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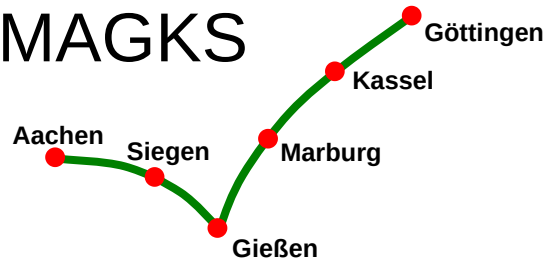

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What determines workers' preferences for efficiency over equity wages?

Prosper F. Bangwayo-Skeete[♣], Afaf H. Rahim[¥] and Precious Zikhali[¤]

Abstract

What makes workers consider it fair for wages to be indexed on job performance or efficiency? In this paper we attempt to answer this question using the 2005 wave of the World Values Survey data for 43 countries to investigate what socio-economic characteristics condition employees' preference for efficiency over equity wages. Our results suggest that employees' preference for efficiency wages increases with education and globalization while it decreases with unemployment, income inequality and income tax rates. Given that conventional economic theory demonstrates the importance of labour efficiency, which improves when workers are remunerated according to their efficiency, for economic growth; our results suggest that institutions and specifically public policies that promote education, and globalization, along with policies that reduce unemployment, income inequality and income tax rates could be used to promote efficiency-based wages.

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1. Introduction

The efficiency–equity trade-off is at the core of policy debates in mainstream economics. One particular area where this trade-off is evident is in the labour wage policies. Whereas horizontal equity within the labour market would require workers on the same job to receive equal pay independent of performance, allocative efficiency, on the other hand, requires workers at the margin to receive a wage equal to their value product. Therefore, for the labour market to operate efficiently, efficiency wage theories suggest wages should be based on labour productivity and performance (Stiglitz, 1974; Shapiro and Stiglitz, 1984 and Akerlof and Yellen, 1990). Since firms' objective is to maximize profits given labour costs and other constraints, efficient workers or high performing workers will boost the firms' productivity and profit and this in turn will promote the country's economic growth. Subsequently, efficiency driven labour market reforms have been central to economic liberalization reforms aimed at stimulating economic growth. For instance, in 1984, in order to improve economic growth, China instituted labour market reforms that exhibited a significant shift from socialist/egalitarian horizontal wages towards a wage policy that aims to strengthen the link between individual remuneration, individual productivity and enterprise performance (Coady and Wang, 2000).

Efficiency wage theories stem from the notion that productivity is dependent on workers' effort and postulate that workers should be compensated for their induced effort with higher wages paid to employees who exert better performance. Four distinct microeconomic foundations justify the relationship between wages and productivity (Yellen, 1984). First, in developing countries higher wages can increase worker's food consumption, and thereby cause them to be better nourished and more productive. Second, higher wages can increase workers' effort in situations where moral hazard problems exist as firms cannot monitor worker performance perfectly. In support of this, Akerlof and Yellen (1990) argue that workers proportionately withdraw effort as their actual wage falls short of their fair/efficient wage, therefore, remunerating workers based on their productivity will provide the incentive to work rather than shirk. A similar line of reasoning was advanced by Shapiro and Stiglitz (1984). Third, adverse selection yields further reason for a relationship between productivity and wages. Assuming that job performance depends on workers' ability and since workers are likely to be heterogeneous, if ability and workers' reservation wages are positively correlated, then firms with higher wages will attract more competent job candidates (James Malcolmson, 1981). Finally, firms may also offer efficiency wages to reduce costly labour

turnover (Stiglitz, 1974; Gottfries and Westermark, 1998). Efficiency wages, in as far as they are set above market clearing wages, can enhance loyalty among workers and hence induce high effort. Conversely, wages set below the market clearing rate can lead to labour turnover and/or shirking.

Intuitively, a firm has to decide whether to index wages on workers' efficiency or to have equal horizontal wages. This poses significant challenges as in most cases choosing one wage policy sacrifices the other. Moreover, the sustainability of wage policies hinges to a large extent on whether or not the employees perceive them as fair. This means that it is important to understand which socio-economic as well as country-specific characteristics influence employees' valuation of wage policies in terms of fairness. To our knowledge, no one has investigated what factors condition workers' preferences for efficiency versus equity wages. Such an investigation is merited, not only due to the importance of incentive mechanisms in labour productivity, but it could also guide employers on designing wage structures for their firms.

Thus, the objective of this paper is to investigate the socio-economic factors as well as macro-level policy variables that influence employees' preferences for efficiency-based wages rather than horizontal egalitarian pay systems. Our analysis is based on the 2005 World Value Surveys (WVS) data on employed individuals.

The rest of the paper is organised as follows: section 2 presents the econometric framework and data used in the empirical estimation while the presentation and discussion of results is done in section 3. We conclude in section 4.

2. The Empirical model and data

This section briefly outlines the econometric framework as well as the data used in the analysis.

2.1 The Empirical model

What makes an individual consider it fair for workers to be paid according to their performance or efficiency? Conversely, what factors make employees have a preference for equal horizontal pay? Specifically, how does the probability that a worker prefers efficiency over equity wages vary with socioeconomic characteristics? In line with this, the objective of the empirical analysis is to examine different socio-economic as well as country-level characteristics that condition employee's preference for efficiency wages relative to equity

wages. Accordingly, we model the probability that an employee believes that wages should be indexed on job efficiency as follows

$$\begin{aligned} &P(\textit{ Efficiency wages}_i = 1 \,|\, \mathbf{X}_i) = \Phi(\alpha_0, \boldsymbol{\alpha}_1, \mathbf{X}_i); \\ &P(\textit{ Efficiency wages}_i = 0 \,|\, \mathbf{X}_i) = 1 - \Phi(\alpha_0, \boldsymbol{\alpha}_1, \mathbf{X}_i) \end{aligned} . \tag{1}$$

Assuming this probability is a linear combination of the worker's observed and unobserved socio-economic characteristics as well as country-specific characteristics then the following empirical model is estimated

$$\textit{Efficiency wages}_i = \alpha_0 + \boldsymbol{\alpha}_1 \mathbf{X}_i + \varepsilon_i , \tag{2}$$

for $i = 1,.....,N$ workers. The dependent variable $\textit{Efficiency wages}_i$ is a dummy variable that takes the value of one if the respondent believes it is fair to base wages on efficiency and zero otherwise. It is formulated based on the following question from the World Values Survey questionnaire: *Imagine two secretaries, of the same age, doing practically the same job. One finds out that the other earns considerably more than she does. The better paid secretary, however, is quicker, more efficient and more reliable at her job. In your opinion, is it fair or not fair that one secretary is paid more than the other?*

This question asks the respondent to make efficiency and equity considerations with reference to wages. As the question indicates, efficiency is with regards to being efficient on the job and can be interpreted as relating to productive efficiency. Thus, if a respondent says it is fair to pay the 'quicker, more efficient and more reliable' secretary more, then the respondent expresses the belief that wages should reward good performance. On the other hand, if the respondent says that it is unfair to have one secretary paid more than the other we consider the respondent as believing in equal horizontal pay i.e. he or she believes workers should be paid the same regardless of the differences in performance. This allows us to interpret the question as asking the respondent to state their preference between efficiency and equity wages.

The vector $\mathbf{X}_i$ comprises socio-economic characteristics of the respondent as well as country-specific characteristics. Inclusion of these characteristics is based on existing empirical literature and theory. The parameter and the vector of parameters to be estimated are α_0 and α_1 respectively. The error term, ε_i is assumed to be independently, identically, and normally distributed with zero mean and standard deviation equal to one (Wooldridge,

2002). The cumulative distribution function of the error terms is denoted by Φ. The assumption of the normality of the error terms and the binary nature of the dependent variable means that equation (2) can be estimated using the probit model (see Wooldridge, 2002 for more details on the probit model).

2.2 Data and descriptive statistics

The individual-level data used in this paper is from the 2005 wave of the World Value Surveys (WVS). The data consists of 60579 observations from 43 countries[1]. Since our interest is on the workers' preference for efficiency wages, the analysis is confined only to employed individuals in the sample -a total of 31108 observations. The paper utilizes the data to investigate the socio-economic factors that influence workers' preference between efficiency and equity wages. To control for macro or country-specific effects on workers' preferences we augment the socio-economic variables from the WVS data by country-level data on GDP per capita, globalization indices, unemployment rates, income inequalities and income tax rates.[2]

Table 1 below gives descriptive and summary statistics of the variables used in our empirical analysis. Around 79% of the respondents believe that it is fair to pay higher wages to more efficient workers. On average the surveyed respondent has completed secondary schooling (the mean for education level is 5.5) and around 67% of the respondents consider themselves religious. 75% of the respondents are employed in the private sector while the rest are employed in the public sector. The mean of the income deciles reported by the surveyed households is 5. Interestingly, on average respondents believe that competition is good as it stimulates hard work and development of new ideas.

Regarding the country-specific variables, the average GDP per capita is around 12800 in PPP (current international dollars) and an average unemployment rate of 9.8% is recorded for

[1] Andorra, Argentina, Australia, Brazil, Bulgaria, Burkina Faso, Chile, China, Cyprus, Egypt, Ethiopia, Finland, Germany, Ghana, India, Indonesia, Italy, Japan, Jordan, Malaysia, Mali, Mexico, Moldova, Morocco, Peru, Poland, Romania, Rwanda, South Africa, South Korea, Serbia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Thailand, Trinidad and Tobago, Turkey, Ukraine, United States of America, Vietnam and Zambia.

[2] Data on GDP per capita and unemployment rates is obtained from the World Development Indicators online database for 2005. The overall globalization index is obtained from the Centre for the Study of Globalization and Regionalization (CSGR) at Warwick University, UK http://www2.warwick.ac.uk/fac/soc/csgr/research/ The overall Globalization Index is a normalized index based on economic, social, and political sub-indices that allows cross-country comparison of the degree of integration in the global economy over time. We have used the maximum individual income tax rate levied in the country and obtained the data from the complete Worldwide Tax & Finance Site (http://www.worldwide-tax.com/). We used the Gini Coefficient as a measure of income inequality and data on Gini is obtained from Human Development Report (2007/8) UNDP

the countries in the sample. The level of income inequality as reflected by the Gini coefficient is 40. The average globalization index is 0.47 indicating that on average, countries in the sample enjoy some levels of global interaction, integration and interdependence with regards to economic, social and political spheres.

Table 1: Descriptive Statistics

Variable	Description	Mean	Std. Deviation
Dependent variable			
Efficiency wages	1 if respondent believes it is fair to reward efficiency on the job, 0 otherwise	0.79	0.41
Socioeconomic characteristics			
Education[3]	Highest education level attained by the respondent	5.51	2.50
Gender	Sex of the respondent (1=male and 0=female)	0.58	0.49
Age	Age of the respondent	39.60	12.32
Married	1 if respondent is married or living together with a partner, 0 otherwise	0.68	0.46
Income[4]	Income scale of the household	5.00	2.20
Public sector	1 if respondent is employed in the public sector, 0 otherwise	0.25	0.43
Private sector	1 if respondent is employed in the private sector, 0 otherwise. Used as a reference variable.	0.75	0.43
Competition[5]	Whether competition is good or harmful	3.76	2.44
Religious	1 if respondent considers him/herself religious, 0 otherwise	0.67	0.47
Black	1 if respondent is Black, 0 otherwise	0.18	0.38
White	1 if respondent is White, 0 otherwise	0.34	0.47
Asian	1 if respondent is Asian, 0 otherwise	0.20	0.40
Other ethnicities	1 if respondent is from another ethnicity, 0 otherwise. Used as a reference ethnicity variable.	0.28	0.45
Country level variables and continental dummies			
GDP	GDP per capita/1000, in PPP (current international $)	12.84	11.65
Unemployment rate	Unemployment, total (% of total labour force)	9.78	8.30
Gini[6]	Gini coefficient, a measure of income inequality	40.28	10.11
Globalization[7]	Overall globalization index (2004)	0.47	0.18
Tax	Maximum individual income tax rate (Percent)	32.75	11.51

[3] This is categorized as follows: 1=No formal education, 2=Incomplete primary school, 3=Complete primary school, 4=Incomplete secondary school: technical/vocational type, 5=Complete secondary school: technical/vocational type, 6=Incomplete secondary: university-preparatory type, 7= Complete secondary: university-preparatory type, 8=Some university-level education, without degree, 9=University-level education, with degree.

[4] The scale is from 1 to 10 where 1= "lowest income decile" and 10 = "highest income decile in the country".

[5] The scale is from 1 to 10 where 1= "competition is good" and 10 = "competition is harmful".

[6] The Gini Coefficient for the sampled countries ranges from 24.9 (Japan) to 60.7 (Brazil). A lower value indicates less income inequality.

[7] A higher value of the index indicates that a country is more integrated in the global economy; zero implies no integration and one indicates full integration.

3. Results and Discussion

Table 2 below presents the results from a probit estimation of equation (2). The estimation is done in two steps: First, we estimate the model based on the individual-level data drawn from the WVS data only (model (1) in Table 2) followed by a second estimation that augments the employed individual-level data with country-level data (model (2) in Table 2). The rationale underlying our strategy is not only to ensure robustness of the results but also to allow for the possibility that country-specific effects might influence respondents' perceptions of efficiency and equity wages. The dependent variable in both estimations is *Efficiency wages* i.e. whether the respondent thinks it is fair to index wages on efficiency or performance, or whether wages should be equal regardless of the efficiency of the worker. As mentioned earlier, the analysis is confined to individuals that were employed at the time the survey was conducted.

The discussion of results is based on the second model (model (2)) which has the advantage of controlling for country-level variables. Results show that the estimated education coefficient is positive and significant; indicating that more educated employees consider it fair to index wages on job performance or efficiency . This is further confirmed by table 3 below where we report the predicted probability that workers prefer efficiency to equity wages for a given level of education, holding the rest of the variables constant at their means. The table reveals that the probability of preferring efficiency wages clearly increases with advancement in education. A possible explanation for this result is that while the dependent variable in the analysis is a self-reported preference for efficiency-wages, the response could be a reflection of whether or not the individual perceives themselves as efficient on their job. If this is the case then the result is consistent with existing literature that has demonstrated how education improves efficiency of workers which is normally reflected in higher wages (see for example Fafchamps and Quisumbing, 1998).

Table 2: Probit estimation of *Efficiency wages*

	(1)		(2)	
Variables	Coeff.	Robust Std. Error	Coeff.	Robust Std. Error
Socioeconomic characteristics				
Education	0.040***	0.004	0.041***	0.005
Gender	0.060***	0.019	0.060***	0.021
Age	0.004***	0.001	0.004***	0.001
Married	0.057***	0.021	0.040*	0.023
Income	0.028***	0.005	0.031***	0.005
Religious	0.012	0.021	0.011	0.025
Black	-0.389***	0.027	-0.304***	0.038
White	0.023	0.024	-0.098***	0.031
Asian	0.067**	0.029	-0.042	0.039
Public sector	-0.021	0.023	-0.021	0.025
Competition	-0.063***	0.004	-0.055***	0.004
Country-level variables				
GDP			-0.011***	0.002
Tax			-0.003*	0.001
Gini			-0.017***	0.002
Unemployment rate			-0.011***	0.002
Globalization			0.299***	0.092
Constant	0.555***	0.053	1.358***	0.114
Wald chi2	1000.37		1081.63	
Log pseudolikelihood	-11841.00		-9793.62	
Overall correct predictions (%)	79		79	
Observations	24754		20856	

Note: ** significant at 10%; ** significant at 5%; *** significant at 1%. Specification (2) controls for continental dummies.*

Table 3: Illustration of how the probability that workers prefer efficiency over equity wages changes with education

Education Level	**Probability (*Efficiency wages*=1)**
No Education	0.75
Incomplete Primary	0.77
Complete Primary	0 .78
Incomplete Vocational	0 .79
Complete Vocational	0 .80
Incomplete Secondary	0 .81
Complete Secondary	0 .82
Incomplete University	0 .83
University Degree	0 .84

Another finding is that conditional on the other factors, preference for efficiency wages increases with age. Age is usually taken as a proxy for work experience, which has also been found to enhance job performance. It could be that when answering the questions respondents who perceive themselves as more efficient due to experience prefer efficiency wages. This is consistent with Vegard (2003) who finds that older individuals' maintain a relatively high productivity level, especially in jobs where experience is important.

One of the underlying aims of globalization is to increase efficiency hence it is not surprising that globalization has a positive impact on employees' preference for efficiency over equity wages as confirmed by our results in tables 2 and 4. Globalization emphasizes profit maximization as well as firms' competitiveness in the global economy. It is also expected that all countries pursue a common set of economic policies which foster free markets and efficiency values. This implies that globalization might influence workers' to put more emphasis on efficiency as opposed to equity.

Table 4: Illustration of how the probability that workers prefer efficiency over equity wages changes with the globalization index

Globalization	**Probability (*Efficiency wages*=1)**
Globalization =0	0 .77
Globalization =0.25	0 .79
Globalization =0.50	0 .81
Globalization =0.75	0 .83
Globalization =1	0 .85

Men favor compensation for efficiency while women prefer equal horizontal wages, independent of effort. This result is consistent with empirical literature that examines gender differences in self-reported distributive justice preferences in work organizations which has found significant differences in the ways that men and women allocate monetary rewards to themselves and/or between themselves and others after performing some task (Kahn, et al., 1980). Women are also found to allocate fewer rewards to themselves and more to their coworkers as compared to men with equivalent inputs (Major, Bylsma, and Cozzarelli, 1989). Studies suggest that women are disproportionately represented in lower status and lower paying occupations in which there are less chances for advancement (Treiman and Hartmann, 1981). This might make women expect to give more and get less from work organizations

than men do, hence, they might consider it fair to have the more efficient secretary paid equal to the other. An alternative explanation is that men and women may want different things from their work as existing evidence suggests that women are less likely than men to value money and more likely to value the intrinsic nature of work and expressive rewards at work (Nieva and Gutek, 1982).

The competition variable is negative and significant. The variable is measured as scale variable with higher value meaning that a worker believes that competition is harmful. Our result suggest that as an employee becomes more inclined to believing that competition is good due to its ability to stimulate hard work and development of new ideas, the more likely he or she will prefer efficiency to equity wages. This is expected since competition rewards efficiency. We also find that employees who consider themselves religious as well as married respondents are more likely to choose efficiency wages over equity wages. In terms of ethnicity; blacks, whites and Asians are all more likely to prefer equity wages than other races.

At individual level, high income earners are likely to prefer efficiency wages over egalitarian wages. However, respondents from high GDP countries tend to prefer equal horizontal wages. This might indicate that low income nations might be primarily focused on increasing economic growth and since efficiency and productivity are important determinants of economic growth then individuals are more concerned with efficiency wages.

We find evidence that income inequality, individual income tax rates and unemployment negatively affect workers' preferences for efficiency over equity wages. These results are confirmed in Table 5 below where we report the predicted probability that workers prefer efficiency to equity wages for a given level of income inequality, income tax and unemployment respectively while holding the rest of the variables constant at their means.

Table 5: Illustration of how the probability that workers prefer efficiency over equity wages changes with income inequality, income tax rates and unemployment

Value (%)	**Probability (*Efficiency wages=1*)**		
	Gini coefficient	**Individual Income Tax**	**Unemployment**
0	0.94	0.83	0.83
25	0.87	0.81	0.76
50	0.76	0.79	0.66
75	0.60	0.78	0.56
100	0.43	0.76	0.45

The finding that the higher the individual income taxes a country has, the less likely individuals are to prefer efficiency over equity wages could be capturing the fact that increased taxes might reduce incentives for workers to exert more effort and in this case equity wages are preferred as they are independent of workers' effort or job performance. The negative and significant impact of income inequality (measured by the Gini coefficient) on workers' preference for efficiency wages is expected since high inequality might increase employees' desire for a more equal income society which translates into workers' preferences for equal horizontal wages that will reduce the inequality level in the country. The rate of unemployment is a crucial determinant of workers' preferences for efficiency vis-à-vis equity wages. When unemployment rate is high, employees major concern is likely to be securing a job rather than indexing wages based on workers' efficiency or performance. This is because the job market is tight and the probability of finding a job is low and accordingly having efficiency wages is not a priority. On the other hand when unemployment is low workers are likely to give priority on having wages based on performance and this translates into more preference for efficiency wages. Moreover, when unemployment rate is low and in case workers are paid equal horizontal wages comparable across entities regardless of performance they will shirk since if caught and fired they can easily find another job (Carter, 2005). Our results strongly confirm this hypothesis as it depicts a negative relationship between unemployment rate and workers' preference for efficiency wages, conditional on other factors.

4. Conclusion

Conventional economic theory demonstrates the importance of labor efficiency for economic growth, implying that promoting labor efficiency is one way to achieve increased economic growth. Fundamental to promoting job efficiency is having an understanding of what influences individuals' preferences for wage structures that reward efficiency. Information on what influences employees' preferences for efficiency vis-à-vis equity wages is crucial in designing firms wage structures. This paper used the 2005 wave of the World Values Survey data for 43 countries to examine socio-economic and country-level characteristics that influence employees' preferences for efficiency over equity wages.

Our results underscore the importance of both socio-economic and country-level variables in workers' efficiency-equity considerations. In particular we find that an employee's preference for efficiency wages increases with education and globalization while it decreases with unemployment, income inequality and income tax rates. This means that institutions and

specifically public policy that promote education and globalization, along with policies that reduce unemployment could be used to promote mechanisms that reward job efficiency, specifically to promote efficiency-based wages.

However it is important to acknowledge that, although empirical evidence supports the importance of efficiency in economic growth, different countries or societies might place different relative importance of efficiency vis-à-vis equity. In some situations equity might be more of a priority to policymakers. Thus, while our analysis has been more inclined to examining the factors that make efficiency wages acceptable to workers, the results need to be put within the context of the policy objectives of the country.

References

Akerlof, G.A and Yellen, J.L. 1990. The Fair Wage-Effort Hypothesis and Unemployment. *The Quarterly Journal of Economics*, 105(2): 255-283.

Carter, T.J. 2005. Money and efficiency wages: the neglected effect of employment on efficiency. *Journal of Socio-Economics* 34 (2): 199–209.

Fafchamps, M. and Quisumbing, A. 1998. Human Capital, Productivity, and Labor Allocation in Rural Pakistan. *Journal of Human Resources*, Spring 1998.

Gottfries, N. and Westermark, A., 1998. Nominal wage contracts and the persistent effects of monetary policy. *European Economic Review*, 42 (2): 207–223.

Kahn, A., O'Leary, V., Krulewitz, J. E., and Lamm, H. 1980. Equity and equality: Male and female means to a just end. *Basic and Applied Social Psychology,* 1: 173-197.

Major B, Bylsma, W.H., and Cozzarelli C. 1989. Gender differences in distributive justice preferences: The impact of domain. *Sex Roles,* 21: 487-497.

Malcolmson, J. 1981. Unemployment and the Efficiency Wage Hypothesis. *Economic Journal*, 19: 848-866

Nieva, V. F., and Gutek, B. A. 1982. *Women and work.* New York: Praeger.

Shapiro, C and Stiglitz, J.E. 1984. Equilibrium Unemployment as a Worker Disciplinary Device. *American Economic Review,* 74(3): 433-444

Stiglitz, J.E. 1974. Wage Determination and Unemployment in L.D.C's: The Labor Turnover Model. *Quarterly Journal of Economics*: 88: 194-227

Skirbekk, Vegard. 2003. Age and Individual Productivity: A Literature Survey. *Working Paper* 2003-028. Rostock, Germany: Max Planck Institute for Demographic Research.

Treiman, D. J., and Hartmann, H. I. 1981. *Women, work and wages: Equal pay for jobs of equal value.* Washington, DC: National Academy Press.

UNDP (2007/8) Human Development Report

World Bank (2007) World Development Indicators online database.

Wooldridge, J. M. 2002. *Econometric Analysis of Cross Section and Panel Data.* Cambridge:MIT Press.

Yellen, J. 1984. Wage Models of Unemployment. *The American Economic Review,* 74(2): 200-205.