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Why Do Workers Join Trade Unions?

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Abstract

This paper uses data from manufacturing firms in Kenya to analyse the determinants of trade unionism. Matched worker-firm data from a recent Kenya manufacturing enterprise survey is used to estimate a reduced-form probit model of union membership. The results show that the likelihood of being a union member decreases with schooling; but is higher for full-time, married, and city employees. We conclude that Kenyan workers become union members to protect job tenure and to improve working conditions.

Keywords*: trade union membership; union density; manufacturing; Kenya.*

JEL Classification: J32, J51, J52

1. Introduction

The behaviour of the labour market in many countries is to some extent influenced by trade unions and their role as representatives of the workforce in collective bargaining with employers or with government. The ability of trade unions to influence the conditions of pay and work in the labour market largely depends on the degree of unionisation of the workforce; that is, the fraction of the workforce in trade unions (Checchi & Corno, 1998). However, the effectiveness of trade unions in influencing conditions of pay and work depends on the degree of membership participation in trade union activities (Anyango et al., 2013). Trade unions thus derive their legitimisation to represent the interests of the workforce from a high degree of union density and union members' participation in union activities. A large degree of unionisation and participation enhances the bargaining power of a trade union, and enables it to negotiate for higher pay rises and to improve working conditions (Checchi & Corno, 1998).

The main objective of trade unions is to raise and protect the welfare of their members (Manda et al., 2005; Anyango et al., 2013). This objective can be achieved through various means, such as improved pay and work conditions, support in the event of a problem at a workplace, job security, information about employment opportunities, legal advice, industrial benefits (e.g., pensions, medical insurance, housing allowances, etc.), training, education, financial aid, and social network. Thus, apart from joining trade unions to push for higher wage levels, there are non-wage benefits that attract individuals into labour unions.

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In Kenya, labour unions are usually found in manufacturing, trade, transport, large-scale agriculture, public and teaching sectors. Union membership is voluntary: it is estimated that about one-third of all Kenyan workers in the formal manufacturing sector are unionised. This is a relatively sizeable fraction of the labour force, given that payment of union dues is a prerequisite for becoming a union member. Data from Kenyan manufacturing firms for the period 1993-1995 show that about 40% of production workers belonged to trade unions, which is well over the national average of about 30% of employees then. The same data shows that the proportion of workers in trade unions varies from one region to another. For instance, 44% of the workers in manufacturing firms in Nairobi are union members compared with about 30% in Mombasa and Nukuru, and 25% in Eldoret (Manda et al., 2005). It is unclear why there are these variations in union membership. Further, it is puzzling that a larger fraction of Kenyan workers are not union members despite the large wage and non-wage benefits associated with being a union member. It is therefore important to understand why some workers join trade unions and others do not. This study analyses the determinants of union membership to shed light on this issue.

The remainder of the paper is structured as follows: section 2 presents theories of trade unions, and section 3 presents previous empirical studies. The model used, data and discussion of variables used are in section 4, while section 5 discusses the results. Finally, section 6 deliberates the conclusion.

2. Theories of Trade Unions

There are several theories that have been developed on trade unionism. These include the political revolutionary theory of labour movement, theory of industrial democracy, theory of union control of industry, environment theory, theory of man vs. machine, and the theory of the 'scarcity consciousness' of manual workers. We summarize each of these theories below.

The *political revolutionary theory* of labour movement was proposed by Marx and Engels, and is based on Adam Smith's theory of labour value (see Smith, 1776). The theory sees trade unions as simply a class struggle between proletarian workers and capitalist businesspeople with a short-run purpose of eliminating competition within labour, and ultimately leading to the overthrow of capitalist businesspeople. According to Marx, trade unions are instruments to overthrow capitalism.

Next is the *theory of industrial democracy* by Webb and Webb (1897). According to the theory, trade unionism is an extension of democracy from political sphere to industrial sphere. Like the political revolutionary theory, the theory agrees that trade unionism is a class struggle but looks at trade unions as providing means to workers to overcome managerial dictatorship and express their voice in the determination of the conditions under which they work. In other words, the theory considers trade unions not as an instrument to overthrow capitalism, but as a means of equalizing the bargaining power of labour and capital. Webb and Webb considered collective bargaining as a process that strengthens labour.

Third is the *theory of union control of industry* propounded by Cole (1913). The views of the theory are somewhere in between the political revolutionary theory and the theory of industrial democracy. While the theory agrees that unionism is a class struggle, the ultimate aim of the struggle is the control of industry by labour and not revolution as predicted by Marx.

Fourth is the *environment theory* propounded by Commons (1913). The theory is sceptical of generalisations and agrees that collective bargaining is an instrument of class struggle. However, it points out that, ultimately, there will be partnership between employers and employees.

The *theory of man vs. machines*—also sometimes referred to as the *'rebellion theory'*—was advocated by Tannenbaum (1921). According to this theory, the use of machines leads to the exploitation of workers; therefore, machines are the cause and trade unions are the outcome. According to the theory, a trade union is formed in reaction to the alienation and loss of community in an individualistic and unfeeling society. The union gives a worker a fellowship and a value system that s/he shares with other workers. Institutionally, a trade union movement is an unconscious effort to harness and reorganise around the cohesive identity that men working together always achieve.

Finally, is the *theory of the 'scarcity consciousness'* of manual workers by Perlman (1928). The theory rejects the idea of class consciousness as an explanation for the origin of a trade union movement, and substitutes it with what is known as job consciousness. According to the theory, "… working people in reality have an urge towards collective control of their employment opportunities, but hardly towards control of industry." The theory further proposes that a theory of the labour movement should include a theory of the psychology of the labouring man. It is when manual workers become aware of a scarcity of opportunity that they band together into unions for the purpose of protecting their jobs and distributing employment opportunities among themselves equitably, and to subordinate the interests of the individual to the whole labour organism.

Generally, the theories of trade unions point to the reasons as to why workers may want to join trade unions. Whereas researchers have devoted time and effort to study 'why employees choose to join a union,' findings of their studies do not report a common list of reasons. Nonetheless, there is a general agreement among labour experts that certain issues are likely to lead to an organizing drive by workers. First, from an economic point of view, workers act rationally and therefore they join a union with the aim of maximizing their benefits through union membership. The excess of benefits over costs justifies workers' joining a trade union. Some of the reasons why workers join a union include: job security, wages and benefits, working conditions, fair and just supervision, powerlessness, and the need to belong. Our analysis in this paper looks at some of these reasons. The next section looks at previous empirical studies.

3. Previous Empirical Studies

There is a large and diverse literature on the determinants of union membership in developed and developing countries, Kenya included. We review only a few to highlight common analytical methods and findings.

Studies based on time series data (e.g., Komsi, 2010; Schnabel & Wagner, 2005; 2007; Borland & Ouliaris, 1994) find that business cycle factors and structural developments are important macro-determinants of union membership. Studies based on cross-section and panel data (e.g., Windolf & Haas, 1989; Fitzenberger et al., 2009; Kollmeyer, 2007) show that trade unionism is determined by personal, occupational and firm characteristics; earnings; attitudes; social variables; and institutional factors such as unemployment insurance benefits.

Most studies done on trade unions in developing countries, Kenya included, are based on cross-sectional data (see, e.g., Rupayan, 2008; Guataqui et al., 2011; Anyango et al., 2013; House & Rempel, 1976; Manda, 1997; Manda et al., 2005; Schultz & Mwabu, 1998). Due to data limitations, some of the studies focus on certain groups of factors affecting union membership. For instance, Guataqui et al., 2011) focuses on structural determinants of trade union membership in Colombia; while the study by Rupayan (2008) looks at political factors on union membership in addition to individual and firm level factors. In Kenya, some authors (e.g., House & Rempel, 1976) show that, for certain categories of workers, trade union membership is negatively associated with earnings, or has no effect on earnings. The study by House and Rempel (1976) does not, however, offer an explanation as to why workers join trade unions if union membership is not associated with an increase in earnings. Manda et al.'s (2005) study on Kenya shows that the negative relationship between union membership and earnings could be due to flaws in the methodology used to analyse union membership. They argue that endogeneity of union membership in the earnings equation is the likely reason for the negative relationship reported in the literature (ibid.). The Kenyan studies, however, do not provide a comprehensive analysis of union memberships. This study aims to fill this gap by offering a rigorous analysis of why some individuals are union members while others are not.

We use worker-firm merged data on Kenyan manufacturing sector to analyse factors affecting union membership. We look at factors commonly identified in previous studies with a focus on age, education, occupation, working status; and workplace characteristics such as union density, firm size, location, and type of industry.

4. A Model of Trade Union Membership

4.1 Introduction

Assuming that the objective of a trade union is to maximise the well-being of its members, we ask two related questions: First, what do trade unions deliver to workers to achieve this objective; and what means do they use to do so? Second, what do workers expect to get from trade union membership, and what factors affect the perceived benefits of membership?

The first question has to do with the supply-side of trade union membership, and deals with the benefits offered to members and the "things that trade unions do" to facilitate membership. As in other market settings, the benefits of membership are offered to workers at some positive price. The second question relates to the demand-side: that is, workers' propensity to join trade unions to acquire the associated benefits. This propensity is determined by the sacrifice a worker must make to join, conditional on the work environment and socio-economic status.

Assuming that the activities of a trade union are not subsidised, the price that workers pay to join a trade union (say, annual membership fee) cannot be less than the cost of the benefits provided to them by the union. Under the no-subsidy assumption, the level of membership fees charged by a trade union depends on the cost of providing membership services. Thus, since production and cost structures of a trade union affect membership fees, they also affect membership decisions. It should be noted that a trade union is both a firm, and a consumer. As a provider of services that improve the working conditions of workers, a trade union is a firm; whereas, as an end-user of its own services, it is a consumer.

We focus on trade union as a collective consumer and explore how an individual's probability of joining this collective firm is affected by its own characteristics, and by the characteristics of the employer. We make a simplifying assumption that union leaders and union workers have the same preferences over the services provided by a union so that the behaviour of both can be described by the common preferences assumption. The common preferences assumption is rather innocuous given that the benefits from union membership are a form of a public good. For example, a pay increase negotiated by a union may be extended to all workers irrespective of their union status (Schultz & Mwabu, 1998). Moreover, union protection from unfair dismissal is available to all members. Because of the public good nature of union benefits, all paid-up members may not make the same non-monetary effort towards the strengthening of the union power.

In the literature, the free rider problem is usually identified with non-unionised workers who benefit from union spill-over benefits (Booth, 1986). However, as we have done here, the free rider problem can also be identified with union members who do not work to increase union power because they know others are working to do so. Nonetheless, Cregan and Johnson (1990) show that pro-union norms and peer pressure at workplaces in favour of unions may be effective checks against shirking and free riding. Thus, despite the public goods' characteristics of benefits from union membership, we continue to maintain a common preference assumption, in which the identity of a union member is unimportant in achieving the overall objective of the union. However, the free rider hypothesis in union membership can be tested directly (Booth, 1986).

In the framework developed below, a worker chooses to join a union if the perceived net benefit of union membership is greater than the benefit of not belonging to a union. We analyse workers' trade union membership decisions in Kenyan manufacturing using a simple qualitative choice model of union status.

4.2 Framework of Analysis

Following standard practice in the formulation of qualitative choice models (see, e.g., Schmidt & Strauss, 1976; Booth, 1986), the net benefit (utility) from trade union membership for worker i can be expressed as:

$$V_i = V(P_1, P_2, \ldots P_n, Y, S, Z) = MaxU_i = U(X_1, X_2, \ldots X_n) \text{ subject to } \Sigma P_i X_i = Y \qquad (1)$$

Where, suppressing the subscript for the worker:

V(.) is the indirect utility function for a worker;
U(.) is the corresponding direct utility function;
$P_1 \ldots P_{n-1}$ are prices of goods and services supplied by the union, with P_n being a price index for non-union goods, which are assumed to be a composite commodity;
$X_1 \ldots X_{n-1}$ are goods and services supplied by the union, with X_n being a composite commodity that is supplied outside of the trade union;
Y is the worker's resource endowment, which determines maximum welfare when it is efficiently allocated; while
S and Z denote, respectively, a worker's social and job characteristics.

Expression (1) illuminates several issues that are unclear in the earnings-union literature. First, the direct utility part of the expression shows the range of goods and services (the Xs) supplied to the worker by the union. These goods and services (Deery & Cieri, 1991; Waddington & Whitson, 1997) include:

(a) Improved pay and work conditions;
(b) Support by the union if there is a problem at the place of work;
(c) Job security;
(d) Quality employment opportunities;
(e) Legal advice;
(f) Industrial benefits such as allowances, pensions, medical insurance, and housing;
(g) Training and education;
(h) Financial services;
(i) Professional support;
(j) Companionship; and
(k) Opportunity to advance one's social goals.

The indirect utility part in equation 1 shows the maximum welfare level that a worker can attain given the prices of 'union goods' (i.e., goods (a) through (k) above), his/her endowment Y, and the prevailing social and industrial environment as captured by S and Z. The indirect utility part is especially useful from an empirical viewpoint because it contains observable information about a union's resource endowment, and the vector of prices of the goods that a union can provide, including unobservable goods such as job security. Solving equation 1 one obtains the following demand function:

$$X_{ij} = f(P_j, S_i, Z_i, Y) \qquad (2)$$

Where X_{ij} is the quantity of 'union good' j demanded by worker i. Conditional on being a union member, monetary prices for these goods, the P_js, are zero.

For example, union members receive wage increases negotiated by union leaders free of charge. From expressions 1 and 2, workers may join a trade union for a variety of reasons. For example, they can sacrifice a higher wage to receive a low wage in unionised firms for reasons of job security and job satisfaction; to be in company of people with ethnic or social values that they share; or to receive social services such as pensions and medical care that are not available in non-unionised firms. Thus, the sign of the effect of union membership on quantities of goods and services shown in equation 2 is an empirical matter.

It now remains to show the conditions under which a worker will join a trade union.

Let $V^J$and V^N be the indirect utilities of joining and not joining a trade union, respectively. Following Booth (1986) and suppressing subscripts for individuals, a worker i will join a union if:

$$V^J - V^N > 0 \text{ for } i = 1, \dots, n \qquad (3)$$

with the deterministic and stochastic components of the indirect utilities taking, respectively, the following forms:

$$V^J = X_J\beta + \xi^J, \text{ and similarly } V^J = X_N\beta + \xi^N \qquad (4)$$

Given equation 3, the probability P^J of worker i joining a union can be expressed as:

$$P^J = \text{ prob}\{(V^J + \xi^J) - V^N + \xi^N) > 0\} \qquad (5)$$

Which, by rearrangement becomes:

$$P^J = \text{ prob}\,(X_{J\beta} - X_N\beta > \xi^N - \xi^J) \qquad (6)$$

Assuming the error terms in equation 6 are independently and identically Weibull distributed, the cumulative joint density function for the errors—i.e., the unionisation probability—can be expressed in conditional logit form (Rupayan, 2008; Kollmeyer, 2007). If the error terms follow a normal distribution, a normal cumulative distribution function is the appropriate statistical description of unionisation probability, and a probit model happens. We estimate a reduced form probit model to analyse determinants of union membership in using Kenyan data. The next section describes the data and the variables used for estimation.

4.1 Data and Variables

We use matched worker-firm data from the Kenyan Manufacturing Enterprise Survey (KMES) carried out in 2000. The KMES was carried out by a team of researchers from the University of Oxford, Gothenburg University, and the

University of Nairobi in conjunction with the Kenya Association of Manufacturers. Much of the data gathered refer to the most recent financial year of the firm, which means that such data refer to 1999. When firms were asked about their current situation, their replies should be construed to refer to the actual time of the interview. Also, most of the data on workers refer to the year of data collection.

The KMES covered firms in four manufacturing sub-sectors (food, textile, wood, and metal) in four major urban centres in Kenya (Nairobi, Mombasa, Nakuru, and Eldoret). The sample is predominantly made of formal sector firms (comprising of about 90% of the firms), and most (55%) are in Nairobi. The firms were selected at random from a sample frame made up of different lists of firms in the country. The formal firms were chosen at random from the master file of registered firms from the Kenya National Bureau of Statistics. The sample frame for informal firms was constructed by undertaking a primary listing of firms in the four sectors, and then selecting the firms at random from the lists. The survey collected information from firms and workers.

The labour market sections of the survey provide information on both firm and individual characteristics. The information on firms was elicited from representatives of each firm, and included data on the total number of firm employees, total wage bills, profits, firm ownership, proportion of firm employees in trade unions, proportion of workers that are permanent (fulltime), casual employees, number of workers who quit the firm or changed jobs the previous year, the value of plant and equipment, value added, among others. In all probability, the data-set collected on individuals from firms is more accurate than would have been the case had the information been collected from households.

The information on individuals was obtained by interviewing at most ten (10) employees randomly chosen from a list of workers of each firm, among those present on the premises on the day of the interview. This could be a potential source of endogenous stratification. All employees in small firms were interviewed. The data on individual workers contains information on education, job experience, tenure, age, sex, marital status, hours of work, earnings, status of employment, among others. In addition to these, the KMES provides information on the family background of a worker, and whether an employee had changed jobs.

Following Booth (1986), Deery and Cieri (1991), Borland (1996), Waddington and Whitson (1997), Rupayan (2008), Manda et al. (2005) and Guataqui et al. (2011), we discuss variables that on *a priori* considerations are thought to affect union membership. We classify the variables by worker and firm characteristics. Individual characteristics that are likely to affect union membership as identified in the literature are sex of the worker, working status (full-time or part-time), firm-specific training, general training (typically obtained outside the firm), family background and commitment, education, age or labour market experience, tenure, occupation, and political ideology or loyalty.

4.1.1 Worker Characteristics

Starting with the sex of the individual, women are traditionally believed to be less likely to unionise because of their discontinuous attachment to the labour market due to family commitments or social norms that discourage them from taking up paid work outside the home. Thus, relative to men, women are less likely to unionise. We use a dummy variable to capture the effect of sex on union membership. Also, in comparison with full-time workers, part-time employees are less likely to unionise because they do not expect to be in a workforce for a long time. For such workers, benefits from unionisation are short-lived and may not materialise during periods of employment. We use a dummy variable to capture the effect of working status on union membership.

Compared to workers with general training, employees with specific or on-the-job training are more likely to protect their job tenure by joining trade unions because they may be unable to use their skills outside of the firm. In Hirschman's (1970) terminology, workers with firm-specific skills are more likely to use voice rather than threat of exit to protect their jobs. A dummy variable is used to capture the effect of on-the-job training on union membership. Similarly, people who have family commitments—such as caring for the young and the elderly—are more prone to unionisation for reasons of job security. We use a dummy variable for marital status to capture the effect of family commitments.

Education affects unionisation probabilities through several channels. Educated workers may expect to achieve more in their careers through personal efforts than through the bureaucratic machinery of a trade union and, thus, be unwilling to unionise. Also, highly educated individuals sometimes identify more with management than with a labour movement. Alternatively, workers with good education may want to use a trade union to advance certain social causes because they would, on average, be more effective in articulating their views. Thus, the influence of education on unionisation probability is ambiguous to start with. We measure education using total number of years of schooling for an individual, or their level of education.

Depending on the benefits provided by unions, it may attract workers of different age groups. For instance, if some unions provide health and old age benefits such as medical and pension schemes, they will attract older workers. In contrast, young workers may not be influenced by schemes such as choice of careers, which they are likely to pursue independently of union availability. If, on the other hand, working conditions and earnings are lower than what younger workers expect, then they are likely to join a union if its union aim is to improve these conditions. We capture the effect of this variables using years of work experience.

Occupation types influence the union status of workers. In some occupations in Kenya (e.g., teaching, civil service, food, and allied services) workers have an incentive to unionise because the skills they acquire for their jobs give them power to extract rents from employers. Also, workers in occupations such as

production lines may have no restrictions to join a union compared to their counterparts in management. We use a dummy variable for production workers to capture the effect of occupation on union membership. We expect production workers to have a higher probability of being union members.

Workers may also join trade unions if they believe that the unions will help improve their working conditions. This is the case especially if the working conditions at a workplace are undesirable. Workers in jobs with undesirable characteristics (e.g., dangerous working environment, long hours of work) are therefore likely to join trade unions or seek compensatory pay. In this paper, we use weekly hours of work as a proxy for working conditions. Longer hours of work without extra pay are associated with poor working conditions.

Some attitudes, social values and political ideologies are associated with greater propensity to unionise. In Western countries (Deery & Cieri, 1991; Riley, 1997; Kollmeyer, 2007), people with *leftist* political ideologies, those who participate in political activities, and those who describe themselves as working class are more likely to identify themselves with trade union causes and to voluntarily become union members. In the Kenyan case, workers who identify themselves with opposition political parties, or who are from ethnic groups that consider themselves not treated well by the ruling party, are more likely to join trade unions, taking them as alternative institutions for pursuing their social and political ends. However, our data does not have information that can enable us to control for the effect of this variable in our analysis.

Several theories of social psychology and social custom models suggest the inclusion of social variables in the union membership model. The influence of key individuals—such as parents and spouses—on the decision to be a union member has been found to have mixed outcomes (Windoff & Haas, 1989; Goerke & Pannenberg, 1998). Our data provides information on the education and occupation of an employee's father. We use a dummy variable on father's education to control for the effect of this variable on union membership.

As mentioned earlier, the free rider problem in the literature is usually identified with non-unionised workers who benefit from union spill-over benefits (Booth, 1986). The free rider problem can be identified with workers who do not work to increase union power because they know others are working to do so. Nonetheless, pro-union norms and peer pressure at workplaces in favour of unions may provide effective checks against shirking and free riding (Cregan & Johnson, 1990). Also, in a median voter model in which workers have different reservation wages and hence different optimal points in the trade-off between an increased wage and a decreased probability of employment, Bulkley and Myles (2001) argue that joining a union instead of free riding may be rational. This would be the case if joining a union enables individuals to influence union bargaining goals and thus their own employment probability. The free rider hypothesis in union membership can be tested directly (Booth, 1986).

It is expected that trade unions would provide job security to their members. Therefore, union members would enjoy greater job security than non-members so that tenure would be higher for union than non-union workers. Therefore, job security should act as an incentive to join a union.

4.1.2 Firm Characteristics

From the literature, firm level factors affecting union membership include the following: state of labour demand in the industry, firm size, union density, type of industry, organisational costs, union recruitment practices, location of firm (industry) and/or workers, union-provided goods such as wages and allowances, and collective bargaining (e.g., decentralised or centralised system). We provide below a brief description and expected effects of some of these variables drawing mainly on literature, following closely the format used by Booth (1986).

The state of labour demand in an industry has an important effect on the ability of unions to negotiate wage increases and to secure other union-provided goods such as fringe benefits for its members, factors that attract workers to unions. If labour demand is wage inelastic, then trade unions have better chances of raising wages and of increasing membership than if they face elastic demand schedules. The rate of unemployment in an industry may be used as a proxy for the state of demand for labour. However, we are not able to capture this variable due to data limitations.

Large firms are more likely to have unionised workers because the costs of organising trade union activities in such firms tend to be low relative to costs in small firms. Further, workers in large firms tend to be alienated from one another by specialised job routines, and are more likely to be treated anonymously by management in contrast to situations in small firms where face-to-face interaction among workers is common. Workers in large firms are thus more likely to turn to trade unions to fulfil socialisation needs, and to protect themselves from arbitrary behaviour of management. To the extent that union organisational costs are lower in large firms, union densities would also tend to be high in such firms, a situation that is conducive to unionisation of new workers. Also, in such organisations, there tends to exist higher peer pressure to conform to a social custom of union membership (Riley, 1997; Schnabel & Wagner, 2005). We measure firm size by the number of employees in a firm and its square. We expect positive but declining impact of firm size on union membership, reflecting lower organising costs for unions in large firms.

Recruitment practices of unions also affect union densities, with densities being higher in firms where recruitment is face-to-face, especially in industries with decentralised collective bargaining. However, decentralised bargaining has the disadvantage that its negotiated wages are normally lower than wages secured through a centralised process. Thus, an increase in unionisation due to recruitment efforts at a firm level may be offset by inability to negotiate sufficiently high wages. Thus, decentralised and centralised collective bargaining affects unionisation through the wage rate in opposite directions. However, if

workers prefer social outcomes of a bargaining process over monetary outcomes, decentralised bargaining may increase unionisation even though it is associated with lower wages. The data that we have enables control for the effect using two variables: centralised, and decentralised collective bargaining.

Due to the limitations of the survey data used in the analysis, only some of the variables discussed above are included in the union participation equation that we estimate. In particular, data on the state of labour demand, attitudes, social values, and political loyalties are not available. The variables included in the analysis are defined as shown in Table A1. They include, among others, the dependent variable, i.e., union membership status (a dummy variable taking value 1 if an individual is a union member, and zero otherwise).

5. Results

This section discusses results in two sub-sections. The first sub-section looks at the descriptive statistics, while the second discusses the probit results.

5.1 Descriptive Results

Table 1 shows the means and standard deviations of the variables used in the analysis. On average, the workers have about 10 years of education. The mean years of experience for all workers is about 12 years; and 13 years for production workers.

Table 1: Means and Standard Deviation of Variables Used in the Analysis

Variables	All Workers		Production Workers	
	Mean	*Standard Deviation*	*Mean*	*Standard Deviation*
Weekly hours of work	46.4	7.0	46.7	6.1
Age	34.8	9.7	35.3	35.4
Years of education	9.8	2.9	8.9	2.7
Experience	12.2	9.3	13.1	9.9
On-the-job training	0.11	-	0.14	-
General training	0.45	-	0.34	-
Production workers	0.61	-	-	-
Firm size (workers)	162	289	-	-
Tenure (years)	8.6	8.6	9.4	8.1
Married	0.75	-	0.80	-
Located in Nairobi	0.55	-	0.54	-
Male	0.81	-	0.91	-
Food sector	0.29	-	0.25	-
Wood sector	0.19	-	0.22	-
Textile sector	0.26	-	0.28	-
Metal sector	0.26	-	0.25	-
Union density	33.2	33.2	33.9	33.9
Central bargaining	0.06	-	0.05	-
Decentralized bargaining	0.44	-	0.45	-
Fulltime employees	0.76	-	0.73	-
Formal sector	0.92	-	0.91	-
Father has university education	0.03	-	0.01	-
Foreign-owned farm	0.11	-	0.09	-
Total Number of observations	**1088**		**670**	

About 11% of the workers have on-the-job-training, while 45% have general training. Production workers constitute about 61% of the workers in our sample, and an average firm employs 162 workers. The average tenure for workers in the manufacturing sector is about 9 years. About 75% of the workers in our sample are married. Of the firms, 55% are in Nairobi, 25% in Mombasa, and the remaining in Nakuru and Eldoret. Most of the respondents (81%) are males, indicating that only 19% of the sample respondents are females; reflecting the domination of the manufacturing sector by male workers. About 9% of the employees in our sample have changed employment. The proportion of employees working in foreign-owned firms is about 11%.

The average union density is about 33.2%. This indicates that about one-third of workers in the manufacturing sector are trade union members. This is not very different from the national estimates of about a third of the workers. As already noted, trade union membership is not compulsory in Kenya. The question is whether there is any distinct group of workers who join unions. We attempt to answer this question using information in Table A2 in the Appendix.

Columns 1 and 2 in Table A2 show the means for union and non-union members based on the entire data-set. We can see from the table that both union and non-union workers are engaged on average for 46 hours in a week. Also, on average the age of union workers is about 38 years compared with 34 for non-union workers. Non-union workers are more likely to be less educated as indicated by about 9 years of education for union workers, and 10 years of education for non-union workers. It is likely that older workers and less educated ones are likely to join trade unions for reasons of job security. Job insecurity may arise from the fact that employers may prefer younger and highly educated individuals to older workers. It is also likely that many of the young workers, being highly educated, work in occupations such as management and administration, which do not allow one to join trade unions; or join firms where there are no trade unions.

Union workers have longer working experience than non-union workers. This probably confirms that older people are more likely to join trade unions than the young. Most of those with general training are non-union members. As shown in Table A2, about 27% of the union workers and 50% of the non-union workers have general training. On the other hand, 84% of production workers are union-workers, compared with 56% non-union production workers. This shows that production workers are a dominant group not only for union workers but also for non-union workers. Also, male workers form most of the union workers, although they also form most of the non-union workers. This, however, reflects the fact that male workers are the dominant workers in the manufacturing sector.

Another important result from Table A2 is that tenure is higher for union than for non-union workers. This partly provides another possible reason why some workers may join a trade union. Workers possibly join a union for job security. Also, most union workers seem to work in larger firms than non-union workers. Lastly, union workers are in firms that are more unionized. This suggests that the union density of a firm may have some influence on union membership.

Table 2: Means for Selected Variables by Location and Union Status

Variables	All Workers			
	Nairobi		*Other Towns**	
	Union	***Non-union***	***Union***	***Non-union***
Weekly hours of Work	44.7	45.0	48.3	47.8
Age	37.0	36.6	38.5	33.5
Experience	14.6	11.8	8.3	10.0
Years of education	8.6	10.1	16.1	11.0
Firm size (workers)	148.0	164.0	199.0	156.7
Tenure (years)	11.7	7.7	14.0	7.3
Union density	68.4	29.9	62.5	18.8
Total observations	**145**	**438**	**75**	**485**
	Production Workers			
	Nairobi		*Other Towns**	
	Union	***Non-union***	***Union***	***Non-union***
Weekly hours of work	48.3	45.4	48.6	48.4
Age	38.5	35.0	40.6	33.7
Experience	8.3	9.1	7.6	9.1
Years of education	16.1	12.5	18.3	11.3
Firm size (workers)	199.0	131.4	190.4	123.7
Tenure (years)	14.0	8.1	16.2	7.7
Union density	62.5	28.0	61.7	14.0
Total observations	**75**	**229**	**59**	**244**

Note: * The other towns are Mombasa, Nakuru and Eldoret

Table 2 shows that the average age and experience for union workers is generally higher than for non-union workers. The average number of years of education is generally higher for non-union workers than for union workers. Union density is highest among firms with union members in all locations, and firms with union members are also generally larger than those without union members. Also, tenure is higher among union than non-union members, with years of service for union workers in the current firms being highest in Mombasa, Nakuru, and Eldoret.

5.2 Probit Results

Table 3 presents the probit maximum likelihood estimates of the effect of both individual and industrial characteristics on workers' participation in trade unions. The results are marginal changes in the probability of being in a trade union following an infinitesimal change (assumed to be a unit change) in factors that are theoretically important in influencing that probability. As the table shows, the *t*–ratios associated with the marginal effects show that most of the variables included in the model influence union membership. Since production workers comprise 61% of all workers in the manufacturing sector, we estimate a separate membership probit equation for this category of workers (last two columns of Table 3).

As Table 3 shows, the marginal effect associated with years of education is negative. This means that workers with higher education are less likely to be trade union members as shown by both sets of results (all workers, and production workers).

Table 3: Probit Analysis of Trade Union Membership

Variables	All Workers		Production Workers	
	Marginal Effects	*T-value*	*Marginal Effects*	*T-value*
Years of education	-0.01597	-3.57	-0.0184	-2.51
Experience	-0.01088	-3.05	-0.0147	-2.51
Experience squared	0.00007	1.14	0.0001	0.94
On-the-job training	-0.0569	-2.27	-0.0925	-2.16
General training	-0.09529	-3.77	-0.1022	-2.58
Male	0.02730	0.87	-0.0063	-0.09
Full-time employment	0.08113	2.93	0.1524	3.15
Union density	0.00282	7.30	0.0046	6.92
Father has university education	0.28263	2.71	0.1384	0.50
	0.0354	1.64	0.0853	2.34
Located in Nairobi	0.1304	3.76	0.1905	3.22
Food sector	0.00703	0.20	0.0332	0.57
Wood sector	0.04590	1.39	0.0749	1.4
Textile sector	0.00005	0.03	0.0059	1.72
Weekly hours of work	0.1186	5.42	-	-
Production workers	-0.0347	-1.16	-0.0582	-1.10
Foreign firm	0.0001	0.83	0.0001	0.42
Firm size	-0.0000	-0.38	-0.0000	-0.73
Firm size squared	0.0067	2.97	0.0105	2.92
Tenure	0.09037	3.43	0.1299	2.99
Non-members benefit	0.0635	2.13	0.0697	1.26
Formal sector	0.0962	1.61	0.1733	1.68
Central bargaining	0.0436	1.29	0.0154	0.27
Decentralised bargaining	0.0746	2.81	0.1183	2.47
Married	948		616	
Number of observations	-297		-216.75	
Log likelihood	0.40		0.41	
Pseudo R-squared				

An extra year of schooling is associated with a 1.59% increase in the probability of union membership for *all* workers, and with 1.84% increase among *production* workers. Another factor driving unionization is full-time employment. The probability of joining a union for all workers is 8.1% higher among full-time workers (relative to part-time workers), and 15.2% higher for production workers.

The marginal effect of experience is negative, and that of experience squared is positive, an indication that experience has a U-shaped relationship with the probability of being a union worker. The explanation for this could be that young workers who possibly have higher education are likely to occupy job levels that put limits to joining trade unions, or jobs that provide more benefits than they would get if they were in a union. On the other hand, the more experienced but less educated workers are likely to join trade unions to secure their jobs.

The coefficient on specific training (on-the-job training) is negative and statistically significant; and that for general training is also negative and statistically significant, a finding that applies to all workers and to production workers. On-the-job training involves training in specialized tasks that are specific to a particular firm, and it is most likely that it will reduce the probability of union membership if workers believe they are likely to lose employment if they join trade unions and hence be unable to get the specific skills acquired. On the other hand, if workers believe that there is high job insecurity, so that one can lose a job with or without on-the-job training, then they are likely to join trade unions. Workers with general training are more likely to have better job options in other firms and thus their propensity to seek union-provided goods such as job security, better wages or allowances should be low.

Being a full-time worker raises the probability that a worker is a union member, especially for production workers. Workers in firms that are highly unionized are likely to be members of trade unions. This shows that if an individual is employed in a highly unionized firm, the chances that s/he is a trade union member are higher than when one is employed in a firm with a low level of unionization. The family background of a worker also affects union status. Workers whose fathers have a university degree are likely to be members of trade unions.

The coefficients on location dummies (all workers) indicate that relative to Mombasa, Eldoret and Nakuru (the location we use for comparison), the probabilities of being a trade union member are higher in Nairobi. Union membership probabilities for Nairobi are 4%, higher than the probabilities for Mombasa, Eldoret and Nakuru. The results for production workers show a similar pattern to that of all workers, but with much higher elevated probabilities. It is possible that recruitment of union members is more aggressive in Nairobi than in the other locations of Mombasa, Eldoret, and Nakuru.

In both sets of results, workers in the food, wood, and textile sub-sector (the comparison group) are associated with higher probabilities of union membership relative to employees in the metal sub-sector. For all workers and production workers, being in the food sub-sector raises the probability of being a trade union member. The explanation for this outcome could be that the food sub-sector has well-established and organized trade unions than the metal, textile, and wood sub-sectors. The strong trade unions in the textile industries in earlier decades could have been affected by the collapse of major textile firms following the liberalization of the economy in the 1980s and 1990s.

Weekly hours of work are positively correlated with the probability of being a trade union member, but this effect is not significant. If an employee is a production worker, there are higher chances that s/he will be a union member. Employees in foreign-owned firms are less likely to be union members. If an employee is in a large firm, such an employee is more likely to be a member of a trade union. Though the relevant coefficient is not significant, part of the reasons for higher union membership in large firms is due to lower cost of unionization.

Longer tenure in a firm raises the probability that a worker is a union member. A worker in firms where non-union workers benefit from deals reached between unions and employers is more likely to be a member of a trade union. In Kenya, workers in the management may not be allowed to join trade unions because of conflict of interest. However, if it happens that they benefit from deals reached between unions and employers, then what this result shows is that in such firms, workers may be encouraged to join trade unions so that whatever benefits they get also apply to them. Whether an employee is in a firm that uses centralised or decentralised bargaining processes does not affect union membership. This means that recruitment practices of unions also affect union membership. Furthermore, if an employee is married, there is a bigger chance that s/he will be a union member. This probably reflects the fact that family responsibilities in terms of food, shelter and school fees pushes a worker to join a trade union for job security, a key factor in family maintenance.

To examine location effects further, we estimated separate probit equations for Nairobi and for the other three locations combined. Table 4 shows the estimated probit results (marginal effects) for the two separate equations.

Table 4: Probit analysis of unionization of workers by location

Variables	Nairobi		Other Towns	
	Marginal Effects	***T-value***	***Marginal Effects***	***T-value***
Years of education	-0.0142	-1.97	-0.0012	-2.51
Experience	-0.0151	-2.57	-0.0007	-1.98
Experience squared	0.0001	1.31	0.0000	0.46
On-the-job training	-0.0182	-0.35	-0.0053	-4.18
General training	-0.1108	-2.53	-0.0185	-4.30
Male	-0.0133	-0.23	0.0004	0.12
Full-time employment	0.1578	3.61	-0.0010	-0.27
Union density	0.0032	5.21	0.0004	5.41
Food sector	0.0689	1.21	0.1504	3.40
Wood sector	-0.0880	-1.80	0.0747	4.52
Textile sector	-0.0068	-0.14	0.1197	3.11
Weekly hours of work	-0.0064	-1.59	0.0002	1.31
Production workers	0.1908	5.14	0.0047	2.26
Foreign firm	-0.0729	-1.43	0.0570	2.69
Firm size	-0.0001	-0.68	0.0000	3.04
Firm size squared	0.0000	1.11	-0.0000	-3.38
Tenure	0.0046	1.17	0.0008	3.62
Non-members benefit	0.0995	2.35	0.0281	2.78
Formal sector	0.0769	1.21	0.0047	2.57
Central bargaining	0.3684	3.16	-0.0038	-2.13
Decentralised bargaining	0.0968	1.88	-0.0077	-1.60
Married	0.1354	3.14	0.0032	1.35
Number of observations	509		432	
Log likelihood	-181.54		-70.83	
Pseudo R-squared	0.38		0.63	

The results for Nairobi show that education, experience, and general training have a negative and significant effect on the probability of being a union member. Full-time employment, union density, being in firms where non-members benefit from deals reached by a union, being a production worker, and being a married person are positively associated with union membership. Similar results are obtained for the other three urban centres except that the effect of on-the-job training, which was not significant in the equation for Nairobi, is now significant. Also, workers in food, wood, and textile industries in the three urban centres are more likely to be in unions than workers in the metal industry. The other difference between the two sets of results is that being in a foreign firm increases the probability of being a union member; and that being a full-time employee has no effect on union membership for workers in Mombasa, Nakuru, and Eldoret.

Higher weekly hours of work are associated with a higher probability that a worker would be in a trade union in the other towns, but the association is statistically insignificant. If a worker is married, then s/he is likely to be a union member if working in Nairobi. Marital status is not positively associated with union membership in the other towns. If a worker is in a firm where central bargaining is done, then such a worker in Nairobi is more likely to be a union member, while in the other towns s/he is less likely to be in a union. The results obtained in this study are similar to some of the results obtained by other previous studies such as Rupayan (2008) for India, Guataqui et al. (2011) for Colombia, and Windolf and Haas (1989) for West Germany, among others.

6. Conclusion

Union membership in Kenya is voluntary, and about a third of employees are union workers. The main objective of trade unions is to raise and protect the welfare of their members through various means, including improving pay and work conditions, and fringe benefits. It should be the case that positive net benefits will attract an individual into trade unionism. This paper analysed the determinants of union membership using data from manufacturing firms in Kenya for 2000, the most comprehensive information available on the country's manufacturing enterprises to date.

The results show that the likelihood of being a union member generally decreases as the level of a worker's education increases. The probability of being a trade union member is higher for full-time employees, married workers, and in firms where non-members can free-ride. Older employees are more likely to be union members than young, inexperienced workers. The main motive for a worker's membership into a trade union is to protect job tenure and improve working conditions. The probability of being a union member varies by worker characteristics and firm attributes; particularly location, type, and size.

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Appendix

Table A1: Definition of the variables

Variables	Definition
Union dummy	1 if a worker is a union member, 0 otherwise
Weekly hours of work	Total number of hours of work in a week
Years of education	Total number of years completed in education
Experience	Total number of years of experience
On-the-job training dummy	1 if a worker has had on-the-job training, 0 otherwise
General training dummy	1 if a worker has had general training, 0 otherwise
Production workers	1 if one is a production worker, 0 otherwise
Firm size (workers)	Total number of workers in a firm
Tenure (years)	Total number of years a worker has been with the current firm.
Married	1 if a worker is married. 0 otherwise
Located in Nairobi	1 ff firm is located in Nairobi, 0 otherwise
Male	1 if a worker is married, 0 otherwise
Food sector	1 if firm is the food sub-sector, 0 otherwise
Wood sector	1 if firm is the wood sub-sector, 0 otherwise
Textile sector	1 if firm is the textile sub-sector, 0 otherwise
Metal sector	1 if firm is the metal sub-sector, 0 otherwise
Union density	Proportion of workers in a firm who are union members
Central bargaining	1 if for a firm there is central bargaining, 0 otherwise
Decentralized bargaining	1 if for a firm bargaining is at the industry of firm level, 0 otherwise
Fulltime employees	1 if fulltime employee, 0 otherwise
Formal sector	1 if formal sector firm, 0 otherwise
Father has university education	1 if the farther to a worker has university education, 0 otherwise
Foreign firm	1 if firm is foreign owned, 0 otherwise
Non-members benefit	1 if non-union workers benefit from deals reached at between union and employer organization, 0 otherwise

Table A2: Means of Selected Variables by Union Status for Workers in the Formal Manufacturing Sector

Variables	All Workers		Production Workers	
	Union	*Non-union*	*Union*	*Non-union*
Weekly hours of work	46.0	46.5	46.3	46.9
Age	37.5	34.1	38.0	34.4
Years of education	8.5	10.0	8.3	9.12
Experience	15.2	11.4	16.0	11.9
On-the-job training	0.14	0.11	0.15	0.15
General training	0.28	0.50	0.26	0.38
Production workers	0.84	0.56	-	-
Firm size (workers)	166	160	148	127
Tenure (years)	12.5	7.5	13.2	7.9
Married	0.91	0.71	0.93	0.74
Located in Nairobi	0.66	0.52	0.68	0.48
Located in Mombasa	0.29	0.24	0.27	0.22
Male	0.91	0.79	0.94	0.90
Food sector	0.35	0.27	0.31	0.22
Wood sector	0.11	0.21	0.12	0.26
Textile sector	0.38	0.23	0.41	0.32
Metal sector	0.16	0.29	0.16	0.29
Union density (%)	66.4	24.5	67.4	20.7
Central bargaining	0.09	0.05	0.09	0.03
Decentralized bargaining	0.79	0.35	0.79	0.32
Fulltime employees	0.92	0.72	0.93	0.66
Formal sector	0.92	0.92	0.91	0.91
Father has university education	0.03	0.03	0.01	0.01
Foreign owned farm	0.11	0.12	0.07	0.09
Total Number of observations	**220**	**843**	**184**	**486**