4 Unions in Practice

4.1 Impact on Inequality

- There is a classic book by Freeman and Medoff [3] called "What do Unions Do?" It goes through all the different dimensions along which unions change workplaces. There was a moment in the economics literature where people were arguing that unions improve productivity by letting workers exercise voice on the job. Having a union in the work-place would serve to aggregate information about workplace conditions, what the workers knew about how to make the shop run better, and so on, and increased productivity.

- Unions have been in decline since the 1950s. Peak union density was about 33 percent in 1955. The bulk of unions today are public sector. We focus on private sector unions here since they are more interesting for what we're looking at and the impact of unions on inequality is most visible in private unions.

- With Farber, Kuzimeko, and Herbst, we look at what unions did at their peak, [2]. The Bureau of Labor Statistics started the Current Population Survey in 1973, which has been providing useful statistics related to employment, wages, etc, and there are a lot of open economics questions from before this period since this data is not available. We do not have a good estimate of who was in unions, what union members were making, and other related questions before this time-period.

- In [2], we use data from Gallop which goes back to 1937, and harmonize these historical polling data to study patterns of union membership and union wages during this period when unions had a lot of power.

- An interesting result is that the union premium, which measures the increase in earnings, has stayed constant at 15 to 20 percent since the 1930s.

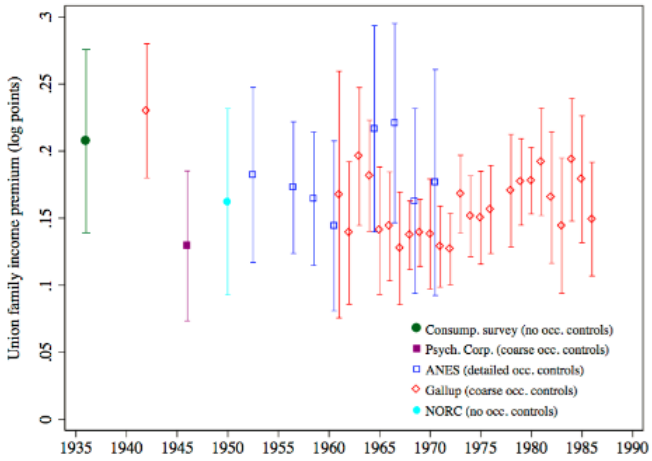


Figure 4: Union premium over time

- Surprisingly, union density seems to not have a relationship with the union wage premium. We were expecting a higher wage premium at peak union density. A potential countervailing force is that when you have a higher union density, you are also bringing in worse workers into the union, which might be pushing back on the gains in bargaining power.

- In Figure 5, on the left hand side, we look at the year-specific coefficients of schooling interacting with earnings. This indicates that the more educated you were, the lower the earnings benefit you got from being in a union. So, unions raised wages for relatively uneducated for people, compressing the difference between college educated and non-college educated workers. Similarly the graph on the right hand side shows that over most of the 20th century, non-white workers benefited more from unions than white workers. Note also that we are controlling for regular wage controls in the regression coefficients, age, race, gender, education, and state.

- *Question*: In a previous presentation, we had discussed increasing commodification as one of the driving forces for economic inequality. Here, you mention here that unions have been useful in compressing the wage gap between college educated and non-college educated workers. How do the decrease in the union density over the years and growing commodification interact?

- *Answer*: These are a bit independent. If everything is commodified but you compress the differences in income between high and low skilled people, then you are equating access to the commodified things also. Commodification is a negative complement to income inequality since if everything is commodified, then the more important income inequality is to securing access to those things. To the extent that unions reduce income inequality, it is independent to the increase in commodification.

- One of the other findings of this paper is that unions effectively eliminate the effect of father's income on own income, which was discussed earlier in the intergenerational mobility presentation. If you are looking for something that is equalizing opportunity, unions are one answer.

- In Figure 6, we look at who is joining unions. The takeaway here is that the people that are in unions at their peak are largely low-educated people, and membership by this population has been declining over time. The bulk of union decline has been among relatively low-skilled workers. Similarly, for race white workers are less likely to be union members relative to non-white workers with the exception of very early periods. i.e., conditional on covariates, non-white workers are more likely to be union members than white workers.

- We then look at the state-year relationship between union density and income inequality. This reproduces the graph from Figure 1. We control for things like state and year-fixed effects, unlike the previous graph. The relationship is more robust than the graph showing a U shape in inequality and reverse U shape in union density.

4.2 Assessing the Impact of Unions Using NLP

- We look at the effect of unions on less pecuniary things. (This is work in progress funded by the NSF.) We take tools from computational linguistics to understand the text of collective

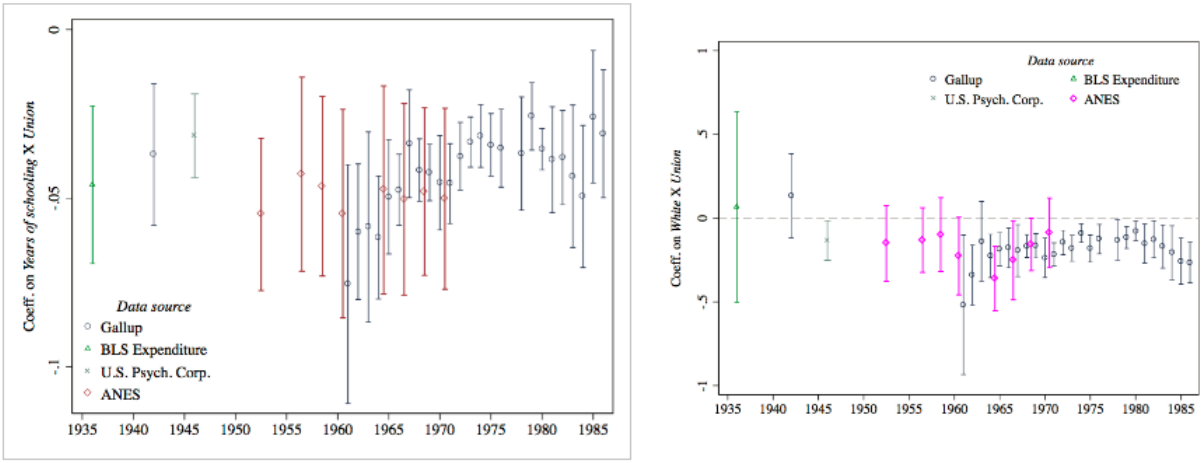


Figure 5: Impact of unions by year of schooling and race

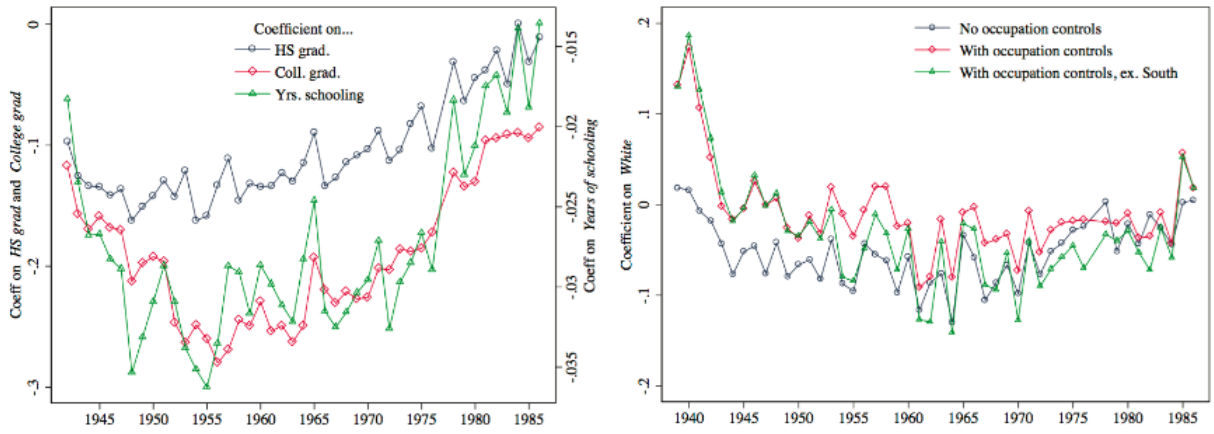


Figure 6: Union membership by education level and race

bargaining agreements. The overarching questions here is: can we measure the "restrictiveness" of contract language?

- *The Data*: Kheel, the labor library at Cornell University, has a digitized copy of 20th century collective bargaining agreements. Through grants from the NSF, we scan a subsample that allows us to run a classifier on the meta data so they can automatically index what is in these contracts. We also have access to 76000 Canadian union contracts since 1976. Finally, a lot of states also post all the public sector union contracts.

- Union contracts are like a workplace constitution. They tell you what rights and responsibilities managers and workers have in their jobs on the shop-floor. They create obligations and constraints and give permissions and entitlements.

- We look at the amount of authority given to different agents in these contracts. We take

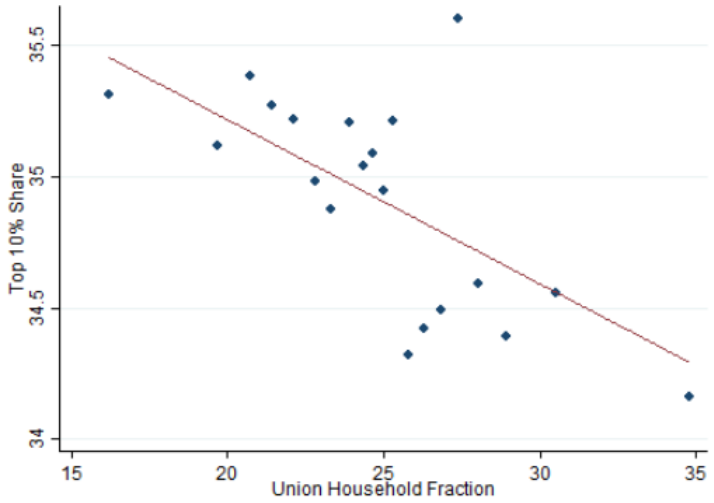


Figure 7: Impact of unions on income inequality

advantage of the fact that contracts are written in very legal language. They use a lot of *deontic modal verbs* such as shall, must, will, can, and so on. We parse the contracts into clauses such as: "the nurse *shall* receive pay for the following holidays: Thanksgiving, Christmas, New Year's Day, Good Friday, and Memorial Day."

- We form a corpus of all contract sentences with such verbs, which is most of the sentences. We then map each phrase to an agent and whether or not you are given an obligation or permission to do something, and then some action. The agents are an employer, union, manager, or worker. The actions are the sentence fragments that we bin using an LDA topic model.
- We note that the average contract is giving a lot more constraints and obligations to employers than it is giving permissions and entitlements, while the reverse is true for employees. The example in Figure 8 is from a teachers' union, although we are doing this for a larger set of contracts.
- *Finding*: Unions transferred who had authority over these different dimensions of work from employers and managers to workers.
- *Question*: Is the idea to do a comparative study across many different domains and years in bulk?
- *Answer*: Yes, in particular, looking at how these things are traded off against wages across domains and time. We want to understand what the workers are bargaining for through these contracts since that indicates what was important to them in that sector at the time. We want to look at this over time across different domains, but also across these different topics to understand what dimensions of the workplace are important for the contract to govern.
- *Question*: Is there a way of validating that these changes in contract language as a reflection

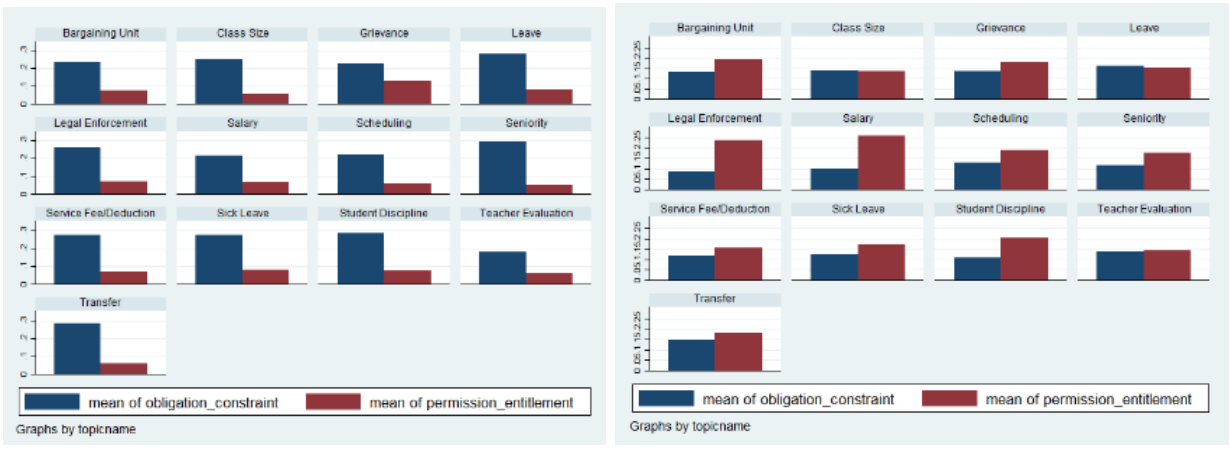


Figure 8: Union contract language restrictiveness for employers (left) and employees (right)

of what the workers deemed important rather than the contract writing style? (e.g., lawyers convincing workers that it is important to request things more definitively.)

- *Answer*: The NLRB has its own internal administrative court system, which writes opinions. Whenever the NLRB issues one of these opinions, we have noticed that contracts pick up the language of those opinions. We hope to use that to get some identification. Moreover, this is happening against the background of law. The contracts are essentially appended onto the labor law that binds in a given state. We can train the classifier by looking at the difference with this shared legal language instead of looking at changes from one contract to another.

5 Unions as Bulwarks of Economic Freedom

- Private sector unions pushed back on many the pathologies that come along with lots of inequality. Independent of their direct effect on income inequality, unions gave workers some system of governance inside the firm. For instance, union contracts give a formal grievance procedure that is legally binding. Furthermore, collective bargaining and higher earning for regular workers addressed issues of market power. Politically, union members turn out to vote at a higher rate than non-union members since unions politically educate and mobilize their union members. Voter mobilization and lobbying counteracted the political power of business. With the decline of unions, there has also been a decline of voter turnout among workers that would have been in unions but are not.
- Currently, unions are at 6 percent density, and we might wonder about the future of unions.

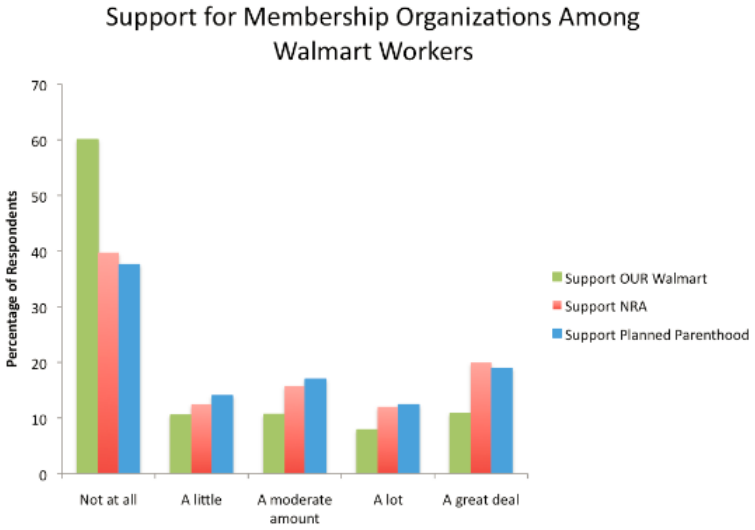
5.1 Some Signs of Life

- One recent innovation is this app called WorkIt made by United for Respect at Walmart. People that join this are generally Walmart workers. The app has chat-rooms where workers ask about the company's policies, legal rights, and have informal conversations. This app also learns frequently asked questions and suggests answers. This is a trusted information-sharing zone about workers' rights on the job.

- Is this like a 21st century union card? One main distinction is that it does not give collective bargaining power, and it's not clear how to develop that from this system.
- With Adam Reich (Columbia, Sociology), we have been running randomized control trials to figure out strategies for getting people to sign up to the app: understand what they want from such an app, what is the value proposition, and why they care [4]. A lot of labor organizing has not taken advantage of the fact that the service sector has a permeable workplace, where customers can directly interact with the workers, unlike before when you had to send somebody into a factory to talk to the workers. Now, we can send anyone into the work place to ask about their working conditions (e.g., at hotels, you can leave a card for the person cleaning the room).
- One of the main complaints of workers at Walmart is not necessarily tied to wages but rather dignity and respect from managers. This also comes across overwhelmingly in the chat-rooms in the app. It also appears that it's the thing they get from the job that they like. E.g., some quotes from the WorkIt App page:
  - "Every working person deserves respect, dignity, and a voice at their job.
  - Abundant "shelfies" which are pictures of well-stocked and orderly shelves, showing that doing their job well gives them a sense of self-respect.
- These non-pecuniary sides of work are part of what unions impacted, and they are important.

5.2 A Future for Unions?

- Currently, most people are not interested in unions. The figure below is from a survey targeting Walmart workers.



- From the employers end, they make less profit even though the outcome is more efficient. Therefore, they have an incentive to oppose mechanisms such as unionizing.

- There is latent support for unions in general is there. E.g, when you ask workers on surveys "would you vote for a union if an election happened tomorrow?" the majority say yes. It might just be that this particular union is not great or does not have visibility. What is not clear is what bundle of characteristics of the old unions and something new is desired. One recurring theme from conversations with Walmart workers is training in some skill that is useful not just in their particular job but also future jobs since that increases their employability.

References

[1] Arindrajit Dube, Alan Manning, and Suresh Naidu. Monopsony, misoptimization, and round number bunching in the wage distribution.

[2] Henry Farber, Ilyana Kuziemko, Roy Herbst, and Suresh Naidu. Unions and inequality in the 20th century: New evidence from survey data.

[3] Richard B. Freeman and James L. Medoff. *What Do Unions Do?* New York: Basic Books, 1984.

[4] Adam Reich and Suresh Naidu. Customer-worker conflict in service sector organizing.