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## DO EGYPTIAN LABOR UNIONS HAVE ANY BARGAINING POWER?

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## SUSTAINABLE DEVELOPMENT GOALS AND EXTERNAL SHOCKS IN THE MENA REGION:

FROM RESILIENCE TO CHANGE IN THE WAKE OF COVID-19

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Very preliminary version. Please do not share.

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## 1 Introduction

In the Arab world, unions have been driving forces behind a desire for a new social contract. As such, unions were tightly linked to the Arab spring movements in Tunisia and Egypt, and are a supporting actor in Algeria's *hirak* movement. Historically, trade unions have been paramount in establishing worker rights, decent working conditions, pay and benefits, and the economics literature relying on data from Europe and North America has established that unions give voice to workers, improve pay and also constitute a monopoly reducing overall efficiency. In a landmark book, Freeman and Medoff (1984) draw several important conclusions on the role of unions: the union wage premium exists; its magnitude varies across markets, people and time periods; those variations are related to union monopoly power and market product power; and finally, the social cost of union monopoly power is modest. Blanchflower and Bryson (2004), returning to the data twenty years later, find no reason to cast doubt on these conclusions, and also find evidence of important union wage gaps for the public sector. In a chapter in the handbook of development economics, Freeman (2010) summarizes what is known about the impact of labor market regulations in developing countries, showing that unions and collective bargaining are less important in developing countries than in developed countries, but that they do affect both wage and nonwage outcomes. In this paper, we examine the role of unions in improving workers' outcomes in Egypt, focusing on wages and work conditions. A country with

a fairly long history of unionism, it has nevertheless seen frequent attempts to clamp down on union membership, and has seen union membership decrease in recent years. Most recently, in 2018, unions were dismantled and required to re-register, leading to a sharp decrease in the number of recognized unions. The Egyptian case also enables a reflection on the role of unions in authoritarian regimes: the International Trade Union Confederation's 2020 report quotes Egypt as one of the ten worst countries for workers (ITUC, 2020).

The rationale of unions relies on firm rent capturing, without which union presence would be irrational, and a sizable literature has well documented a positive wage effect of union membership in (mostly) developed countries (Jarrell and Stanley 1990), but evidence is also suggestive of positive wage premia in developing countries (Freeman 2010). Furthermore, a spark in the interest in inequalities has prompted research into the links between unionization and inequality, asking whether falling union membership rates can explain increasing wage inequality (Card, Lemieux, and Riddell 2004; Kollmeyer 2018). Despite a presence of unions in Egypt dating back to WWI, and their important role as a sociopolitical actor in recent times, few (if any) studies have attempted to investigate quantitatively their role in shaping worker outcomes in the country, or even in the region. This paper contributes to bridging this gap.

The following section describes the data used, and draws a portrait of union activity in recent times in Egypt using microdata and secondary sources. Section 3 discusses methodological issues in measuring the union wage gap, and implements the analysis of union wage gaps in Egypt. Section 4 analyzes the links between income distributions and unionization rates at the sectoral and occupational levels. Section 5 discusses the overall findings and the plausibility of union bargaining power, relying on evidence from firm-level data. The last section concludes.

## 2 Unionism in modern Egypt

### 2.1 State of the Union: from post-independence to post-revolution

In the decades running up to Independence, as anticolonialist movements gained momentum in the MENA region, workers were simultaneously creating the premise for representation in order to achieve decent working condition and wages. Trade union membership grew rapidly in the region. To the extent that by 1960, Egypt had some 500 000 members of trade unions and had ratified 30 international labor conventions (World Bank 2004). Gamal Abd al-Nasser in 1957 created the Egyptian Trade Union Federation (ETUF), which functioned as the sole legal representative of Egyptian workers (Schmidinger 2013). According to Beinin (2009b), the Egyptian Trade Union Federation was since its foundation merely an extension of the regime, and the absence of direct elections to its committees and its hierarchical organization imply that local union chapters were constrained in their ability to carry out actions. For example, according to the 1976 Trade Union Law, strikes must be approved by 2/3 of the executive committee of the national-level sector union, and all local union committees need to belong to the national-level sector union (Beinin 2009b).

Although the ETUF may have been a means of ensuring State control over worker rights, this does not mean that all members were positive to ETUF's structure, nor that no other organization occurred. Following liberalization policies in the 1980s, which deteriorated workers' conditions, workers slowly started to reorganize (Schmidinger 2013). In 1990, the Center for Trade Union and Workers' Service (CTUWS) was founded, intended as an NGO supporting workers without formally being a union. As the new millennium began, strikes and worker actions grew more and more commonplace. Beinin (2009a) states that while from 1998 to 2003 an average 118 collective actions took place in the country a year, they numbered 614 in 2007 and 608 in 2008. Originating in the textile industry, collective actions spread to involve nearly all industrial sectors, and even public services, extending to doctors, pharmacists and university professors (Beinin 2009b). Response to collective actions by the Mobarak regime was sometimes

violent, and prompted the creation of associations (often through social networks) that would ultimately become protagonists of the revolution, such as "The 6<sup>th</sup> of April", a Facebook group prominent in the events leading up to and during the January 2011 revolution.

Against the backdrop of grassroots unionism, whether performed within or outside of local ETUF committees, a few trade unions established themselves in the last years of the Mubarak regime. In 2009, the government recognized the Independent General Union of Real Estate Tax Authority Workers, the first union not affiliated with ETUF (Beinin 2009b). This was a second success for municipal tax collectors, who in December 2007 went on a 10-day strike to achieve wage parity with tax collectors employed directly by the Ministry of Finance (Beinin 2009b). An independent teachers' union was established in 2010, and on January 30, 2011, together with a retired workers' union and a health professionals union, they formed the Egyptian Federation of Independent Trade Unions (EFITU). By September, 2011, 130 independent unions had been formed, although only 24 of which adhered to EFITU (Schmidinger 2013), and in January 2013, their number surpassed 1000, mostly affiliated either with the EFITU, or the Egyptian Democratic Labor Congress (EDLC) formed as an alternative to the EFITU. Labor protests also continued growing since the revolution, and anecdotal evidence suggests that some of the post-revolution collective organizations actually succeeded in overturning governmental policy, such as when in January, 2016 civil servants obtained the rejection by the parliament of a new civil service law (Abdalla and Wolff 2016). Although the formation of new strong unions cannot be discarded, most blue-collar workers remain organized under the ETUF umbrella. This is since ETUF holds a monopoly on the social security funds providing pensions and other benefits to union members, the contributions to which are included in membership fees which are often automatically deducted from pay (Abdalla and Wolff 2016).

Although the union landscape has changed dramatically since the revolution, ETUF remains a major actor. According to Abdalla and Wolff (2016), ETUF in 2016 claimed to represent some 3.8 million workers, while EDLC claims 886000 members. EFITU claims to represent 2.4 million

workers, although this number is contested by the authors. Furthermore, the extent to which overlap interferes with relative power of the organization is unknown. What is known, however, is that many workers joining new unions stayed on as members of the ETUF unions, given its monopoly on social funds. A last piece of evidence suggesting that new unionism in Egypt has the potential for societal change is the law on Trade Unions passed in December, 2017, effectively reestablishing the ETUF as the sole workers' organization allowed to operate.<sup>1</sup> The law led to the dissolution of independent unions in March 2018, with a requirement to re-register within 60 days. By May, only 122 of an approximate 1000 independent unions had been recognized by the government. The law was amended in 2019, lowering the numbers of required members for a union to achieve recognition from 150 to 50, but workers' right groups claim that little has actually changed on the ground.

## 2.2 Data

The main data used are drawn from the Egyptian Labor Market Panel Survey, a longitudinal dataset featuring data collected in 1998, 2006, 2012 and 2018. A distinctly cross-sectional round—separated from the panel—was carried out in 1988, but is not part of the panel sample. The data was collected by the Economic Research Forum (ERF) in collaboration with the Central Agency for Public Mobilization and Statistics (CAPMAS). The survey collects data on a wide range of topics, such as education, housing, job history, migration, fertility, etc. Being a panel survey, the survey tracks households (and split-offs therefrom) at every survey. Each round also adds a refresher sample to maintain the representativeness of the sample, and to focus on particular phenomena of interest. With regards to union membership, the individual questionnaire contains a question of whether or not individuals are members of a trade union (*rabita*). The questions surrounding union membership have changed slightly across waves. In the most recent wave, for individuals declaring not being members of a union, we know whether or not other workers are members, thereby proxying for union presence in the workplace. In the 2012 wave, a question on the precise nature of the union is included. In the first two waves,

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<sup>1</sup>NATLEX, ILO.

neither of the two questions are available. In the last part of the paper, we also draw on evidence from the World Bank enterprise surveys from 2004 and 2007 to ask whether or not our results are coherent with firm data.

The annual labor force survey (also run as a collaboration between ERF and CAPMAS) would also be a good asset to study the impact of unions in Egypt. While the surveys, based on larger samples than ELMPS, do contain a question on union membership, the question is censored from the publicly available data. Another source of information on trade union activity in Egypt are available from the ILO, and in particular the NORMLEX database, which keeps tabs of negotiations between the government, worker representatives and ILO surrounding the compliance of Egyptian law with international labor conventions, and the practical enforcement (or lack thereof) of labor laws.

Figures 1 and 2 show the proportion of wage earners (15 years or older) who are union members, by sector and employment status respectively. Figure 1 suggests that unions have become less pervasive in Egypt since 1998, although decline varies significantly from sector to sector. The transport sector has seen continuous decline over all panel rounds, while manufacturing saw a sharp drop between 2006 and 2012, but small changes over the other periods.

### **3 The union wage gap: a reality in Egypt?**

#### **3.1 Identification issues**

Although a sizable literature on the union wage gap exists, in particular using data from the U.S. and Europe, evaluating the effect of union membership on wages and other job benefits is an intricate matter. At least four difficulties can be thought of. The first one concerns the endogeneity of union existence. It is well known that unions historically arose to protect workers in contexts of unfair and hard working conditions. In other words, the existence of bad working conditions precedes that of unions, and it is likely that within an economy and at a given time

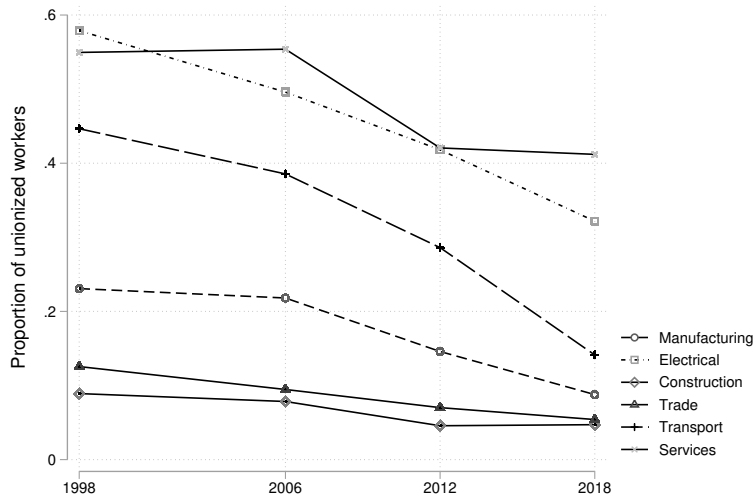


Figure 1: Sectoral unionization rate (selected industries, ELMPS 98-18)

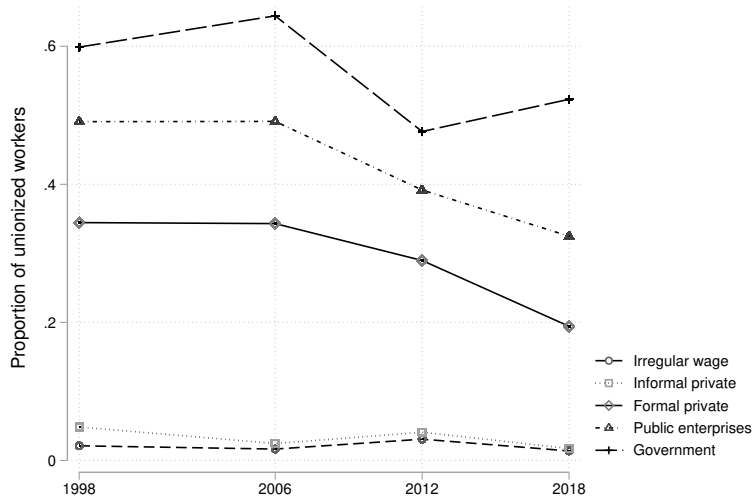


Figure 2: Unionization rate by employment status (ELMPS 98-18)



period, unions develop to a larger extent in those sectors where workers have the worst working conditions. An OLS regression of union presence in a sector on wages is thus likely to exhibit downward bias on the coefficient of union presence. A real-world example of this threat is the fact that union activity in Egypt in the 1980s and 1990s had its center of gravity in the textile industry (Schmidinger 2013), an industry known for its poor working conditions (Hamman 1979). Similarly, endogeneity can occur at the individual level. Not all members of a workplace choose to join unions, and those who do may not constitute a random sample of workers in the workplace. Workers indeed have different incentives to increase union power in workplaces. Freeman and Medoff (1984) found that unions tend to decrease inequalities in the workplace, and Johnson and Youmans (1971) had already found that unions raised wages of less skilled workers more relative to wages of more skilled workers. This suggests that relatively low-skilled, untalented or discriminated-against workers would be more likely to join unions. Such selection also occurs on the employer's side. If union jobs are rationed, queues build up for such jobs, and employers have a say in the employees they choose to hire. Interested in productivity, they are likely to hire high-productivity individuals, who are also those least likely to be interested in joining unions. This creates a positive bias on the union coefficient, and the total bias associated with union coverage thus depends on the relative size of the two effects (Blanchflower and Bryson 2010). Solutions to these selection problems have included estimating unions and wages simultaneously, adding a source of exogenous variation for union membership (Booth, Francesconi, and Zoega 2003), or exploiting within-individual variation in union membership in a panel setting (Card 1996).

Another source of bias in estimating the impact of unions is the threat effect. This effect refers to the idea that employers, viewing union formation in their workplaces as a potential threat to their profits, provide minimally acceptable wages and working conditions to avoid being targeted by unions. To assess the extent of such bias, several methods have been employed. Freeman and Medoff (1981) regress nonunion wages on the sectoral union coverage rate, finding no evidence of such a threat effect. Bronars and Deere (1994) analyze the equity value of

firms in narrowly defined (4-digit) industries and examine what happens to the value of share prices in the industry when one firm submits a petition to the National Labor Relations Board. They find that while the petitioning firm experiences a loss of -1.04 percent during the petition month, rival firms in the same narrow industry experience losses of -0.74 percent during the same month, suggesting substantial spillover effects. Using panel data, Neumark and Wachter (1995) distinguish the threat effect from a crowding effect, where the non-union segment acts competitively. In this model, higher unionization implies layoffs in the unionized segment of the market, leading to increased supply and falling wages in the non-unionized segment. The two effects have contradictory outcomes, the first one reducing the union wage gap, and the second one reinforcing it. Assuming that unobservable characteristics of industries remain fixed over time, and using data from the Current Population Survey (1983-1989) they identify a negative and significant net effect of coverage rates on non-union wages, suggesting that the crowding mechanisms outweighs the threat mechanism.

Although not directly related to identification, the Egyptian case presents a supplemental difficulty in estimating the union wage gap. As described in section 2, the idea that unions acted in the pure interest of workers during Egypt's autocratic regimes is highly doubtful. The monopoly on union activity held by the Egyptian Trade Union Federation, the presence of regime candidates in most higher instances of decision (Abdalla and Wolff 2016), as well as the refusal to support the 2011 revolution (Schmidinger 2013) casts doubts on the possibility and desire of officially recognized trade unions to act in the interest of workers prior to the revolution. The emergence of a handful of independent unions in the 1990s, and their multiplication and recognition during and after the revolution would provide an interesting point of comparison, had the type of union individuals are associated with been identifiable. Unfortunately, this is not the case in the ELMPS data. For 2012, it is possible to know the type of union individuals are affiliated with (specifically, whether its inside our outside the workplace), but not whether it is affiliated with the EUTF or not. However, if we assume that free unions do a better job at improving working conditions than EUTF unions, then the increase in free unions should

in principle lead to a stronger wage effect on average. In other words, an individual joining a union or finding a unionized job after the revolution should see a larger wage gain than before the revolution. This hypothesis is what we test in the following.

### 3.2 Empirical specification

As an initial check, and to achieve comparability with a strain of the literature, we run an OLS regression on each round of the panel, with union membership as the variable of interest. The dependent variable is wages, and a vector of both time-invariant and time-variant supplementary variables, including industry and employment type dummies, are included:

$$w_i = \alpha + \beta U_i + \gamma X_i + \epsilon_i \tag{1}$$

Following (Card 1996), we then rely on a panel regression with individual fixed effects to identify the union wage gap.

$$w_{i,t} = \alpha + \beta U_{i,t} + \gamma X_{i,t} + \delta_i + \phi_t + \epsilon_{i,t} \tag{2}$$

Our hypothesis to test is that unions emerged as more potent actors after the 2011 revolution. Therefore, applying the panel to time pairs 1998-2006, 2006-2012 and 2012-2018 should see  $\beta$  increase in value (or decrease if negative). We focus on the population of wage earners aged 18 - 55 in the first round of the two rounds, in order to capture a working-age population.

[Table 1 about here]

Table 1 shows the results from OLS regressions on each round of the panel (equation 1), controlling for sector of activity, governorate, occupation category, employment status and a set of socio-demographic variables. They show that being part of a union is associated with a

positive wage premium in Egypt, for all periods. In other words, given a level of education, a sector of activity and an employment status, individuals who are members of unions earn more than those who do not. The specification is a semi-log one, such that  $\beta$  can be interpreted as the percentage wage increase that being a union member entitles. Several interpretations are possible and may coexist. First, the principal selection issue. Recall that the rationing of union jobs creates queues for such jobs, and employers may hire the most high-productive elements in such queues. Wage discrepancies between union members and non members would thus be due to underlying productivity differences and not to union membership. Second, upward bias may also result from a crowding effect (Neumark and Wachter 1995), where unionization leads to higher layoffs in unionized sectors, increased supply of workers and falling wages in non-unionized sectors. Also, the presence of upward bias does not exclude that downward bias related to selection both at the industry and individual level does not operate. Finally, the ability of unions in Egypt to actually exert pressure on employers is doubtful, at least until the 2011 revolution. We shall get back to this issue.

Given its claim to national representativity for all panels (using refresher samples), comparing the beta coefficients across rounds can tell us about the evolution of the union wage gap over time. Positive across rounds, there is nevertheless a spike in 2006, followed by a decrease, suggesting the benefits of being in a union have decreased since 2006. The implied confidence intervals of columns 1, 2 and 3 suggest that the premium was indeed significantly higher in 2006 than in 1998 or 2012. They also suggest that the premium was higher in 2018 than in 1998. This may suggest that unions actually have improved their bargaining power over the last two decades. It may however equally well suggest that the the factors associated bias on the union coefficient have shifted. This could happen if ability-based selection into union jobs diminished over time, or if economic policy or market forces worked in favor of an increasingly equal wage distribution.

Instead of relying on cross-sectional data, we thus draw on the panel feature of the data to

investigate wage variations in individuals who join or leave unions between rounds of the panel. Using a fixed effects specification, any time-invariant unmeasurable correlates of the wage level, such as permanent components of ability or motivation, will be absorbed. We use three subsamples of the data: the 1998 wave and the 2006 wave, the 2006 and the 2012 waves, and the 2012 and the 2018 waves. We do this keep attrition low, and to be able to assess the evolution of the coefficient over time. For the same reason, we restrict each subsample to individuals who were between 18 and 55 in the first of the two waves. Table 2 shows the results of the regressions.

[Table 2 about here]

The coefficient of interest from the panel regression is also positive, albeit of a lower magnitude than in the OLS case, suggesting that there was indeed positive selection bias associated with the OLS results. Interpreting the coefficient, we see that the gain (loss) of union membership between two rounds is associated with a 7.5% wage increase (decrease) for the period 1998 to 2006, and a 6% increase (decrease) for the remaining two periods. While significantly different from zero, the confidence intervals for the union coefficient overlap in all three specifications, preventing us from concluding on a reduction in the absolute union wage gap over time. Although the fixed effects specification deals with time-invariant heterogeneity, it does not absolve us from other problems. In particular, we do not know whether the negative wage impact arises from individuals who joined a union, staying at their previous jobs, from individuals changing jobs and becoming union members during the change, or a combination of both. In essence, we are interested in knowing if union membership *per se* carries a wage benefit, or if being in a unionized sector or workplace is what is triggering the wage impact.

### 3.3 Is the union effect personal?

To investigate this issue, we rely on a question that was inserted in the 2018 round of ELMPS: in case of a negative answer to the question on union membership, individuals were asked whether or not coworkers were union members. This allows us to effectively distinguish the impact

of union membership from that of being at a workplace with at least some union presence. From the cross-sectional regression in table 3, we see that being in a workplace where other workers are union members, without being one oneself, leads to a lower wage premium. In the last specification (column 3), the coefficient for union presence is not significantly different from zero. It does seem to matter who is a union member, rather than whether unions exist in the workplace or not. This again begs the question of to what extent unions truly exert bargaining power in the Egyptian labor market. Provisionally accepting the hypothesis that unions indeed improve wages, how to best interpret table 3? In our view, two interpretations come to mind. The first one considers that union membership signals quality of the job. An example is if union presence is correlated with contractual arrangements. Should individuals in the same workplace have alternatively short-term versus long-term contracts, or even formal and informal contracts, these arrangements would likely correlate both with to union membership and wages. Informal wage earners are likely not to be covered by any minimum wage laws or sectoral wage agreement, and union membership could in the data act as a signal for contractual arrangements. An alternative hypothesis is that personally being a member of a union matters. This would on the other hand signal that unions are seen as a threat to employers, who adjust wages of unionized members.

[Table 3 about here]

ELMPS contains information on contractual arrangements and other job benefits, which can be controlled for in a regression. In column 4, we add a large number of covariates to the regression, and switch from 1-digit economic activity and occupation dummies to two-digit dummies. We also add a dummy for formal employment, contract, firm size, and experience at current job. Although controlling for these job attributes does not prevent the coefficient from being bias, it gives us a first idea of whether such job characteristics tell the full story or not. As seen from column 4, the coefficient associated with union membership remains positive and significant, while the coefficient associated with union presence in the workplace falls below zero and sees its confidence interval widen.

### 3.4 A look at the union wage gap using propensity scores

Exogenous variations in union membership are difficult to come by. Firstly, union membership is linked to the nature of the job, itself endogenous with respect to wage. Individual-level instruments for union membership are thus rarely credible, and are a rare feature of the literature. As an alternative, propensity score matching (PSM) has been used (Bryson 2002; Eren 2007; Meara, Pastore, and Webster 2020) to establish credible counterfactuals. It is well known that PSM fails to correct for bias due to unobservables, and the set of covariates used to match non union members with union members should thus be as large as possible. At the same time, if the first-stage regression does too well in estimating the propensity score, the area of common support is likely to be small and the number of observations used for the matching too few for statistical inference. In table 4, we use a matching estimator to assess the union wage gap in each round of ELMPS. The matching algorithm is a radius-based one with a caliper of 0.1.<sup>2</sup> The propensity score estimation is based on a logit model which very well predicts union membership (McFadden’s Pseudo- $R^2$  lies between 0.38 and 0.5 in the four rounds). Given the good level of fit, it comes as no surprise that a large proportion of the untreated observations are clustered around propensity scores close to 0. To ensure that comparable propensity scores are used, we drop 50% of the treated observations at which the propensity scores of the untreated observations are the lowest. Figure 3 shows the distribution of the propensity scores for treated and untreated, used and unused observations. Clearly, the observations used come from a broad range of propensity scores, avoiding concerns for a localized effect.

Aside from providing estimates of the union wage gap, the estimation of the propensity score used to match union members with non-members provides an opportunity to explore who unionized individuals are. It turns out that union membership is positively related to occupational groups, education level and institutional sector, but not significantly linked to gender or economic activity (table not shown). In particular, the highly educated and employees of the

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<sup>2</sup>Other matching algorithms were tried, and did not significantly alter results. Results are available upon request.

public sector are more likely to be union members.

[Table 4 about here]

Table 4 shows the results of the matching procedure. The effect on wages from union membership is positive and significant, in all specifications and samples except for the Mahalanobis distance matching for 2018. The effects are lower than those estimated in the OLS regressions, suggesting that compositional effects did indeed drive part of the previous results. Similar to OLS, again, we find that the wage gap peaked in 2006, decreasing in magnitude in the subsequent rounds. Although not experimental estimates, the consistency of the estimated union wage gap does suggest that unions are favorably associated with wages in Egypt. This does not, however, warrant a causal interpretation at this stage. It could very well be that union jobs are simply *better* jobs, independently of union activity. The assumption that wage gaps are due to union activity is implicit in most of the literature, and is probably a warranted assumption in the European or North American contexts. In Egypt, however, given the constraints to free unionization that the literature suggests, and the link between unionization rates and the public sector, the assumption is more difficult to accept. To look at things from a different perspective, we therefore examine the link between income distributions and union presence in the next section.

### **3.5 Using political decisions as exogenous variations in union existence**

To be completed.

## **4 Does union presence in a sector concentrate income?**

A prevalent result from studies into union impacts on wage distributions is that unionized sectors tend to concentrate income (Freeman and Medoff 1981; Card, Lemieux, and Riddell 2004). On the one hand, collective bargaining may raise wages, ensuring that some workers are paid



above their marginal productivity, effectively decreasing income inequalities at the workplace. On the other hand, highly productive individuals may opt out of such industries or workplaces, fearing that they be paid below their marginal productivity. If union activity indeed sets a wage standard at the industry level through collective bargaining, we should expect to see more concentrated income distributions in those sectors where union presence is the strongest.

Delving into collective bargaining requires a discussion of how wages are set in Egypt. According to Book IV of the Labour Code<sup>3</sup>, collective bargaining refers to discussions about labour terms and conditions, social development for workers and settling of disputes between workers and employers. The law contains provisions for negotiations at the establishment, branch, occupation or industry-levels, and when establishments are small or lacking union presence, workers selected by the union branch office may represent the establishment's workers. The law also specifies that all branch data used in such negotiations shall be provided by the General Egyptian Federation of Trade Unions (ETUF). In practice, however, scholars have highlighted that all labor agreements have been "centralized and supervised by the State in collaboration with ETUF" (Beinin 2013). According to a report by the Danish Trade Union Development Agency, collective bargaining is technically not allowed in the public sector, although it exists in practice. The Ministry of Manpower and Migration oversees any collective bargaining, even at the establishment level. Since 2018 and the new labor law, however, independent unions are allowed to sign collective bargaining agreements, and a number of such agreements were signed in 2019-2020 (Danish Trade Union Development Agency, 2018). The general picture that emerges for the period 1998 to 2018, however, is one of scarce collective bargaining, and where the National Council of Wages only intervenes - primarily in the public sector -when things become acute. In the private sector, employers often do not respect the law and the bargaining framework has completely broken down (Danish Trade Union Development Agency, 2018).

To investigate the extent to which union activity over the period 1998 - 2018 contributed to

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<sup>3</sup>Accessible at: <https://www.ilo.org/dyn/natlex/natlex4.detail?plang=en&psn=64693>.

a contraction in wage disparities, we exploit the panel nature of the data and regress measures of income inequality at the occupation and industry levels on the share of unionized workers in each occupation/industry. To correct for time invariant selection on both wages and unionization rates, we run a fixed effects specification at the occupation and industry levels. A central methodological consideration here is the industry and occupation aggregation that is used. On the one hand, using few industries or occupations ensures that a large number of observations exists to estimate wage inequality in each group, but may not be relevant for wage setting mechanisms<sup>4</sup> and reduces the number of observation and thus power in the fixed-effects regression. On the other hand, a too narrow definition of sectors or occupations implies that each group inequality measure is calculated from few observations. To try to navigate in between extremes, we use 2-digit and 3-digit sectoral (occupation) classifications, removing those sectors (occupations) which did not contain enough observations in a given year. The results are shown in Table 5 which shows the outcomes of a series of regressions with group-level Gini coefficients as the outcome variables. Groups are—respectively—industries, occupations, and a mix of industries and occupations (the 1-digit level of industries interacted with occupations at the 1-digit level).

[Table 5 about here]

If unions raise the wage floor through bargaining power or threat of strikes or other forms of worker mobilization, we would expect to see that inequality falls as unionization rates increase, *i.e.* a negative and significant coefficient of the Union variable. The coefficient of the Union variable is indeed negative in 3 of the regressions in Table 5, but it is never close to significant. Rather, in 7 regressions out of 10 the coefficient is positive, including a barely insignificant one at the 3-digit industry level when sectors with less than 50 observations were removed. If anything, the union effect seems more likely to be increasing inequality than decreasing it. Turning to magnitude; the union variable is expressed as a proportion, so if precision is an issue and one of the coefficients shown actually represent the impact of union activity on wages inequalities, the

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<sup>4</sup>For example, treating 'Manufacturing' as a uniform sector with respect to unionization and wage inequality is probably not a good idea.

impact would not be strong. In column 2 (upper panel), for example, going from no unionization to a 100% unionization would entail a 0.004 increase in the Gini coefficient, a negligible effect. At most, going from zero to full unionization in a sector would bring about a modification of (+) 0.07 of the Gini (column 2, lower panel).

## 5 Discussion

The positive associations between union membership and wages, found both in the fixed effects and matching results of the previous sections, suggested wage gains of 5% up to 20% from union membership. These figures are in the same ball park as previously reported results for OECD countries Jarrell and Stanley (1990). They are also reconcilable with the figures reported by Freeman (2010) from a set of Latin American, Asian and African countries.<sup>5</sup> In these studies, the union wage gap ranges from 5% to 20%. However, in three cases, a negative wage gap is reported. In the words of Freedman, "Since it makes little sense for independent unions to negotiate lower wages for members, in all these cases, the unions are presumably not "normal unions" doing collective bargaining." Although our estimates rhyme well with figures found in both developed and developing countries, they do not seem to fit with anecdotal evidence of union behavior on the ground. As previously discussed, both international worker organizations as well as scholars consider the Egyptian collective bargaining process to be defunct, and only recently have independent unions started to earn formal recognition. In the last section, we indeed show that there is no evidence that the extent of union coverage in a sector or occupation relates negatively to the extent of inequalities, suggesting that what we are capturing at the individual level from the ELMPS survey is not "normal union" operations.

As a last piece of evidence, we draw on data from the World Bank Enterprise Survey in Egypt. The survey is a panel survey with six waves; 2004, 2007, 2008, 2013, 2016 and 2020.

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<sup>5</sup>No Arab countries are included in the data set

In the post-revolutionary waves, however, questions concerning unions were dropped from the dataset. The period 2004 to 2008 however corresponds to intermediate years between waves 1, 2 and 3 of the ELMPS survey and may serve as good indicators of firms' labor relations during the period 1998 to 2012. It is important to emphasize that the Enterprise survey targets private companies in the manufacturing and services sectors, and are thus not representative of employment in Egypt. This may be especially worthwhile mentioning since unionization rates are higher in the public sector. Furthermore, the enterprise survey does not allow us to directly identify wages. Dividing the total labor cost by the number of employees indeed gives us an average wage, but this does not say much about the distribution of labor value added between top management and production workers.

Table 6 shows average unionization rates among private firms in the years 2004, 2007 and 2008. Clearly, the unionization rates reported by firms are lower than those from formal private firms reported by workers in the ELMPS. Two reasons may explain the discrepancy: first of all, the firms included in the enterprise survey may not be an accurate representation of the formal private sector. Second, and more plausibly, firms are not necessarily aware of the fact that workers are union members. If the numbers in ELMPS are to be believed, this implies that firms underestimate unionization rates by around 20 percentage points. Equivalently, they fail to identify (roughly) two out of three unionized workers. This is already a first piece of evidence suggesting that unions in Egypt are not primarily concerned with labor relations. A second piece of evidence from table 6 is the low share of strikes and labor disputes experiences by firms, ranging from 0.18% (in 2007, when only panel firms were considered) to a maximum of 2.89 in 2008 (also for the panel sample). This indeed suggests that labor disputes are a rare phenomenon in private Egyptian firms.

[Table 6 about here]

Evidence from North America and Europe (N. A. Menezes-Filho 1997; Doucouliagos and

Laroche 2009) as well as Latin America (Murillo et al. 2005; N. Menezes-Filho et al. 2005) shows relatively consistent evidence that union presence decreases profits. This is fairly intuitive, since the mere existence of unions relies on firms extracting rents of which unions seek a bite. Pooling data from the 2004-2008 panel sample, the correlation between profit shares and unionization rates in the enterprise surveys stands at  $\rho = 0.024$ . To more properly assess the relationship, we also regress the profit share on declared unionization rates, bearing in mind that the unionization rates declared by firms may sharply understate the true rates.

[Table 7 about here]

The coefficients from table 7 do not suggest falling profits with union presence in Egypt. Column 2 shows the impact of having at least some union presence (defined as a unionization rate  $\geq 0$  in the data) on the share of net profits over total sales. The firm fixed effects ensure that sector-specific profit levels spuriously correlated with unionization rates do not bias the estimates, as long as those rates remain fixed in time or do not evolve in a systematic way with respect to unionization. The coefficient in column 2 is close to zero and far from significant. In column 1, we report the coefficient from the unionization rate. If unions indeed captured rent from firms, we expect the coefficient to be negative and significant. Instead, the coefficient is positive and significant and the 10% level, suggesting that unionization rates increase net profits.

## 6 Concluding remarks

Union membership among Egyptian workers has fallen from 24.7% 1998 to 18.8% 2018, echoing trends in Europe and North America, although the reasons may have more to do with governmental clampdown than lack of interest among workers. The relationship between unions, wages and inequalities and ages in the Egyptian context warrants study since the country is in a period of transition regarding its labor laws and collective bargaining framework. The central

question of this paper is whether unionization leads to increased bargaining power as reflected in higher wages.

Wage regressions run using household survey data suggest a positive union wage gap; unionized individuals do receive higher wages, controlling for sectoral, occupational and institutional categories as well as individual attributes. This result stands in a difference-in-difference framework, and using a propensity score matching algorithm. Unionized individuals in Egypt therefore earn higher wages than non-unionized individuals. There is however no support in the data for this to be a result of what Freeman (Freeman 2010) called "normal unions", *i.e.* unions capturing parts of firms' rents and distributing them to workers. Unionization rates are neither associated with income distributions at the sectoral or occupational levels, nor do they act negatively on firms' shares of net profits.

The necessity to reconcile the two above and seemingly contradictory findings leads us to believe that unionization is a job attribute in the Egyptian labor market. Unionized jobs are on average good jobs, but that has little to do with union activity in itself. There is thus scope for reform in the field of labor relations in Egypt, and future independent unions may contribute to a normalization of relations. On the whole, understanding the real efficiency of unions at extracting rents is crucial to understand whether current resistances by regimes in the Arab world are solely based on political power struggles or may be linked to vested business interests. Further research should seek to examine the political as well as economic conditions that allow for the emergence of efficient unions.

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## 7 Tables

Table 1: Union wage gap by ELMPS round

	1998 (1)	2006 (2)	2012 (3)	2018 (4)
Union member	0.10529*** (0.020)	0.24070*** (0.017)	0.16979*** (0.018)	0.18709*** (0.021)
Age	0.01250 (0.007)	0.01421* (0.006)	0.00036 (0.006)	-0.00391 (0.006)
Female	-0.17630*** (0.020)	-0.26514*** (0.018)	-0.25324*** (0.020)	-0.34030*** (0.024)
Education level: <i>Ref: illiterate</i>				
Read & Write	0.11051** (0.035)	0.04108 (0.035)	0.01954 (0.038)	0.05692 (0.035)
Less than intermediate	0.17797*** (0.031)	0.10323*** (0.027)	0.05749* (0.023)	0.07818** (0.028)
Intermediate	0.20079*** (0.032)	0.17651*** (0.024)	0.11346*** (0.021)	0.11405*** (0.023)
Above intermediate	0.29786*** (0.041)	0.25201*** (0.033)	0.16211*** (0.037)	0.16163*** (0.039)
University and above	0.45789*** (0.041)	0.36068*** (0.032)	0.26704*** (0.028)	0.22479*** (0.029)
Rural	-0.08134*** (0.019)	-0.05517*** (0.016)	-0.02866 (0.015)	0.01964 (0.015)
Student	0.10037 (0.087)	0.04508 (0.083)	0.11931* (0.053)	0.12940* (0.054)
R <sup>2</sup>	0.38481	0.36212	0.21590	0.16969
N	4171	6838	9271	8911

Robust standard errors in parentheses. Additional control variables: economic activity (1-digit ISIC), occupation (1-digit), governorate, marital status, age-squared and employment status.

Table 2: Union wage gap, fixed-effects regression

	1998/2006 (1)	2006/2012 (2)	2012/2018 (3)
Union member	0.07566*** (0.020)	0.06022** (0.020)	0.06180** (0.023)
2006	0.72021*** (0.013)		
2012		0.85067*** (0.012)	
2018			0.79990*** (0.013)
Marital status <i>Ref: Under 18</i>	0.00000 (.)	0.00000 (.)	0.00000 (.)
Never married	0.05669 (0.088)	0.28423** (0.102)	0.28851** (0.108)
Married	0.20342* (0.093)	0.48107*** (0.106)	0.39167*** (0.116)
Divorced	0.09376 (0.137)	0.38146** (0.141)	0.43364** (0.148)
Widow	0.24345* (0.123)	0.40598** (0.133)	0.54837*** (0.143)
Rural	0.02693 (0.086)	-0.10838 (0.085)	-0.12107 (0.110)
Institutional sector <i>Ref: government</i>			
Public enterprise	0.10322 (0.055)	0.07304 (0.046)	0.13227* (0.051)
Private	0.27101*** (0.057)	0.16198*** (0.043)	0.08626* (0.044)
Investment	0.41871*** (0.124)	0.30357*** (0.065)	0.22931** (0.079)
International	0.85262** (0.292)	0.97355* (0.424)	-0.29179 (0.380)
Other	0.19109 (0.191)	0.19050 (0.118)	-0.30306 (0.158)
R <sup>2</sup>	0.63222	0.60893	0.51760
N	12120.00000	17512.00000	19979.00000

Coefficients are from a fixed effects-regression with (robust standard errors in parentheses), run on wave pairs from four rounds of ELMPS.

Table 3: Union wage gap 2018, distinguishing union presence and membership

	(1)	(2)	(3)
Union category: <i>Ref: no union presence at workplace</i>			
Union member	0.21459*** (0.026)	0.24391*** (0.026)	0.20464*** (0.027)
Other union presence	0.13381*** (0.035)	0.14341*** (0.036)	0.05767 (0.037)
Age	0.00899 (0.006)	0.00901 (0.006)	0.00605 (0.006)
Female	-0.42685*** (0.026)	-0.37060*** (0.027)	-0.36174*** (0.027)
Education level: <i>Ref: illiterate</i>			
Read & Write	0.08446* (0.042)	0.08235 (0.042)	0.07890 (0.041)
Less than intermediary	0.02825 (0.032)	0.03416 (0.032)	0.04070 (0.032)
Intermediary	0.11907*** (0.026)	0.11840*** (0.026)	0.11256*** (0.025)
Above intermediary	0.21797*** (0.048)	0.22271*** (0.048)	0.19019*** (0.047)
University and above	0.23234*** (0.035)	0.22546*** (0.035)	0.21039*** (0.034)
Rural	-0.02650 (0.017)	-0.02200 (0.017)	0.01541 (0.018)
Non-student	0.12625* (0.063)	0.11883 (0.061)	0.12668* (0.059)
Employment status dummies	Yes	Yes	Yes
Economic activity dummies	No	Yes	Yes
Institutional sector dummies	No	No	Yes
R <sup>2</sup>	0.09435	0.10637	0.15060
N	8499	8490	8479

Coefficients are from a fixed effects-regression with (robust standard errors in parentheses), run on wave pairs from four rounds of ELMPS.

Table 4: Effects of union membership on wages, 1998 - 2018

	Treated	Controls	Difference	S.E.	T-stat	Obs.
Sample: 1998						
<i>Propensity score matching (radius, caliper 0.1)</i>						
Unmatched	5.66404354	5.40771268	0.256330856	0.018503109	13.85	2123
Matched	5.58643668	5.50315689	0.083279789	0.029828507	2.79	2027
<i>Mahalanobis distance matching</i>						
Unmatched	5.66404354	5.40771268	0.256330856	0.018503109	13.85	2075
Matched	5.58643668	5.50865927	0.077777417	0.039280885	1.98	2075
Sample: 2006						
<i>Propensity score matching (radius, caliper 0.1)</i>						
Unmatched	6.27989177	5.87492242	0.404969351	0.015592453	25.97	3503
Matched	6.17490321	5.99162455	0.183278662	0.024014787	7.63	3316
<i>Mahalanobis distance matching</i>						
Unmatched	6.27989177	5.87492242	0.404969351	0.015592453	25.97	3409
Matched	6.17490321	6.00973919	0.165164022	0.032737087	5.05	3410
Sample: 2012						
<i>Propensity score matching (radius, caliper 0.1)</i>						
Unmatched	6.97827046	6.68583805	0.292432412	0.015569769	18.78	4831
Matched	6.91953046	6.78869937	0.130831096	0.023936228	5.47	4377
<i>Mahalanobis distance matching</i>						
Unmatched	6.97827046	6.68583805	0.292432412	0.015569769	18.78	4604
Matched	6.91953046	6.80729103	0.112239431	0.034163759	3.29	4604
Sample: 2018						
<i>Propensity score matching (radius, caliper 0.1)</i>						
Unmatched	7.70324477	7.42655713	0.276687636	0.017813284	15.53	4311
Matched	7.66706776	7.5729829	0.094084855	0.026605594	3.54	4305
<i>Mahalanobis distance matching</i>						
Unmatched	7.70324477	7.42655713	0.276687636	0.017813284	15.53	4307
Matched	7.66706776	7.61137368	0.055694079	0.035557147	1.57	4309

Results from matching algorithms run on ELMPS rounds 1 - 4.

Table 5: Effects of union coverage on sectoral Gini, 1998 - 2018

	Industry		Occupation		Industry & occupation
	2-digit level	3-digit level	2-digit level	3-digit level	1-digit & 1-digit
<i>Removing sectors with less than 25 wage observations</i>					
Union (avg)	0.0302 (0.03)	-0.00445 (-0.036)	-0.0681 (-0.056)	-0.01453 (-0.057)	0.06382 (0.064)
2006	0.01235 (0.009)	0.01125 (0.009)			
2012	0.00936 (0.009)	0.00791 (0.017)	0.00387 (0.01)	0.00626 (0.009)	0.00551 (0.009)
2018	-0.0099 (-0.012)	-0.00693 (-0.017)	-0.00214 (-0.012)	0.0124 (0.012)	-0.00654 (-0.008)
Constant	0.30263*** (0.011)	0.30963*** (0.017)	0.32160*** (0.022)	0.29372*** (0.021)	0.27939*** (0.023)
R <sup>2</sup>	0.10052	0.07148	0.07867	0.03857	0.06681
Obs	147	189	84	164	156
<i>Removing sectors with less than 50 wage observations</i>					
Union (avg)	0.03002 (0.04)	0.07099 (0.046)	0.00695 (0.052)	0.00614 (0.069)	0.06897 (0.1)
2006	0.01422 (0.01)	0.01482 (0.01)			
2012	-0.00015 (-0.011)	0.00705 (0.018)	0.00572 (0.011)	-0.01356 (-0.007)	0.00741 (0.012)
2018	-0.00845 (-0.012)	-0.0065 (-0.018)	0.00097 (0.014)	-0.00433 (-0.013)	-0.01259 (-0.012)
Constant	0.30558*** (0.014)	0.29003*** (0.019)	0.30037*** (0.023)	0.30526*** (0.023)	0.27429*** (0.039)
R <sup>2</sup>	0.09009	0.17514	0.01173	0.0591	0.152
Obs	99	111	75	112	85

Results from a fixed effects model. Robust standard errors in parentheses.

Table 6: Descriptive statistics from Enterprise surveys (2004,2007,2008)

	2004	2007	2008
<i>Sample: full</i>			
Average % of workforce unionized	6.87	11.47	10.62
% of firms with no union presence	81.96	68.97	79.41
% of firms affected by strikes or labor disputes during the past year	0.74	0.38	1.82
Profits as percentage of total sales (after tax)	14.44	11.12	16.59
<i>Sample: firms present in all three waves (556 firms)</i>			
Average % of workforce unionized	7.41	8.56	7.18
% of firms with no union presence	81.32	74.31	85.3
% of firms affected by strikes or labor disputes during the past year	0.93	0.18	2.89
Profits as percentage of total sales (after tax)	14.29	10.00	14.66

Table 7: Effects of unionization rate on net profits, 2004 - 2008

	(1)	(2)
2007	-0.03318*** (0.006)	-0.03231*** (0.006)
2008	0.00102 (0.007)	0.00156 (0.007)
Union rate	0.03005* (0.016)	
Some union		-0.00078 (0.009)
Constant	0.14400*** (0.005)	0.14632*** (0.005)
R <sup>2</sup>	0.03803	0.03485
N	2450	2450

Results from a fixed effects model. Robust standard errors in parentheses.

## 8 Figures

Figure 3: Areas of common support in matching procedure

