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What is it About Democracies that Pays Higher Wages?

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Abstract

Democracy and democratisation are associated with higher manufacturing wages. However, classifying a country as democratic does not highlight what institutional characteristics (if any) may be leading to higher wages within democracies. In order to shed light on this issue, this paper uses a dataset that "decomposes" democracy into six different governance indicators in a panel of 84 countries over the period 1996 to 2009. The evidence suggests that in poor and middle-income countries, greater voice and accountability as well as rule of law will lead to increments in manufacturing wages. It is argued that these characteristics increase wages by allowing for freedom of association and assembly as well as by encouraging greater respect for labour laws. The paper also uncovers some evidence to suggest that greater voice and accountability and rule of law can lead to a fall in wages in more developed nations. It is argued that since more developed countries are undergoing a process of deindustrialisation, more democratic wage bargaining activities will lead to faster downward adjustment of manufacturing wages.

Key words: *Manufacturing wages, productivity, democracy, governance, panel data econometrics*

JEL Codes: *J30, P48, J89, E02*

1. Introduction

Wages in the manufacturing sector of the United States are on average 7 times larger than those in the manufacturing sector in Iran. Economists have put forth a large number of explanations as to why wages in certain countries are lower than in others. For instance, in a recent literature review, Winters et al. (2004) argues that the direction of a change in wages following a trade shock will depend on the elasticity of labour supply, the time it takes the labour market to adjust to a shock, whether imports are final goods or inputs (as well as their skill intensity) and, of course, the comparative advantage of the trading nation. Similarly, Sachs and War-

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ner (1999) show that the presence of natural resources may lead to lower economic growth via a Dutch disease phenomenon, which can be associated with negative labour market outcomes, including lower manufacturing wages (Corden 1984). Moreover, Baumol (1986) argues that differences in the growth rate of productivity as determined by historical events and macroeconomic policy can also affect real wages.

Rodrik, on the other hand, may argue that the wage difference between Iran and the United States is due to their systems of government. Using democracy indices over the period 1960 to 1994, Rodrik (1999) shows that democracies are associated with higher wages in manufacturing. He concludes therefore that "democratic institutions tend to be friendly to labour" (p. 733). However, in an unrelated study, Rodrik (2000) suggests that "democracy is a meta-institution for building good institutions" (p.1). Therefore identifying that democracies pay higher wages does not answer *what it is about a democracy that promotes higher wages*. This paper aims to fill this gap using a panel of countries similar to that in Rodrik (1999).

In a similar study Palley (2005) also tries to explain what aspect of democracy leads to higher wages. Following Palley (2004), Palley (2005) argues that the key feature of democracies that leads to higher wages is that this system of government introduces and supports institutions that promote labour standards. In fact, Palley (2005) concludes that it is not democracy that leads to higher wages, but that democracy leads to higher labour standards, which in turn lead to higher wages. However, much like "democracy", the term "labour standards" includes a plethora of characteristics.[1] Therefore, Palley (2005), like Rodrik (1999), does not clarify some more specific institutional features of democracies that lead to higher wages (by perhaps promoting labour standards).

It is noteworthy to mention that although democracy and freedom are generally viewed as leading to positive labour market outcomes, the arguments held in Palley (2005) are significantly more controversial. For instance, persistent wage growth in East Asia is argued to be owed to flexible labour markets with few or no exogenous legal restrictions from government or powerful unions. Chau (1997) and Edwards and Lustig (1997) argue that East Asian success was due, in large part, to a significant degree of labour market flexibility, which allowed small and medium-sized firms to adapt rapidly to new market conditions, remain competitive internationally, and take advantage of technological advances. Similarly, Manning (1998) finds that labour market flexibility has served East Asian countries not only in adapting to the high growth period but to the recession that followed the Asian crisis of the late 1990s. Moreover, Krueger (1983) explains that under some kinds of market imperfections outward shifts in demand for labour can generate responses that may not

[1] Labour standards are defined as: (a) freedom of association; (b) the right to collective bargaining; (c) the elimination of forced or compulsory labour; (d) the abolition of child labour; and (e) the elimination of discrimination in respect of employment and occupation (Palley 2004).

translate into higher wages. For example, if unions are sufficiently powerful, outward shifts in labour demand will only generate higher wages for unionised labour without translating into increased employment. Recent evidence in Heckman and Páges (2000), Bell (1997), Foguel et al. (2001), Ramaswamy (2003) and Casacuberta et al. (2004) corroborates this for Chile, Colombia, Brazil, India, Pakistan, Bangladesh, and Uruguay, respectively. Overall, these findings show that strong unions and higher minimum wages mitigated the job creation benefits of greater outward orientation.

Nevertheless, as in Palley (2005), there exists some evidence to suggest that labour laws may not result in negative labour market outcomes in all countries. Freeman (2009) argues that most studies on developing nations find modest adverse effects of the minimum on employment, therefore minimum increments have an overall positive effect on the total income accruing to low-paid workers. Moreover, in many nations minimum wages spill-over to the informal sectors, resulting in improvements in the wage distributions there as well.

Overall, most of the evidence indicates that labour market rigidities hurt workers; however there is some evidence to suggest that certain aspects of these rigidities may improve labour market outcomes, particularly wages. Freeman (2005) argues that in order to better shed light on whether labour market rigidities or institutions increase or decrease wages and other labour market outcomes researchers must focus on disaggregated micro-level data. This paper takes a similar approach in that although the data remains macroeconomic in nature, the definitions of labour standards and democracy are disaggregated in order to highlight what factors are good or bad for workers.

This paper addresses this issue by using a dataset that "decomposes" democracy into six different governance indicators in a panel of 84 countries over the period 1996 to 2009. The countries are chosen due to data availability, however most major economies in Africa, Asia, the Americas and Europe are included. Using econometric techniques that adequately capture endogeneity issues, the study concludes that institutional reforms that allow for freedom of association and assembly as well as encourage respect for existing labour laws will lead to improvements in manufacturing wage outcomes, at least in middle income and poor nations. This study also uncovers some evidence to suggest that these processes can have the opposite effect in richer countries. This study argues that this is because these countries are undergoing a process of deindustrialisation. In this case, further democratisation encourages better coordination of wage bargaining activities, which is expected to result in faster downward adjustments of wages to reflect a decline in manufacturing production and employment.

The rest of the paper is structured as follows. The next section provides a review of the data. Section 3 discusses the econometric methodology. Section 4 presents the results and the final section concludes.

2. Data

The data employed in this study closely follows Rodrik (1999), with the difference, of course, that the data in this paper has been updated in terms of both country and year coverage. The econometric analysis relies mainly upon a cross-country panel of 84 nations over the period 1996 to 2009. Two separate measures of manufacturing wages are used as the dependent variables. The preferred dependent variable is the average level of dollar wages in manufacturing from United Nations Industrial Development Organization (UNIDO), which provides information on wages per worker in manufacturing, including includes bonuses and gratuities, housing and family allowances, as well as in-kind payments, for a broad sample of countries ranging in income levels.

As a robustness exercise, the empirical analysis also uses wage data from the United States Bureau of Labor Statistics' (BLS) International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, which also includes bonuses paid to workers. This source covers a smaller sample of 29 countries; however it is advantageous in that it is carefully constructed with cross-national comparability in mind (Rodrik 1999). Unfortunately, however, unlike UNIDO, the BLS data set covers mainly developed countries—rich economies make up 86 per cent of the BLS data compared to 23 per cent of UNIDO, moreover the developing nations group in the BLS data set is mainly made up of upper middle income economies that entirely exclude Africa and most of Asia.[2] Moreover, in concentrating on more developed nations, the BLS data also captures more democratic countries—the average democracy index among countries in the BLS data set is 8.9 (with a standard deviation of 2.5) out of a possible 10, compared to 4.6 (with a standard deviation of 6.4) in the UNIDO sample. In both the UNIDO and BLS data sets, the figures are provided in local-currency terms, and are converted to United States dollars using contemporaneous market exchange rates from the World Bank's World Development Indicators. The correlation coefficient between both wage variables is 0.90 and statistically significant at the one per cent level.

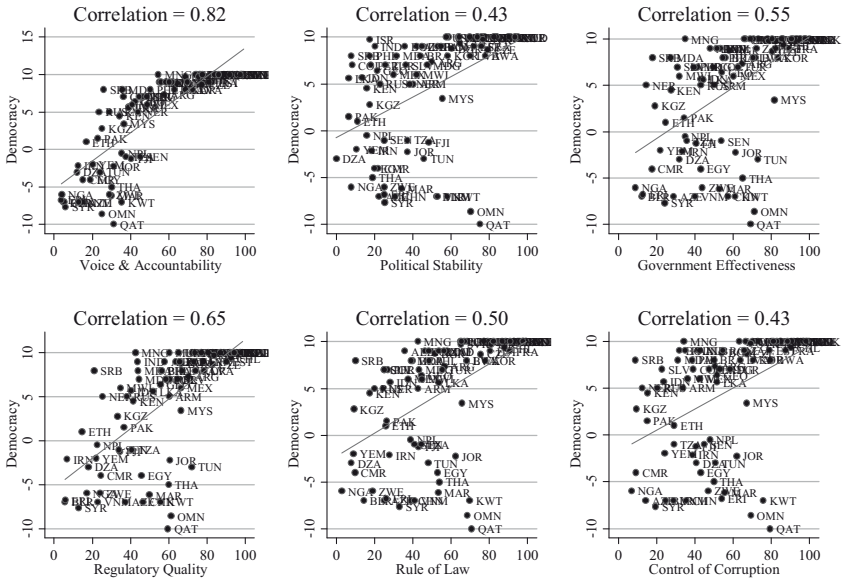
As in Rodrik (1999), democracy is the key independent variable. This paper follows Rodrik by also using the most commonly employed measure of democracy, Polity IV from Marshall et al. (2010), which captures a regime's authority on a 21-point scale ranging from –10 (hereditary monarchy) to +10 (consolidated democracy). This source contains annual democracy indicators for the period 1946–2011 for independent countries with populations greater than 500,000 in the early 1990s. This paper diverts from Rodrik's analysis by 'decomposing' democracy into six

[2] The developing country group in the BLS data sample used in this paper is made up of Argentina, Brazil, Mexico and the Philippines. The UNIDO dataset, on the other hand, covers a wider range of poor, middle income and rich nations, including Zimbawe, Brazil and the United States, respectively.

commonly used governance indicators available from Kaufman et al. (2009).[3] These variables are (1) control of corruption, which measures perceptions of corruption within countries; (2) government effectiveness, which measures perceptions of the quality of public services, the bureaucracy, and the credibility of the government's commitment to policy; (3) voice and accountability, which measures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media; (4) political stability, which measures the perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means; (5) regulatory quality, which measures perceptions of the ability of the government to implement policies that promote private sector development; and (6) rule of law, which measures perceptions on the quality of contract enforcement, property rights, the police, the courts, and the likelihood of crime and violence. These measures rely on data from household surveys, provide a value for any country with data available, and weigh available sources according to the precision of the individual data sources. The 'decomposition' of democracy into these governance indicators is intuitively justified based on their definitions and also makes statistical sense with the correlation of these variables with democracy being highly positive and statistically significant at the 1 per cent level (see Figure 1). Finally note that these measures are only available from 1996 to 2009, therefore limiting the study to these years.

The remaining explanatory variables used in the benchmark regressions closely follow Rodrik (1999); these variables are described below, while data sources are presented in brackets. First, the log average of labour productivity in manufacturing, as measured by manufacturing value added per worker, is used to reflect changes in the marginal product of labour (from UNIDO). Log per capita GDP, a proxy for structural determinants correlated with levels of income; schooling, measured by enrolment rates; the proportion of the population living in urban areas; and openness are employed as general predictors of real wages (from World Development Indicators, World Bank). Finally, the log of the consumer price index (price) is used to indicate cost-of-living differences not captured by exchange-rate conversions (from Heston et al 2012). Table 1 presents the summary statistics.

[3] At the time when Rodrik (1999) was published, this measure was only available for 1996 and 1998.



Notes: Correlation coefficients are significant at the 1% level.
Source: Democracy data comes from Marshall et al (2010) and Governance measures come from Kaufman et al (2009).

Figure 1: Democracy versus democratic characteristics across 84 countries

Table 1

Descriptive statistics of core variables used in regressions

Variable	Obs	Mean	Std. Dev.	Min	Max
Log wages and salaries (manuf., per worker) $	368	8.46	1.41	3.77	15.34
Log hourly compensation (manuf.), $	110	2.71	0.78	0.79	4.06
Wages and salaries (manuf., per worker) $ (000s)	368	22.74	238.59	0.04	4579.48
Hourly compensation (manuf.), $	110	18.56	12.97	1.20	56.89
Democracy (Polity IV)	368	4.8	6.4	–10	10
Voice & Accountability	368	53.1	28.0	1	100
Political stability	368	48.7	27.0	0	98
Government effectiveness	366	59.3	25.1	6	100
Regulatory quality	367	59.2	25.8	2	100
Rule of law	368	56.9	25.6	3	100
Control of corruption	366	57.3	26.0	7	100
Trade union membership (per cent of population)	103	10.0	11.8	0.2	44.1

Log productivity	368	9.7	1.3	4.6	16.8
GDP per capita $ (000s)	368	10.9	15.1	0.1	93.6
Log GDP per capita $	368	8.3	1.6	4.7	11.4
Log price level (CPI)	368	4.1	0.4	3.1	5.7
Primary enrolment ratio to gross (/100)	368	1.0	0.1	0.3	1.6
Population density (thousands)	368	0.1	0.1	0.002	0.6
Trade (/100)	368	0.8	0.4	0.2	2.2

3. Estimation Methodology

Following Rodrik (1999), the empirical analysis consists of two methodologies. First, it begins with simple ordinary least squares (OLS) regressions, where coefficient estimates highlight differences *across* rather than within countries. Second, in order to uncover what aspect of political reform leads to higher wages *within* countries, the core empirical analysis employs panel data techniques. However, the paper diverts from Rodrik (1999) in that the latter analysis uses Durbin-Wu-Hausman tests to indentify instances of panel level endogeneity before adequately addressing this issue.

The endogeneity tests indicate that the log of price level is endogenous with both wage variables, perhaps suggesting that an increase in wages significantly increases aggregate demand and thus prices in these economies. Interestingly, the log of GDP per capita is also found to be endogenous with hourly wages from BLS, suggesting that amongst richer economies, an increase in GDP per capita leads to an increase in wages. Finally, Rodrik (1999) suggests that there may be two-way causality in regards to democracy and wages. He argues that a larger middle class, sustained by relatively high wages may render democracy more likely and durable. In that regard, this paper finds evidence that voice and accountability, regulatory quality, government effectiveness and control of corruption are all endogenous with wages in the manufacturing sector. The remaining variables were all found to be exogenously determined.

In the absence of natural external instruments, this paper considers the use of general method of moments (GMM) techniques, which handle the estimation of endogenous panels using internal instruments. The analysis relies on system, rather than difference, GMM because lagged levels of the regressors are poor instruments for the first-differenced regressors. The system GMM estimator uses the levels equation to obtain a system of two equations: one differenced and one in levels, which increases the number of available instruments. Thus the variables in levels in the second equation are instrumented with their own first differences, which increases efficiency. Moreover, systems GMM controls for country and allows for year fixed effects. Additionally, the estimation technique specifies two step estimators, where the standard covariance matrix is robust to panel-specific autocorrelation and heteroscedasticity.

The tables in the following section show Arellano–Bond tests for autocorrelation (AR(1) and AR(2)). In the specifications, the null hypothesis of no autocorrelation cannot be rejected. Using two-step systems estimation technique suggests that the Hansen J statistic, rather than the Sargan statistic, must be employed to diagnose goodness of fit. The Hansen tests suggest that the null hypothesis (the instruments as a group are exogenous) in all the columns presented in the tables of results below cannot be rejected.

4. Results

4.1 Cross-Sectional Results

Table 2 presents the results of the OLS regressions using the UNIDO database. Column 1 confirms the results in Rodrik (1999) suggesting that more democratic countries also exhibit higher manufacturing wages. Rodrik finds that an increase in democracy from its absolute absence to full democracy is associated with an increase in wages by 28 per cent; this paper finds that a similar change in democracy is associated with an increase in wages of 40 per cent, *ceteris paribus*.[4] However, unlike Rodrik, the robustness exercise using wage data from BLS (Table 3) does not confirm that more democratic countries have higher wages. One reason for this inconsistency may be that the BLS data covers mostly richer nations and therefore does not provide enough variability in wage income and democracy as compared to the UNIDO database.

In order to address this potential issue, Table 4 re-estimates Table 3 with interactive terms of the democracy variables and GDP per capita. Column 1 of Table 4 confirms this intuition, showing that democratic countries have higher wages up until a level of GDP per capita of $12,500;[5] thereafter democracy exhibits a negative relationship with wages.[6, 7] According to the World Bank, countries with a GDP per capita of this level and above can be defined as "rich economies."

A possible explanation for these results lies in the fact that relatively richer economies are characterised by a process of deindustrialisation, where production and employment in manufacturing decline relative to the rest of the economy (Row-

4 The interpretation of this coefficient estimate is obtained by multiplying the democracy coefficient in Table 2 (0.019) by 21.

5 This value is calculated by taking the derivative of wages with respect to democracy and finding the point at which the function becomes negative.

6 Regressions using squared values of democracy and the other characteristics were also attempted in order to investigate if there exists a quadratic relationship. The results indicate that this is not the case.

7 A positive relationship is also found using interactive terms of GDP per capita and democratic characteristics with wages from UNIDO as the dependent variable. The results are not shown here, but area available upon request.

thorn and Ramaswamy 1998). If simultaneously rich countries experience an increase in democratisation, then it is possible to conclude that labour market institutions will become more representative of the entire labour force, including the growing number of unemployed (Palley 2004). In this case, these institutions (say unions) may opt to adjust wages downwardly to reflect a slowdown in the manufacturing sector's productive and employment capacity (Blanchard and Wolfers 2000). In other words, unions face a trade-off between employment and wages, so in the face of growing unemployment they may opt to decrease wages (Oswald 1985).

Turning next to what aspects or characteristics of democracy may be behind these results. Table 2 also finds that countries with higher voice and accountability ratings exhibit higher wages. To put this into perspective, a country such as Iran, on average, scores 13 on the voice and accountability index, the United States, on the other hand, exhibits a score of 89. Therefore, going from the level of voice and accountability in Iran to that in the United States is associated with an increase in wages of 43 per cent. As above, the robustness exercise in Table 3 fails to confirm this relationship, however the interactive term in Table 4 shows that greater voice and accountability is associated with higher wages in countries with a GDP per capita of less than $25,000.

The voice and accountability index captures factors such as freedom of expression and freedom of association. Hence, these findings support Palley's (2004, 2005) results in that voice and accountability encompasses and promotes features that are key to the furtherance of labour standards, namely freedom of association and the right to collective bargaining. In turn these features are associated with the consolidation of collective wage bargaining institutions, such as trade unions—the correlation coefficient between voice and accountability and trade union membership as a proportion of the population is 0.6 and significant at the 1 per cent level.[8] In turn, unionisation significantly increase manufacturing wages (see Table A1 in the Appendix). Note that the results showing that relatively richer nations will experience a decrease in wages following a rise in voice and accountability are consistent with the notion that more representative wage bargaining activities can lead to a decrease in manufacturing wages under a process of deindustrialisation.

Finally, note that Table 4 also shows a positive relationship between all the characteristics of democracy and manufacturing wages in poor and middle income countries. However, since these results are not evident in Table 2 it is not possible to conclude with certainty that this is the case. The results pertaining to the remaining explanatory variables will be discussed in the next section.

[8] A simple regression of trade union membership and voice accountability also showed that an increase in the latter by 10 index points is associated with a statistically significant increase in trade union membership by 5 per cent.

Table 2

Characteristics of democracies and manufacturing wages: OLS Results (1996 – 2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	0.88***	0.89***	0.86***	0.86***	0.86***	0.86***	0.86***
	[24.3]	[23.6]	[24.2]	[23.8]	[22.8]	[23.0]	[23.7]
Log GDP per capita	0.058	0.033	0.080	0.079	0.068	0.067	0.087*
	[1.36]	[0.73]	[1.52]	[1.45]	[1.25]	[1.29]	[1.70]
Log price level	0.35**	0.27*	0.34**	0.35**	0.33**	0.31**	0.35**
	[2.61]	[1.95]	[2.32]	[2.40]	[2.23]	[2.19]	[2.42]
Primary enrolment ratio to gross	–0.34	–0.27	–0.18	–0.23	–0.25	–0.21	–0.21
	[–1.12]	[–0.92]	[–0.63]	[–0.75]	[–0.80]	[–0.70]	[–0.70]
Population density (thousands)	0.041	0.10	0.23	0.19	0.19	0.12	0.20
	[0.10]	[0.25]	[0.64]	[0.46]	[0.49]	[0.28]	[0.50]
Trade (/100)	0.14*	0.12*	0.11	0.12	0.11	0.11	0.12
	[1.76]	[1.70]	[1.13]	[1.37]	[1.28]	[1.32]	[1.47]
Democracy	0.019**						
	[2.48]						
Voice & Accountability		0.0056***					
		[2.78]					
Political Stability			0.0012				
			[0.38]				
Government effectiveness				0.0011			
				[0.34]			
Regulatory quality					0.0022		
					[0.78]		
Rule of law						0.0025	
						[0.87]	
Control of corruption							0.00038
							[0.13]
Constant	–1.85***	–1.62***	–1.94***	–1.89***	–1.80***	–1.78***	–1.95***
	[–4.28]	[–3.61]	[–3.97]	[–3.62]	[–3.52]	[–3.88]	[–4.39]
Observations	368	368	368	366	366	366	366
R-squared	0.91	0.91	0.90	0.90	0.90	0.90	0.90

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Dependent variable is the log wages and salaries per worker in manufacturing.

Table 3

Characteristics of democracies and manufacturing hourly wages: OLS Results (1996 – 2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	0.0031	0.0092	0.0048	0.0096	0.0051	0.0066	0.0058
	[0.23]	[0.70]	[0.35]	[0.71]	[0.37]	[0.48]	[0.41]
Log GDP per capita	0.69***	0.63***	0.67***	0.60***	0.67***	0.65***	0.66***
	[8.16]	[8.36]	[9.06]	[7.55]	[8.15]	[8.47]	[8.47]
Log price level	0.46***	0.49***	0.48***	0.47***	0.48***	0.46***	0.48***
	[2.93]	[3.52]	[3.20]	[3.54]	[3.29]	[3.28]	[3.29]
Primary enrolment ratio to gross	–0.31	–0.085	–0.23	–0.099	–0.22	–0.14	–0.20
	[–0.69]	[–0.16]	[–0.46]	[–0.20]	[–0.46]	[–0.26]	[–0.41]
Population density (thousands)	0.035	0.15	0.034	0.094	0.042	0.053	0.050
	[0.15]	[0.69]	[0.13]	[0.43]	[0.18]	[0.22]	[0.21]
Trade (/100)	–0.12*	–0.12*	–0.12*	–0.13**	–0.12*	–0.12*	–0.12*
	[–1.86]	[–1.98]	[–1.81]	[–2.15]	[–1.88]	[–1.91]	[–1.89]
Democracy	–0.026						
	[–1.12]						
Voice & Accountability		0.0032					
		[1.10]					
Political Stability			–0.00006				
			[–0.035]				
Government effectiveness				0.0062*			
				[1.84]			
Regulatory quality					0.00018		
					[0.045]		
Rule of law						0.0016	
						[0.68]	
Control of corruption							0.00069
							[0.29]
Constant	–5.54***	–5.90***	–5.75***	–5.74***	–5.76***	–5.76***	–5.74***
	[–8.85]	[–8.73]	[–8.63]	[–9.35]	[–8.97]	[–9.07]	[–9.22]
Observations	110	110	110	110	110	110	110
R-squared	0.97	0.97	0.97	0.97	0.97	0.97	0.97

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Dependent variable is the log hourly compensation in manufacturing.

Table 4

Characteristics of democracies and manufacturing hourly wages: OLS Results with interactive terms (1996–2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	–0.0039	0.0075	0.0047	0.0099	0.0071	0.0050	0.0065
	[–0.22]	[0.46]	[0.30]	[0.63]	[0.48]	[0.28]	[0.40]
GDP per capita (000s)	0.18**	0.080***	0.055***	0.089***	0.045	0.11***	0.070***
(Y/L)	[2.37]	[3.93]	[6.84]	[3.62]	[1.67]	[5.12]	[3.27]
Log price level	1.08***	0.96***	1.09***	0.80***	0.98***	0.82***	0.93***
	[4.81]	[6.58]	[7.03]	[4.63]	[5.31]	[5.10]	[5.27]
Primary enrolment	–0.52	–0.012	–0.31	–0.059	–0.54	–0.050	–0.33
ratio to gross	[–0.80]	[–0.019]	[–0.52]	[–0.093]	[–0.89]	[–0.079]	[–0.53]
Population density	–0.16	0.045	0.10	0.028	0.38	–0.21	0.029
(thousands)	[–0.53]	[0.12]	[0.30]	[0.10]	[1.22]	[–0.65]	[0.096]
Trade (/100)	–0.098	–0.016	–0.017	–0.061	–0.14	–0.059	–0.039
	[–1.33]	[–0.22]	[–0.23]	[–0.89]	[–1.58]	[–0.86]	[–0.52]
Democracy	0.20*						
	[1.90]						
Democracy*Y/L	–0.016**						
	[–2.17]						
Voice &		0.018***					
Accountability (VA)		[3.74]					
VA*Y/L		–0.0007***					
		[–3.11]					
Political Stability (PS)			0.011***				
			[4.27]				
PS*Y/L			–0.0005***				
			[–5.03]				
Government effective-				0.025***			
ness (GE)				[4.95]			
GE*Y/L				–0.0008***			
				[–3.12]			
Regulatory quality					0.020***		
(RQ)					[3.07]		
RQ*Y/L					–0.00032		
					[–1.21]		
Rule of law (RL)						0.016***	
						[4.24]	
RL*y/L						–0.001***	
						[–4.35]	
Control of corruption							0.015***
(CC)							[4.93]
CC*Y/L							–0.0006***
							[–2.83]
Constant	–3.85***	–3.65***	–3.14***	–3.49***	–3.25***	–2.88***	–2.84***
	[–2.91]	[–4.64]	[–4.55]	[–5.32]	[–4.79]	[–4.45]	[–4.44]
Observations	110	110	110	110	110	110	110
R-squared	0.93	0.94	0.94	0.95	0.93	0.94	0.94

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Dependent variable is the log hourly compensation in manufacturing. Democracy and characteristics of this regime are interacted with GDP per capita in thousand US dollars.

4.2 Panel Results

Table 5 presents the GMM regression results using the UNIDO wage data, while Table 6 presents the robustness exercise using the BLS data set. Turning first to the democracy variable, Table 5 confirms the findings in Rodrik (1999). Democratic reform *within* a country leads to an increase in manufacturing wages. Column 1 of Table 5 shows that an increase in the democracy index from levels evident in Iran (–3) to those in the United States (10) is associated with an increase in manufacturing wages by 31 per cent, *ceteris paribus*.[9] However, as above, Table 6 indicates that this relationship is not robust when the econometric specification does not adequately control for the level of economic development. Therefore, Tables 7 and 8 interact democracy and its characteristics with GDP per capita. In this instance, however, the results using both the UNIDO wage data (Table 7) and the BLS wage data (Table 8) as the dependent variables suggest that democracy does not have a statistically significant effect on wages.

In terms of what may be a characteristic of democracies that drives wages *within* countries, Tables 5, 7 and 8 echo the findings in Table 2 and suggest that greater voice and accountability significantly increases wages. However, Table 8 also suggests that this is only the case in middle income and poor countries. Concentrating on the results in Table 5, if a country experiences policy initiatives that lead to a change in voice and accountability from levels similar to those found in Iran to levels similar to those in the United States it would also experience an increase in manufacturing wages of 98 per cent, *ceteris paribus*. Similarly, Table 8 suggests that a similar change in voice and accountability in a middle income country (GDP per capita of $12,499) would lead to an increase in wages by 43 per cent. Moreover, this trend would continue until GDP per capita becomes larger than $21,000, at which stage greater voice and accountability would decrease manufacturing wages. These findings are consistent with the results and interpretations of the previous sub-section.

There is also evidence using both the UNIDO and BLS data sets to suggest that rule of law significantly increases manufacturing wages. Tables 5, 7 and 8 indicate that an within country increase in rule of law from levels similar to those in Iran (28) to those in the United States (92), will generate an increase in manufacturing wages by somewhere between 22 and 42 per cent, *ceteris paribus*.[10]

One possible explanation for this result comes from Rei et al. (2008), who argue that rule of law is particularly useful in promoting the growth of formal sectors within economies. Moreover, Fugazza and Jacques (2004) argue that formal sectors

[9] These figures are again similar to those in Rodrik (1999). In his fixed effects specification, the author finds that a similar increase in democracy is associated with an increase in manufacturing wages by 22 per cent.

[10] The calculations using the point estimates in Table 8 are for a middle income country of GDP per capita of $12,499.

will exhibit higher wages because it is possible to enforce minimum wage laws and other labour standards. Another related explanation is simply that an increase in the rule of law is associated with greater respect for existing labour laws.

As above, Table 8 also uncovers some evidence to suggest that rule of law will have a negative relationship on wages if GDP per capita exceeds $15,000. A possible explanation for this result mirrors the one put forward to explain how greater voice and accountability may be leading to a fall in wages in richer countries. Essentially, greater rule of law could further formalise and define the role of labour market institutions (such as trade unions). This, in turn, could make these intuitions more effective in the wage bargaining process. Further, more effective coordination in bargaining may result in faster downward adjustments of manufacturing wages against a backdrop of deindustrialisation.

Note that the negative relationship found between wages and voice and accountability and rule of law for richer economies could not be confirmed when using UNIDO wages as the dependent variable (Table 7): the coefficient estimates of the interactive terms with voice and accountability and rule of law are negative but statistically insignificant. This may result from the fact that rich economies make up a larger proportion of the BLS than the UNIDO data set. Alternatively, this may result from definitional differences between the two wage variables. For instance, as mentioned above, the UNIDO wage data includes bonuses and gratuities, housing and family allowances, as well as in-kind payments, which may be increasing in order to compensate workers for lower hourly wages in some developed nations. The BLS hourly wage definition, on the other hand, includes bonuses that are less likely to be correlated with changes in wage income. Some of the bonuses include cost-of-living adjustments, as well as selected social allowances and social insurance expenditures, such as sick leave and life and accident insurance. Regardless, it remains important to at least hypothesise as to some reasons that may be driving these results.

Turning to the remaining democratic characteristics, there is mixed evidence that these variables significantly affect manufacturing wages within countries. Therefore, it is not possible to conclude that, aside from voice and accountability and rule of law, any of the other characteristics of democracies can significantly affect manufacturing wages. For instance, Tables 5 and 7 show evidence to suggest that an increase in regulatory quality is associated with an increase in manufacturing wages. However, these findings are not robust to the use of the BLS dataset in Tables 6 and 8. Similarly, government effectiveness and political stability are found to be positive and significant in Table 7, but not elsewhere. Finally, Table 8 indicates that countries with lower perceived levels of corruption, will also exhibit higher wages, although this result is not replicated elsewhere.

Turning to the remaining explanatory variables, the results using the UNIDO wage data as the dependent variable indicate that higher productivity leads to higher wages (Tables 2, 5, 7 and 9). The remaining tables also generally find that an in-

crease in both GDP per capita and in the price level are associated with higher wages. The GDP per capita findings suggest that higher production leads to increased demand for labour, which translates into higher manufacturing wages. The price level estimates suggest that an increase in the cost of living within a country is associated with increments in manufacturing wages.

Table 5

Characteristics of democracies and manufacturing wages: GMM Results (1996–2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	0.85***	0.92***	0.83***	0.85***	0.83***	0.89***	0.81***
	[13.1]	[11.9]	[9.42]	[11.9]	[10.9]	[14.0]	[14.0]
Log GDP per capita	0.13	0.0060	0.15*	0.10	0.044	0.14	0.14
	[1.56]	[0.075]	[1.75]	[0.78]	[0.45]	[1.39]	[1.45]
Log price level	0.025	–0.17	–0.016	–0.076	0.069	–0.27	0.038
	[0.088]	[–0.62]	[–0.047]	[–0.24]	[0.22]	[–1.42]	[0.18]
Primary enrolment ratio to gross	–0.95**	–0.59*	–0.81**	–0.62**	–0.79**	–0.48	–0.71*
	[–2.63]	[–1.96]	[–2.15]	[–2.24]	[–2.46]	[–1.53]	[–1.68]
Population density (thousands)	0.033	–0.26	0.023**	0.024***	0.024***	–0.41	0.025***
	[0.085]	[–0.44]	[2.49]	[3.63]	[3.39]	[–0.76]	[2.84]
Trade (/100)	0.0089	0.023	–0.017	0.040	0.010	–0.087	0.059
	[0.11]	[0.21]	[–0.30]	[0.61]	[0.17]	[–1.00]	[1.08]
Democracy	0.022**						
	[2.53]						
Voice & Accountability		0.014***					
		[5.21]					
Political Stability			0.0037				
			[1.47]				
Government effectiveness				0.0063			
				[1.25]			
Regulatory quality					0.0097**		
					[2.57]		
Rule of law						0.0085**	
						[2.20]	
Control of corruption							0.0020
							[0.34]
AR(1) p–value	0.254	0.313	0.223	0.372	0.436	0.225	0.231
AR(2) p–value	0.541	0.424	0.603	0.658	0.709	0.763	0.507
Hansen p–value	0.266	0.366	0.318	0.474	0.283	0.186	0.366
Observations	368	368	393	391	391	391	391

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions are estimated using two-step Systems General Method of Moments. Dependent variable is the log wages and salaries per worker in manufacturing.

Table 6

Characteristics of democracies and manufacturing hourly wages: GMM Results (1996 – 2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	–0.019	–0.0017	–0.0020	–0.0021	–0.0013	–0.0018	–0.0017
	[–1.13]	[–0.68]	[–0.70]	[–0.91]	[–0.56]	[–0.69]	[–0.58]
Log GDP per capita	0.70***	0.74***	0.74***	0.71***	0.70***	0.74***	0.66***
	[3.19]	[4.03]	[6.37]	[5.08]	[7.22]	[4.96]	[8.33]
Log price level	–0.079	0.26	0.26	0.34	0.34*	0.29	0.37***
	[–0.20]	[0.89]	[1.48]	[1.54]	[1.87]	[1.14]	[3.20]
Primary enrolment ratio to gross	–2.46***	0.70	0.75	0.77	0.45	0.73	0.88
	[–4.22]	[1.19]	[1.58]	[1.21]	[0.50]	[1.48]	[1.23]
Population density (thousands)	0.018	1.74	1.58	1.70	2.64	1.76	4.31
	[0.045]	[0.97]	[0.89]	[0.79]	[0.54]	[1.16]	[0.67]
Trade (/ 100)	–0.45**	–0.16	–0.17	–0.14	–0.083	–0.17	–0.17*
	[–2.72]	[–0.77]	[–1.06]	[–0.73]	[–0.56]	[–0.90]	[–1.73]
Democracy	–0.078						
	[–0.93]						
Voice & Accountability		–0.0029					
		[–1.45]					
Political Stability			–0.00035				
			[–0.29]				
Government effectiveness				–0.0025			
				[–1.65]			
Regulatory quality					–0.0026		
					[–0.88]		
Rule of law						–0.0013	
						[–0.58]	
Control of corruption							–0.00038
							[–0.15]
AR(1) p-value	0.109	0.71	0.906	0.432	0.959	0.712	0.76
AR(2) p-value	0.394	0.486	0.206	0.469	0.261	0.17	0.365
Hansen p-value	0.337	0.172	0.22	0.228	0.575	0.208	0.708
Observations	110	72	72	72	72	72	72

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions are estimated using two-step Systems General Method of Moments. Dependent variable is the log hourly compensation in manufacturing.

Table 7

Characteristics of democracies and manufacturing wages: GMM Results with interactive terms (1996 – 2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	0.88***	0.93***	0.89***	0.84***	0.80***	0.87***	0.79***
	[13.1]	[12.9]	[13.2]	[9.91]	[10.8]	[16.2]	[12.8]
GDP per capita (000s)	0.0096*	0.0079	0.043**	–0.0087	–0.014	0.016	–0.00082
(Y/L)	[1.97]	[0.98]	[2.32]	[–0.62]	[–0.96]	[0.52]	[–0.041]
Log price level	–0.016	–0.20	–0.12	0.079	0.20	–0.0087	0.25
	[–0.064]	[–0.78]	[–0.55]	[0.36]	[0.90]	[–0.049]	[1.09]
Primary enrolment	–0.29	–0.42	–0.15	–0.54	–0.69*	–0.36	–0.41
ratio to gross	[–0.62]	[–0.79]	[–0.40]	[–1.59]	[–1.78]	[–0.93]	[–1.16]
Population density	–0.054	–0.065	0.013	0.020***	0.024***	0.017	0.020
(thousands)	[–0.14]	[–0.11]	[1.40]	[2.74]	[3.58]	[1.12]	[1.45]
Trade (/100)	0.21	0.062	0.057	0.058	–0.054	0.071	0.11
	[1.59]	[0.43]	[1.08]	[0.70]	[–0.75]	[0.78]	[1.09]
Democracy	0.013						
	[1.31]						
Democracy*Y/L	0.00078						
	[1.66]						
Voice &		0.013***					
Accountability (VA)		[3.65]					
VA*Y/L		–0.00004					
		[–0.39]					
Political Stability (PS)			0.0072***				
			[3.59]				
PS*Y/L			–0.00038*				
			[–1.78]				
Government				0.0087**			
effectiveness (GE)				[2.59]			
GE*Y/L				0.00017			
				[1.11]			
Regulatory quality					0.012***		
(RQ)					[3.30]		
RQ*Y/L					0.00020		
					[1.13]		
Rule of law (RL)						0.0065*	
						[1.98]	
RL*y/L						–0.00006	
						[–0.19]	
Control of corruption							0.0016
(CC)							[0.23]
CC*Y/L							0.00015
							[0.79]
AR(1) p-value	0.345	0.388	0.208	0.431	0.49	0.204	0.113
AR(2) p-value	0.619	0.503	0.612	0.72	0.748	0.856	0.627
Hansen p-value	0.224	0.563	0.256	0.499	0.372	0.149	0.584
Observations	368	368	393	391	391	391	391

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions are estimated using two-step Systems General Method of Moments. Dependent variable is the log wages and salaries per worker in manufacturing. Democracy and characteristics of this regime are interacted with GDP per capita in thousand US dollars.

Table 8

Characteristics of democracies and manufacturing hourly wages: GMM Results with interactive terms (1996 – 2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log productivity	–0.0086	–0.0020	–0.0042	–0.0037	–0.0086	–0.00064	–0.0037
	[–0.75]	[–1.39]	[–1.07]	[–1.29]	[–0.75]	[–0.33]	[–1.29]
GDP per capita (000s)	0.068	0.075**	0.023	0.091	0.030	0.15*	0.038**
(Y/L)	[0.55]	[2.26]	[0.87]	[1.68]	[0.82]	[1.85]	[2.43]
Log price level	1.10***	0.76***	1.08***	0.81***	1.22***	0.28	1.22***
	[3.75]	[3.89]	[4.26]	[3.56]	[7.12]	[0.53]	[8.91]
Primary enrolment	–2.38***	0.65*	0.95*	0.76	1.25	0.54	0.79
ratio to gross	[–2.94]	[1.94]	[1.79]	[1.19]	[1.36]	[0.93]	[1.24]
Population density	–0.026	3.14*	4.22**	3.00	6.42***	1.26	6.08***
(thousands)	[–0.053]	[1.87]	[2.76]	[1.26]	[3.17]	[0.49]	[3.30]
Trade (/100)	–0.22**	0.13	0.19**	0.13	0.13	–0.13	0.18**
	[–2.24]	[1.23]	[2.68]	[0.88]	[1.15]	[–0.91]	[2.22]
Democracy	0.038						
	[0.43]						
Democracy*Y/L	–0.0050						
	[–0.41]						
Voice &		0.014**					
Accountability (VA)		[2.52]					
VA*Y/L		–0.00067*					
		[–2.05]					
Political Stability (PS)			0.0048				
			[0.82]				
PS*Y/L			–0.00017				
			[–0.68]				
Government				0.010			
effectiveness (GE)				[1.16]			
GE*Y/L				–0.00085			
				[–1.58]			
Regulatory quality					0.013		
(RQ)					[0.55]		
RQ*Y/L					–0.00025		
					[–0.67]		
Rule of law (RL)						0.021*	
						[1.82]	
RL*y/L						–0.0014*	
						[–1.82]	
Control of corruption							0.0070**
(CC)							[2.82]
CC*Y/L							–0.00035*
							[–2.01]
AR(1) p-value	0.153	0.841	0.92	0.925	0.989	0.915	0.204
AR(2) p-value	0.166	0.114	0.119	0.371	0.301	0.182	0.255
Hansen p-value	0.478	0.659	0.376	0.515	0.365	0.418	0.639
Observations	110	72	72	72	72	72	72

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The regressions are estimated using two-step Systems General Method of Moments. Dependent variable is the log hourly compensation in manufacturing. Democracy and characteristics of this regime are interacted with GDP per capita in thousand US dollars.

5. Conclusion

What is it about a democracy that promotes higher wages? Briefly, the answer to this question is: freedom of association and assembly as well as respect for existing labour laws. This paper reaches these conclusions with a panel of 84 countries over the period 1996 to 2009 and after testing the robustness of the results using another panel of 29 nations as well as econometric techniques that account for the presence of endogeneity. The results show that both voice and accountability and rule of law significantly increase manufacturing wages, at least in poor and middle income countries. It is therefore argued that greater voice and accountability increases wages by advancing institutions that respect rights such as freedom of assembly and collective bargaining. Moreover, an increase in rule of law is argued to have a similar effect on wages by strengthening the economy's formal sector, where labour standards and minimum wage laws are more easily enforced. On that note, it is also argued that an increase in rule of law will be highly correlated with growing respect for existing wage laws.

Interestingly, the findings in this study also point to some potential differences between developed and developing nations, with democracy, voice and accountability and rule of law leading to a decrease in manufacturing wages in the former. It is hypothesised that this may be related to the fact that relatively richer economies are undergoing a process of deindustrialisation, where the manufacturing sector shrinks relative to the rest of the economy. Therefore, if greater democratisation (exhibited by an increase in voice and accountability and rule of law) leads to better coordination of wage bargaining activities, then labour markets in these countries will experience faster downward adjustments of manufacturing wages to reflect deteriorating employment and productive capacities.

Finally note that as in Rodrik (1999), one can only draw tentative conclusions from this study as the findings pertain to the manufacturing sector alone. Ideally, future studies will check whether similar results are obtained with poverty measures as well as other income indicators, including cross-country earnings measures. Preliminary work (by the author) indicates that the results in this paper are generally inconsistent with poverty measures, but generally consistent across other (more imperfect) measures of earnings.

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Appendix

Table A1

Trade union membership and manufacturing wages: OLS and GMM Results (1996–2009)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Wage variable source:	UNIDO	UNIDO	BLS	BLS	UNIDO	UNIDO	BLS	BLS
Estimation technique:	OLS	OLS	OLS	OLS	GMM	GMM	GMM	GMM
Log productivity	0.56*** [3.80]	0.58*** [4.28]	–0.0057 [–1.31]	0.0043 [0.24]	0.60*** [4.95]	0.40*** [3.08]	–0.050 [–0.80]	–0.0085 [–0.37]
Log GDP per capita	0.33*** [2.79]		0.76*** [16.3]		0.43*** [4.95]		0.72*** [3.22]	
GDP per capita (Y/L)		0.022** [2.71]		0.048*** [6.28]		0.019** [2.11]		0.030*** [3.93]
Log price level	0.17 [0.82]	0.62** [2.51]	–0.075 [–0.49]	0.75** [2.14]	–0.18 [–0.53]	1.17*** [2.77]	–0.100 [–0.31]	0.59 [1.49]
Primary enrolment ratio to gross	0.027 [0.035]	0.31 [0.43]	0.0092 [0.027]	–0.42 [–0.42]	–0.10 [–0.21]	–0.63 [–0.54]	–3.08** [–2.48]	–0.65 [–0.37]
Population density (thousands)	0.029 [1.01]	–0.033 [–0.95]	0.22 [1.13]	0.21 [0.52]	0.047*** [3.20]	–0.012 [–0.14]	0.12 [0.24]	0.31 [0.73]
Trade (/100)	0.0012 [0.014]	0.16** [2.06]	–0.0063 [–0.064]	0.36* [1.98]	–0.049 [–0.95]	0.043 [0.23]	–0.29 [–1.33]	0.071 [0.40]
Trade Union Membership (% of population) (TU)	0.0098** [2.19]	0.020** [2.53]	0.0062* [2.10]	0.043*** [5.72]	0.0083* [1.78]	0.042 [1.56]	0.0065 [0.73]	0.030** [2.24]
TU*Y/L		–0.00047** [–2.22]		–0.001*** [–4.80]		–0.0010* [–1.74]		–0.00063* [–1.97]
Constant	–0.47 [–0.33]	–0.34 [–0.26]	–4.40*** [–6.59]	–1.75 [–0.73]				
R-squared	0.95	0.95	0.98	0.92				
AR(1) p-value					0.111	0.206	0.91	0.426
AR(2) p-value					0.658	0.643	0.602	0.352
Hansen p-value					0.818	0.201	0.547	0.493
Observations	114	114	55	55	114	114	55	55

Notes: t-statistics in brackets. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Columns 1 and 2 are estimated using OLS. Columns 3 and 4 are estimated using two-step Systems General Method of Moments. Dependent variable in the UNIDO regressions is the log wages and salaries per worker in manufacturing. Dependent variable in the BLS regressions is the log hourly compensation in manufacturing. Trade union membership expressed as a proportion of the population and sourced from the International Labour Organisation's LABORSTA data base. TU*Y/L is trade union membership interacted with GDP per capita in thousand US dollars.