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ABSTRACT

Controlling for labor productivity, income levels, and other possible determinants, there is a robust and statistically significant association between the extent of democratic rights and wages received by workers. The association exists both across countries and over time within countries. The coefficient estimates suggest that non-negligible wage improvements result from the enhancement of democratic institutions: average wages in a country like Mexico would be expected to increase by 10-30 percent were Mexico to attain a level of democracy comparable to that prevailing in the U.S.

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DEMOCRACIES PAY HIGHER WAGES

This short paper provides empirical support for the assertion made in the title: controlling for labor productivity, income levels, and other possible determinants, there is a robust and statistically significant association between the extent of democratic rights and wages received by workers. The association exists both across countries and over time within countries (i.e., in panel regressions with fixed effects as well as in cross-section regressions). The coefficient estimates suggest that non-negligible wage improvements result from the enhancement of democratic institutions: average wages in a country like Mexico would be expected to increase by 10-30 percent were Mexico to attain a level of democracy comparable to that prevailing in the U.S.

The Evidence

Our dependent variable is the average level of dollar wages in manufacturing in a broad sample of countries, ranging in income levels from Ethiopia (less than 300 per capita in 1985 dollars) to the United States. (The appendix discusses sources and provides greater detail on all the variables used here.) As is to be expected, labor productivity turns out to be the main determinant of wage differences across countries. We use as our measure of labor productivity manufacturing value added (MVA) per worker. This variable alone explains between 80 to 90 percent of the cross-national variation in manufacturing wages.[1] But other variables play a role as well, as shown in column (1) of Table 1. We find that controlling for labor productivity, higher wages are associated with higher levels of GDP per capita and with higher levels of

[1] See also Freeman (1994) for a similar conclusion.

consumption prices. They are also associated with greater democracy, which is this paper's key message.[2]

Why GDP per capita should play a role is not clear. One explanation would be that this finding reflects the tendency of the labor share in value added to be larger in richer countries. Note that the ratio of wages to MVA per worker is the factor share of labor in manufacturing (i.e., wL/pQ). The positive and statistically significant coefficient on GDP per worker—controlling for MVA per worker—indicates that this factor share rises systematically with the level of development. The panel regressions reported later suggest, however, that there may be business-cycle effects at work as well. Labor typically captures a larger share of value added when the economy is doing well.

The positive coefficient on the price level of consumption strengthens the suspicion that there are elements of bargaining in the determination wages. Under perfectly competitive labor markets, the price of the consumption basket would not exert an independent influence on the level of wages: wages would be set by equating the marginal product of labor to the real product wage. Workers obviously care about real consumption wages, however, and this will be reflected in wages when bargaining plays a role.

Our focus here is on the effect of democracy on wages. I use the democracy index of Gastil (various years), which is based on indicators of civil liberties and political rights and ranges from 0 to 1 (see the appendix). The estimate in column (1) suggests a statistically highly significant (p-value < 0.000) and sizable impact from democratic institutions. Going from the

[2] The regressions shown in Table 1 also include a range of regional and country-grouping dummies (see note to the Table). The estimated coefficients tend to be statistically significant for East Asia and Latin America (and negative in both cases).

level of democracy in Iraq (0) to that in the U.S. (1) is associated with an increase in wages of 60 percent, holding all else constant. Somewhat more realistically, moving from Mexico's democratic level (0.5) to that of the U.S. is associated with an increase of 30 percent. (Note that the panel estimates reported later would lead us to reduce these impacts by half.)

The partial scatter plot shown in Figure 1 gives a visual sense of the results. We notice that countries with greater democratic freedoms than would have been predicted from their income levels such as India, Israel, Malta, and Cyprus also have correspondingly higher wages relative to productivity. Some countries at the other end of the spectrum—lower-than-expected values for the democracy index and low wages—are Syria, Chile[3], Saudi Arabia, Turkey, and Mexico.

Columns (2) to (7) check for robustness by including a number of additional regressors (regional and country-grouping dummies are included in all the regressions). I try first some variables that were included in Freeman's (1994) paper on national wage differentials: schooling, urbanization, and openness. None of these enters significantly, which is not surprising since unlike Freeman (1994) I control for labor productivity directly. Next I include a dummy for oil exporters, which enters with a negative sign (contrary to my expectations) but is again not significant. Finally, I include two measures of labor rights: the unionization rate and the number ratified among the ILO's six basic workers' rights conventions (Rodrik 1996). Neither is significant by conventional standards, and the sign on unionization is actually negative. We should not take the latter result seriously, however, because of the small sample size in the

[3] The data refer to the 1985-89 period, during which Chile was run by a military dictatorship. Democratic elections were held in 1989 (see below on the Chilean case).

regression where unionization is included (42 countries).[4] The estimated coefficient on democracy remains virtually unchanged and highly significant in all these regressions.

The final column of Table 1 shows the results of two-stage least squares estimation, with democracy treated as an endogenous variable. Following the work of Barro (1996), I use schooling, a dummy for oil exporters, and five-year lagged democracy as instruments. The estimated coefficient on democracy is still highly significant, and actually larger. I conclude that there is little ground for worry about reverse causation from wages levels to democracy.

Finally, I have tested for influential observations using the DFITS statistic (Belsley, Kuh, and Welsch 1980). Only one country presents a potential problem (Central African Republic), and removing it from the sample makes no difference to the results.

These results are for a cross-section of about 80 countries during the second half of the 1980s. The democracy index is available on a consistent basis for the entire 1970-94 period. The data on labor costs and productivity are more patchy, but it is possible to construct time series for a significant number of countries. Therefore, the natural next step is to pool time-series and cross-section data and use panel techniques to see whether the relationship between democracy and wages holds up in a panel setting as well. We use five-year averages of the data covering a maximum of five sub-periods for each country, namely 1970-74, 1975-79, 1980-84, 1985-89, and 1990-94. This gives us a total of 388 observations. (The panel is not balanced since not all countries have data for all five-year sub-periods.)

We run three types of regressions on the pooled data: OLS with period dummies; random-effects (also with period dummies); and full fixed-effects (with dummies for both

[4] Also, the sign on unionization turns positive when democracy is excluded from the regression, but the coefficient remains insignificant.

periods and countries). Not that the fixed-effects methodology is particularly demanding in this context, as it requires that the effect of democracy on wages be recovered from the relatively few time-series observations for individual countries. Since wages and MVA/worker are both measured in current dollars, we run these regressions also in a slightly different form to eliminate any spurious effects arising from inflation over time: we use as our dependent variable the ratio of wages to MVA/worker (which we call "unit labor costs").

The results, displayed in Table 2, are remarkably consistent where the democracy variable is concerned, regardless of the method of estimation.[5] We obtain a range of estimates for the coefficient on democracy of 0.2-0.4, with the fixed-effects regressions providing the lowest estimates. All the estimates are statistically significant at the 95 percent level or better. Indeed, in light of the limited number of time-series observations and the relatively small variation in democracy over time in most countries, it is striking that the results of the fixed effects regressions are so strong. This constitutes quite persuasive evidence that the enhancement of democratic institutions raises wages for workers.

We end by providing some event-study type evidence from countries that have gone through significant transformations in regime type. Table 3 lists 12 instances of transition (drawn from the experiences of Chile, Turkey, Argentina, Brazil, Hungary, Spain, Greece, and Portugal), selected according to availability of continuous annual data and a clear instance of regime change. In each case, the table shows the pre- and post- level of wages relative to labor productivity, or alternatively the factor share of labor (wL/pQ). In all four cases of transition

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[5] We include openness on the right-hand side of these regressions because it enters with a statistically significant coefficient in the pooled OLS version. However, this variable is no longer significant when we estimate the

from democracy to authoritarian regimes, we find a dramatic fall in the factor share of labor. In six out of eight cases of transition to democracy we find an increase in the labor share. On the whole, 10 out of the 12 cases listed here behave in the manner consistent with the econometric results.[6]

Concluding remarks

Institutions matter to distributive outcomes. What this paper shows is that democratic institutions tend to be friendly to labor: they result in higher wages and a larger factor share for labor. Put differently, democratic rights—greater civil liberties and political freedoms—enhance the bargaining power of workers relative to employers. That too should not come as a surprise. What is perhaps surprising is that the effects show up so strongly in the data.

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regressions with random or fixed effects (giving us a result more in line with the cross-section results reported in Table 1).

[6] Some of the individual episodes shown in Table 3 can also be read differently, putting more emphasis on the state of the business cycle, and much less on regime transitions. The econometric evidence, however, is not subject to the same criticism, as we control for GDP per capita explicitly—and that is of course the great advantage of econometrics compared to case studies.

Appendix: Data Sources

The U.N. Industrial Development Organization (UNIDO) provides annual data on "labor costs" and value added per employee in manufacturing for a large sample of countries. "Labor costs" seems to refer to the wage bill divided by the number of employees. My source for this data is the World Bank's Labor Market Data Base (Rama 1996), where the original UNIDO data are collated. The data were kindly made available by Martin Rama. I converted these data to U.S. dollars using current exchange rates from the World Bank's World Data 1995 and from national sources (for Taiwan, for example). Unit labor costs were calculated by dividing labor costs with MVA per employee, and do not depend on the exchange rate used. Five-year averages were calculated by using all available annual observations within the relevant period. The unionization variable comes also from the World Bank Labor Market Data Base. The index on "basic worker rights" comes from Rodrik (1996).

The democracy index derives from work by Gastil and his followers (various years), and combines indicators of civil liberties and of political rights. The original Gastil range of 1-7 was converted to a 0-1 scale as in Helliwell (1994) and Barro (1996). My source for this index is Barro and Lee (1994) and Barro (1996). I am grateful to Robert Barro for providing the data for 1990-94, which are not included in the Barro-Lee data set.

Other data used in this paper come from Barro and Lee (1994), Penn World Tables, or the World Bank's World Data 1995. The price level variable refers to the price level for consumption in the Penn World Tables.

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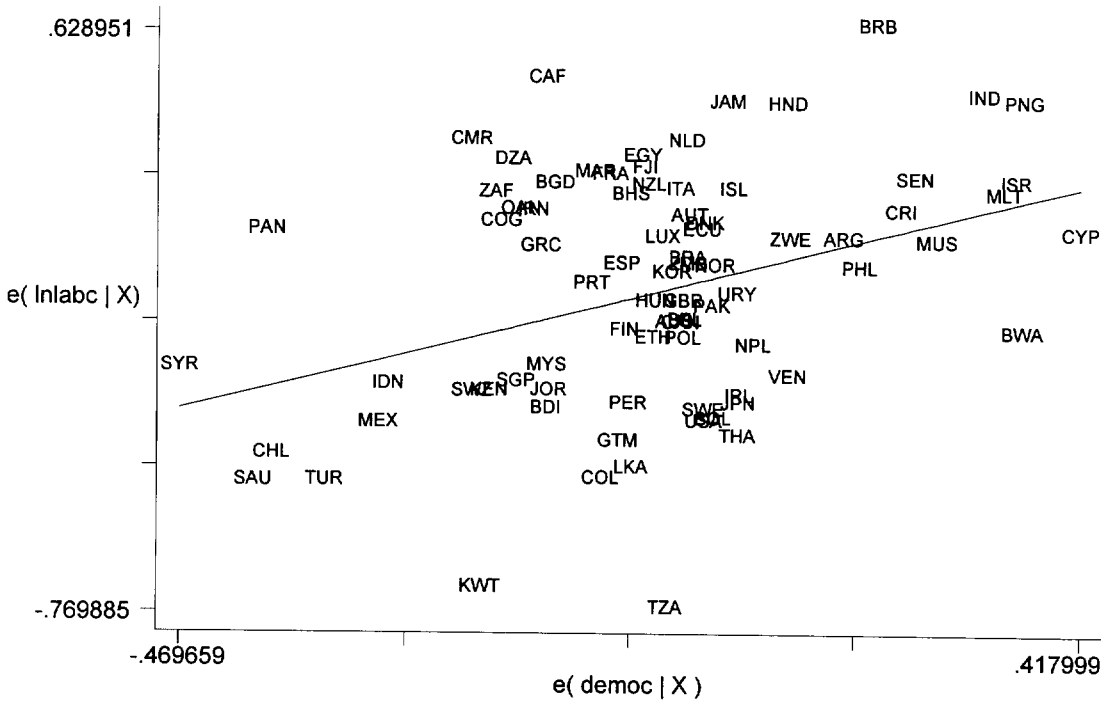

Figure 1: Partial scatter plot of log labor costs against democracy (based on column 1 of Table 1)

Table 1

Democracy and wages: Cross-section results (1985-89)

	dependent variable: log labor costs, 1985-89 average							
	OLS	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*2SLS*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
democracy	0.60*	0.60*	0.61*	0.60*	0.52*	0.59**	0.60*	0.69*
	(0.16)	(0.17)	(0.15)	(0.16)	(0.16)	(0.25)	(0.17)	(0.22)
log MVA/worker	0.80*	0.81*	0.81*	0.80*	0.80*	0.86*	0.80*	0.81*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.10)	(0.05)	(0.05)
log GDP/cap.	0.20*	0.24**	0.22**	0.19*	0.22*	0.24**	0.21*	0.16***
	(0.07)	(0.11)	(0.09)	(0.07)	(0.06)	(0.11)	(0.07)	(0.09)
log price level	0.51*	0.55*	0.52*	0.51*	0.53*	0.49***	0.49*	0.57*
	(0.18)	(0.19)	(0.18)	(0.18)	(0.19)	(0.26)	(0.18)	(0.20)
log schooling		-0.12						
		(0.10)						
urbanization			-0.16					
			(0.25)					
openness				0.03				
				(0.07)				
oil exporters					-0.16			
					(0.13)			
unionization						-0.09		
						(0.22)		
basic worker rights							0.03	
							(0.02)	
N	80	73	79	80	80	42	79	73
Root MSE	0.28	0.29	0.29	0.29	0.28	0.30	0.28	0.29
R^2	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95

Notes: Regressions include a constant term and dummies for East Asia, Latin America, Sub-Saharan Africa, socialist countries, and OECD members (coefficent estimates not shown). Five-year lagged democracy, schooling and oil dummy used as instruments in the regression shown in column (8) Robust standard errors are reported in parenthesis. Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table 2

Democracy and wages: Panel results (1970-94)

	log labor costs			*log unit labor costs*		
	OLS	*random effects*	*fixed effects*	*OLS*	*random effects*	*fixed effects*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
democracy	0.30*	0.23*	0.20**	0.41*	0.26*	0.19**
	(0.08)	(0.08)	(0.09)	(0.08)	(0.08)	(0.09)
log MVA/worker	0.82*	0.83*	0.85*			
	(0.03)	(0.03)	(0.04)			
log GDP/cap.	0.21*	0.25*	0.30*	0.10*	0.16*	0.21*
	(0.03)	(0.04)	(0.07)	(0.03)	(0.04)	(0.07)
log price level	0.27*	0.18*	0.11	0.11***	0.08	0.08
	(0.07)	(0.05)	(0.07)	(0.06)	(0.06)	(0.07)
openness	0.09*	0.06	-0.10	0.14*	0.09	-0.07
	(0.03)	(0.05)	(0.10)	(0.04)	(0.06)	(0.10)
period dummies	yes	yes	yes	yes	yes	yes
country dummies	no	no	yes	no	no	yes
N	388	388	388	388	388	388
R^2	0.95	0.95	0.93	0.43	0.42	0.22

Notes: Estimated using five 5-year averages covering 1970-74, 1975-79, 1980-84, 1985-89, and 1990-94. OLS and random effects regressions include a constant term and dummies for East Asia, Latin America, Sub-Saharan Africa, socialist countries, OECD members, and oil exporters (coefficent estimates not shown). Robust standard errors are reported in parenthesis in columns (1) and (4). Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table 3

Country examples

		factor share of labor	
year	*country*	*pre-transition*	*post-transition*
A. Transitions fom democracy to authoritarianism			
1973	Chile	0.24	0.13
1980	Turkey	0.38	0.25
1976	Argentina	0.31	0.19
1964	Brazil	0.26	0.19
B. Transitions fom authoritarianism to democracy			
1974	Greece	0.33	0.40
1974	Portugal	0.40	0.58
1975	Spain	0.51	0.58
1989	Chile	0.15	0.17
1989	Hungary	0.35	0.42
1983	Turkey	0.27	0.20
1983	Argentina	0.19	0.20
1985	Brazil	0.22	0.20

Note: Pre- and post-values are calculated using up to three observations prior to and following the year of transition indicated.