DEMOCRACIES PAY HIGHER WAGES*

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Revised
October 1998

* This is an extensively revised and expanded version of a paper with the same title circulated as NBER Working Paper No. 6364. I am grateful to Olivier Blanchard, George Borjas, Richard Freeman, Edward Glaeser, Robert Jensen, Thomas Kane, Philip Keefer, Robert Lawrence, Frank Levy, Florencio Lopez de Silanes, Richard Zeckhauser, two anonymous referees, and especially Lawrence Katz for helpful suggestions. Robert Barro and Martin Rama have made available some of the data used in this paper. The Harvard Institute for International Development has provided partial financial support. Vladimir Kliouev and Joanna Veltri have performed admirable research assistance.

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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 democracy and the level of manufacturing wages in a country. The association exists both across countries and over time within countries. The coefficient estimates suggest 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 to 40 percent were Mexico to attain a level of democracy comparable to that prevailing in the United States. Political competition and participation seem to be the driving force behind the result.

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I. INTRODUCTION

In 1996 average labor productivity in Mexico, measured by output per worker and converted to U.S. dollars at market exchange rates, stood roughly at $9,600. The corresponding level in the United States was $58,000, six times higher. In the same year, the compensation level for production workers in the manufacturing sectors of the two countries differed by a factor of almost twelve--$1.50 per hour in Mexico versus $17.70 in the United States.[1] Why are Mexican wages so much lower than what a comparison of economy-wide labor productivities would suggest?

Cross-national comparisons of this sort are always difficult, and there could be various reasons why the wage gap is so large. The data may not be directly comparable; productivity in the manufacturing and non-manufacturing sectors may differ; average hours worked may vary; or the presence of factors of production other than production workers may complicate the picture.[2] But the size of the gap not accounted for by labor productivity is so large that one is led to suspect there may be institutional reasons for it as well. In particular, it is possible that the political context in which labor markets operate shapes behavior in these markets and influences

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[1] The figures on labor compensation come from the U.S. Bureau of Labor Statistics, and include wages, salaries, employers' contribution to social security and other labor taxes in both cases. The figures on economy-wide labor productivity are my own estimates, arrived at by adjusting GDP per-capita for labor force participation and unemployment rates. Let y, k, and u denote per-capita GDP, the labor-force participation rate for the entire population, and the unemployment rate, respectively. Then output/worker can be expressed as $(1/[1-u])(1/k)y$. According to the World Bank's World Development Indicators 1998 CD-ROM, per-capita GDP levels at current prices and exchange rates stood at $27,676 and $3,593 in the two countries in 1996. The implied labor-force participation rates--obtained by dividing the labor force by population, both also from the same source—are 50.6 percent (United States) and 39.5 percent (Mexico). Finally, the unemployment rates in 1996 were 5.4 percent (United States) and 5.5 percent (Mexico). Note that the Mexican unemployment rate is for urban areas only, and I have not adjusted for that.

[2] Not all of these complications work in the direction of closing the gap, however. According to UNIDO statistics used below, in 1991 manufacturing value added (MVA) per worker differed in the two countries by a factor of less than three ($27,666 versus $78,331 in Mexico and the United States, respectively).

wage outcomes. Could political institutions, as well as labor productivity, contribute to the determination of the level of wages?

The evidence marshaled in this paper strongly suggests that the answer is affirmative. Controlling for labor productivity, income levels, and other possible determinants, there is a robust and statistically significant association between the extent of democratic rights in a country and the level of wages received by workers in manufactures. The association exists both across countries and over time within countries—that is, in panel regressions with fixed effects as well as in cross-section regressions.

The estimates suggest that non-negligible wage improvements result from the enhancement of democratic institutions. The point estimates from regressions with fixed effects imply that average manufacturing wages in Mexico would increase by a range of 6 to 38 percent were Mexico to attain a level of democracy comparable to that prevailing in the United States. These are the "direct" effects of democracy on wages, holding constant value added per worker in manufacturing and per-capita GDP (among other controls). The cross-section regressions yield generally larger effects, with manufacturing wages in a country like Mexico expected to rise—according to results with the most reliable data—by up to 90 percent. The evidence from past transitions to democracy is also consistent with the econometric findings: countries such as Portugal, Spain, and Greece have experienced increases in labor's share of manufacturing value added of several percentage points upon their transition to democracy, while countries moving in the opposite direction have typically witnessed a sharp reduction in labor's share.

We have to be careful to attribute causality in the appropriate direction when interpreting the observed association between democracy and wages. This paper provides evidence of several

kinds that suggests that democracy is causal. This evidence comes from instrumental-variables estimation, panel regressions with country fixed effects, and specific instances of changes in wage levels following transitions in political regime. At the same time, it is possible that reverse causation exists as well. Countries with a large middle class—reflected in a relatively high level of manufacturing wages—may be more likely to make a transition to democracy and to remain one. There is no obvious support in the data for this proposition, but the possibility cannot be ruled out.

The relevance of institutions to labor-market outcomes has been the subject of a number of recent papers focusing on the widening wage distribution in the United States. For example, DiNardo, Fortin and Lemieux [1996] focus on de-unionization and the erosion of the real value of the minimum wage as explanatory factors behind the rise in the skill premium, and the changes in the overall wage distribution more broadly. Card, Kramarz, and Lemieux [1996] study the role of "labor-market rigidities" in Canada and France relative to the United States in determining the paths of the wage distribution in these countries. Blau and Kahn [1996] emphasize the de-centralized nature of wage bargaining in the U.S relative to other countries in shaping wages at the bottom end of the wage distribution. The focus on these and related papers tends to be on labor-market institutions alone, as determined by government policies or union preferences. The present paper focuses on the functional distribution of income between wages and profits, and provides evidence that the broader set of political institutions matter too.

A second strand that is relevant to this paper is the literature on the economic consequences of political democracy. Research in this area has focussed almost exclusively on the implications for economic growth, a subject on which a considerable amount has been written. This literature has yielded generally ambiguous results; for some recent examples see Bhalla

[forthcoming], Przeworski and Limongi [1993], Helliwell [1994], and Barro [1996]. More recently, a number of papers have looked at the relationship between democracy and economic stability, with findings that point in the direction of a positive association [Rodrik 1997; Chandra 1998; Quinn and Woolley 1998]. To my knowledge, the relationship between democracy and the level of wages or other indicators of distribution has not been seriously studied.

The outline of the paper is as follows. Section II describes the data on wages and indicators of democracy used in this paper. Section III presents the cross-section and time-series evidence. Section IV discusses alternative hypotheses for the finding, and carries out some tests to discriminate among them. Section V provides some concluding comments. An appendix describes data sources and construction in greater detail, paying particular attention to cross-national comparability of the wage data.

II. DATA SOURCES

The dependent variable in the empirical analysis is the average level of dollar wages in manufacturing. I use two sources of data on wages. One is the recently compiled World Bank Labor Market Data Base (WBLMDB, Rama [1996]), which contains wage statistics from United Nations Industrial Development Organization (UNIDO) files. This source provides information on wages per worker in manufacturing for a broad sample of countries ranging in income levels from Ethiopia (less than 300 per capita in 1985 dollars) to the United States, and going back to the early 1960s. These figures are provided in local-currency terms, and I have converted them to U.S. dollars using contemporaneous market exchange rates.

The relatively large sample size of the WBLMDB/UNIDO data set comes at some cost to cross-national comparability. In most countries, the statistics on wages refer to “wages and

salaries," which in U.N. nomenclature include "all payments in cash or in kind made to 'employees' during the reference year in relation to work done for the establishment" [UNIDO 1998]. In principle, "wages and salaries" cover: (a) direct wages and salaries; (b) remuneration for time not worked; (c) bonuses and gratuities; (d) housing allowances and family allowances paid directly by the employer; and (e) payments in kind.

A smaller group of countries report "compensation of employees," which is "equivalent to wages and salaries plus employers' contributions on behalf of their employees paid to social security, pension and insurance schemes, as well as the benefits received by employees under these schemes and severance and termination pay" [UNIDO 1998]. Some countries report data that fall in between these two categories in terms of exclusiveness, by including employer contributions to social security but excluding severance pay, for example. Notes for specific countries reveal departures from standard statistical procedures in a significant number of cases. The appendix discusses these issues in greater detail and checks for the robustness of the empirical results when controls for differences in coverage are included.

The second source of wage data is the U.S. Bureau of Labor Statistics' (BLS) International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing [BLS 1998].[3] This source covers a smaller sample of 29 countries, and includes only a small number of developing countries (Sri Lanka, Mexico, Hong Kong, Taiwan, Singapore, and Korea, in rough order of increasing wages). But it has the major advantage that it has been carefully constructed with cross-national comparability in mind. "Compensation costs" are meant to be exhaustive, and include both hourly direct pay and employer-provided social insurance

[3] I am grateful to a referee for drawing my attention to this source.

expenditures and other labor taxes.[4] These data series start from 1975. The simple correlation coefficient between the WBLMDB/UNIDO and BLS measures of manufacturing wages is very high, typically above 0.90.

The other key variable in this paper is democracy, and here too I use two different sources of information. The first is the Freedom House measure of democracy, which derives from work by Gastil and his followers [various years], and has been used extensively in previous econometric work focusing on the relationship between democracy and growth [Helliwell 1994; Barro 1996]. This source provides a subjective classification of countries on a scale of 1 to 7 on civil liberties (*civlib*) and political rights (*prights*) separately, with higher ratings signifying less freedom. In practice, the country ratings on *civlib* and *prights* are highly correlated. Following Helliwell [1994], I combine the two ratings into a single index that varies from 0 to 1 (with higher values indicating greater democracy) by using the transformation [14 – civlib - prights]/ 12. Consistent time series for this indicator are available since 1970.[5]

The second measure of democracy comes from the Polity III data set of Jaggers and Gurr [1995].[6] This source contains annual democracy indicators for the period 1946-1994 for independent countries with population greater than 500,000 in the early 1990s. As with the

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[4] According to the BLS documentation: "Hourly direct pay includes all payments made directly to the worker, before payroll deductions of any kind, consisting of (a) pay for time worked (basic time and piece rates plus overtime premiums, shift differentials, other premiums and bonuses paid regularly each pay period, and cost-of-living adjustments) and (b) other direct pay (pay for time not worked (vacations, holidays, and other leave, except sick leave), seasonal or irregular bonuses and other special payments, selected social allowances, and the cost of payments in kind). Social insurance expenditures and other labor taxes includes (c) employer expenditures for legally required insurance programs and contractual and private benefit plans (retirement and disability pensions, health insurance, income guarantee insurance and sick leave, life and accident insurance, occupational injury and illness compensation, unemployment insurance, and family allowances) and, for some countries, (d) other labor taxes (other taxes on payrolls or employment (or reductions to reflect subsidies), even if they do not finance programs that directly benefit workers, because such taxes are regarded as labor costs)."

[5] My source for this index is Barro and Lee [1994] and Barro [1996]. I am grateful to Robert Barro for providing the data for 1990-1994, which are not included in the Barro-Lee data set.

[6] The data were downloaded from the Harvard-MIT Data Center (http://data.fas.harvard.edu/).

Freedom House data, these indicators have been subjectively coded by the authors on the basis of "the competitiveness of political participation, the openness and competitiveness of executive recruitment, and the level of constraints on the chief executive" [Jaggers and Gurr 1995, p. 471]. Countries are rated on an 11-point scale from 0 to 10 (with higher values indicating greater democracy). I have rescaled the ratings to range from 0 to 1 for greater comparability with the Freedom House index.

The democracy measures deriving from the Freedom House and Polity III data sets are highly correlated. Across countries, the correlation coefficient ranges from 0.81 to 0.93 depending on the time period. The changes over time within countries also tend to be quite similar. However, due to the peculiarities of the ratings schemes used in the two sources, there is limited cross-country comparability across the two sources. Mexico, for example, receives a rating of 0.5 from Freedom House but a rating of 0.1 from Polity III. This has to be borne in mind in interpreting the estimated coefficients on these two indices in the regressions reported below.

Descriptive statistics for the wage and democracy indicators are shown in Table I, along with those for the other core variables used in the analysis below. Other data used in this paper come mostly from standard cross-national data sources, in particular Barro and Lee [1994], Penn World Tables (Mark 5.6), and the World Bank's World Data 1995. Non-standard sources will be indicated when the relevant variable comes up. Panel A of Table I is for the WBLMDB/UNIDO sample, while Panel B is for the BLS sample. The information in the table pertains to cross-sectional averages of the data (for 1985-1989 and 1990-1994, respectively). As mentioned above, however, I will also exploit the panel nature of the data in the empirical analysis.

III. THE EVIDENCE

The core of the empirical analysis consists of a set of cross-section and panel regressions in which wages are regressed on measures of democracy as well as other determinants. The benchmark regression includes the following regressors in addition to democracy: (a) average labor productivity in manufacturing, as measured by manufacturing value added (MVA) per employee (from the WBLMDB/UNIDO data set); (b) per-capita GDP, as a handy proxy for other structural determinants correlated with levels of income; (c) average price level of consumption, to indicate cost-of-living differences not captured by exchange-rate conversions[7]; and (d) a set of geographical and country-grouping dummies (for Latin America, East Asia, Sub-Saharan Africa, OECD and socialist countries), used in all but the fixed-effects regressions.

For purposes of the analysis, I have grouped the data into five-year averages covering seven sub-periods over 1960-1994. Cross-section analysis using the BLS data will focus on 1990-1994 averages, while that with the WBLMDB/UNIDO data will focus on 1985-1989 averages because of the substantially fewer number of observations in the latter case for the 1990s. The panel regressions make use of the entire time period.

A. Cross-section results

Table II presents cross-section results for 1985-1989 using the WBLMDB/UNIDO data on wages. As expected, labor productivity turns out to be the main determinant of wage differences across the 93 countries that are included. Manufacturing value added per worker

[7] The price level of consumption is the price index of a country's consumption basket in internationally-comparable, purchasing-power-adjusted terms. It comes from the Penn World Tables.

explains on its own between 80 to 90 percent of the cross-national variation in manufacturing wages.[8]

This paper's central message is that the level of democracy also has a strong positive effect on wages. The first two columns of the table show that the Freedom House and Polity III indices each enter with positive coefficients that are significant at the 99 and 95 percent confidence levels, respectively. The point estimates suggest quantitatively large impacts.[9] Take for example Iraq, a country with a value of 0 in both democracy ratings. Going from the level of democracy in Iraq to that in the United States is associated with an increase in wages of 60 percent according to the regression using the Freedom House data (column 1), and an increase of 28 percent according to the regression using the Polity III data (column 2). Somewhat more realistically, moving from Mexico's democratic level to that of the United States is associated with an increase in wages of 30 percent (0.60x0.5) or 25 percent (0.28x0.9), depending on the regression used. We note that similar results hold for all cross-sections since 1975: the cross-sectional relationship between democracy and wages (using either democracy measure) is statistically significant in all sub-periods from 1975-1979 through 1990-1994 (not shown).

The partial scatter plot shown in Figure I gives a visual sense of the results. We notice that countries with greater democratic freedoms than would be predicted on the basis of their income levels tend to have correspondingly high wages relative to productivity. India, Israel, Barbados, Mauritius, Malta, and Cyprus are some examples. Some of the countries at the other

[8] When log wages are regressed on log MVA/worker alone, the estimated coefficient on the latter is 1.05 with a t-statistic of 26. See also Freeman [1994] and Golub [1997] on the relationship between wages and labor productivity across countries and over time.

[9] We lose four observations when we use the Polity III measure because Bahamas, Barbados, Malta, and Seychelles are not in the Polity III data set.

end of the spectrum—lower-than-expected values for the democracy index and low wages—are Iraq, Chile[10], Saudi Arabia, Turkey, Mexico, and Indonesia.

The regressions reveal also that GDP per capita and the domestic price level (for consumer goods) enter the regressions with significant coefficients.[11] Even after controlling for labor productivity, we find that higher levels of GDP per capita and higher levels of consumer prices are associated with higher wages. One explanation for the role played by GDP per capita is that the finding reflects the tendency of the labor share in value added to be higher 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. It is also possible that GDP per capita enters for reasons having to do with measurement error: if not all changes in productivity are captured in MVA, some will show up in the estimated coefficient on aggregate GDP.

As for the significant positive coefficient on the price level of consumption, we might be picking up the effect of bargaining on 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 care about real consumption wages, however, and this will be reflected in wages when bargaining plays a role. However, measurement error (this time in prices) may again be partly responsible.

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

[11] We note that democracy enters with a highly significant coefficient even when these additional controls (GDP per capita, price level, and regional dummies) are dropped. The estimated coefficients on East Asia, Latin America, and OECD tend to be negative and occasionally significant, while other dummies are insignificant.

Columns (3) and (4) check for robustness by including a number of additional regressors. I try some variables that were used in Freeman's [1994] paper on national wage differentials: schooling (measured by average years of education of total labor force), urbanization, and openness (measured by share of total trade in GDP). None of these enters significantly, which is not surprising since unlike Freeman [1994] I control for labor productivity directly.[12] When MVA per worker and per-capita GDP are dropped, all of these variables become significant if entered individually (at the 90 percent level or better). I also include a dummy for oil exporters, which enters with a negative sign (contrary to my expectations) but is again not significant. The estimated coefficients on democracy remain virtually unchanged and highly significant when the additional controls are introduced.

The final three columns of Table II show the results of two-stage least squares estimation, with the indices of democracy instrumented in various fashions. In column (5), I use a set of dummies pertaining to the colonial history of each country and a dummy for oil exporters as instruments for the Freedom House measure.[13] On the presumption that colonial history is relevant to the political-regime type but does not otherwise influence wages in a country, the colonial dummies identify countries that were British, French, Spanish, Portuguese, or other

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[12] This is also the case when these variables are entered individually rather than collectively.

[13] Bhalla [forthcoming] was the first author to use colonial dummies as instruments for democracy. I am grateful to Robert Lawrence for this reference and to Surjit Bhalla for making his paper available. The coding here has been done separately, and does not necessarily match up with Bhalla's.

colonies.[14] The estimated coefficient on democracy is still highly significant, and actually larger. This provides some indication that causality runs from democracy to wages levels.[15]

As an additional check on possible reverse causation, I have also regressed changes in democracy (over five- and ten-year horizons) on initial levels of wages, labor productivity and the other variables in the benchmark specification. The results (available on request) indicate that initial wages exert no effect on subsequent changes in democracy. In other words, there is no evidence in the data that countries with high wages (relative to productivity) are more likely to become democratic.

Since the two measures of democracy are likely to be "noisy" indicators of an underlying latent variable, it is also instructive to instrument each measure using the other. Columns (6) and (7) show the results of doing so. Both measures remain highly significant, and the estimated coefficient on the Polity III measure increases substantially (from 0.29 to 0.45).[16]

Up to this point, I have relied on the WBLMDB/UNIDO data on wages and salaries. As discussed previously, the BLS data on hourly compensation are of much higher quality. However, the small sample size of the latter renders cross-section analyses of the type I have so far focused on potentially less informative. Nonetheless, the results are shown in Table III. I use the same specification as before, but remove the dummies for socialist and Sub-Saharan African

[14] In an earlier version of the paper, following the work of Barro [1996], I used schooling, a dummy for oil exporters, and five-year lagged democracy as instruments. The results were virtually identical to those reported here.

[15] Instrumenting for the Polity III measure of democracy in the same fashion (not shown) also yields a higher coefficient on democracy, although in this case the estimated coefficient is not statistically significant at conventional levels.

[16] I have tested for outliers in the sample using the DFITS statistic [Belsley, Kuh, and Welsch 1980]. The results indicate that only two countries present a potential problem (Congo and Central African Republic). Removing them from the sample made no difference to the results.

countries (since there are no relevant observations), and also exclude the Latin America dummy (as Mexico is the only country in the sample that is from that region).[17]

Regardless of the sample size, which varies from 27 to 29[18], the regressions with the BLS data yield highly significant coefficients on our democracy measures. Moreover, the magnitude of the estimated coefficients is significantly larger, ranging from 0.55 to 1.77.[19] The latter figure implies that Mexican wages would rise by almost 90 percent as a consequence of Mexico attaining the U.S. level of democracy! The higher estimates might be due to the particular set of countries covered by the BLS sample, or due to better data quality. The partial scatter plot between democracy and labor compensation in the BLS sample is shown in Figure II.[20]

B. Panel results

The next question is whether the relationship between democracy and wages holds up in a panel setting, and in particular within countries over time. So in this section I pool time-series and cross-section data. I use five-year averages of the data covering a maximum of seven sub-periods for each country, namely 1960-1964, 1965-1969, 1970-1974, 1975-1979, 1980-1984, 1985-1989, and 1990-1994. This gives us a sample size that varies from 548 observations covering 104 countries (when using the Polity III data) to 106 observations covering 28 countries

[17] Leaving the Latin America dummy in makes no difference to the results.

[18] We lose one observation (Hong Kong) when we use the Polity III measure. In addition, MVA per worker is not available for all the 29 countries in the BLS sample.

[19] A possible complication arising from the use of BLS hourly compensation data is that I control for value added per worker, not value added per hour. This leaves open the possibility that democracy works by reducing hours worked (and not just increasing wages). Indeed, democracy is negatively and statistically significantly correlated with statutory hours across countries, even after controlling for income levels and regional dummies.

[20] Note that Japan shows up at the low end of the democracy scale in this figure, along with Singapore and Sri Lanka. This is because the Freedom House rating for Japan in this period is 0.93, lower than the perfect score of 1 given to all the other advanced industrial countries.

(using the BLS sample). The panel is not balanced since not all countries have data for each of the sub-periods.

I show results for two types of regressions on the pooled data: OLS with period dummies and full fixed-effects (with dummies for both periods and countries). Note that the fixed-effects methodology is particularly demanding in this context, as it requires that the impact of democracy on wages be recovered from the relatively few time-series observations for individual countries. But the fixed-effect estimation is useful in two important respects. First, it is particularly informative about the consequences of regime changes on wage levels within a given country. Second, it eliminates country-specific idiosyncrasies in the WBLMDB/UNIDO data set regarding the type of coverage provided on wages and salaries.

Since wages and MVA/worker are both measured in current dollars, I run the regressions with the WBLMDB/UNIDO data also in a slightly different form to eliminate any spurious effects arising from wage and price inflation over time: I use as the dependent variable the ratio of wages to MVA/worker (which yields the factor share of labor in value added in manufacturing).[21]

The results are displayed in Tables IV and V. The findings are quite consistent where democracy is concerned, regardless of the method of estimation. All the OLS estimates of the coefficient on democracy are positive and statistically significant at the 99 percent level. Remarkably, all the fixed-effect estimates are significant at the 95 percent level or better also. Even though there are no more than four observations per country in the BLS sample, the results using the BLS data are particularly powerful: the fixed-effect estimates with both democracy measures are significant at the 99 percent level (Table V). In light of the limited number of time-

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[21] The same transformation is not possible with the BLS sample, because the BLS data are on an hourly basis, while MVA is on an annual basis.

series observations and the relatively small variation in democracy over time in most countries, it is striking that the results with the fixed-effect regressions are so strong. This constitutes quite persuasive evidence that the enhancement of democratic institutions is associated with higher wages for workers.[22]

A closer look at the underlying data in the BLS sample reveals that the time-series evidence is driven by the experience of the following countries: Spain, Portugal, Greece, Korea, Taiwan, and Sri Lanka. The first five of these countries have become significantly more democratic over the time period covered. And in each case, wages have outstripped labor productivity around the time of the political transition. Sri Lanka, which is the only country to have become less democratic, has experienced the opposite outcome. I will present more systematic evidence on specific regime transitions in the next section.

The range of panel estimates for the coefficient on democracy is 0.11-0.97, with the fixed-effect regressions providing somewhat lower estimates. On the whole, these are not too dissimilar to the cross-section results. Using Mexico as an example again, the panel estimates imply that Mexican wages would rise by 6-48 percent as a consequence of a transition to full democracy.

C. Evidence from specific countries

I next provide some event-study type evidence from countries that have gone through significant transformations in regime type. This kind of evidence can be particularly informative on the issue of causality. Table VI lists 12 instances of transition (drawn from the experiences of

[22] Results with a random-effects specification are quite similar to the pooled OLS results, so are not shown separately. In particular, the estimated coefficients on democracy are significant at the 99 percent level in all versions of the random-effects panel regressions.

Chile, Turkey, Argentina, Brazil, Hungary, Spain, Greece, and Portugal), selected according to availability of continuous annual data and a clear, abrupt 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 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. In some of these instances, the increase is quite dramatic: in Greece and Spain, the labor share increases by seven percentage points, and in Portugal by 18 points. On the whole, 10 out of the 12 cases listed here behave in the manner consistent with the econometric results.[23] The average reduction in the factor share of labor in the wake of transition to authoritarianism is a whopping 11 percentage points. The average increase in the factor share of labor when the political regime moves in the reverse direction is 4 percentage points.

Figures III and IV display two other cases, South Korea and Taiwan, where there has been a significant transition to democracy since the late 1980s, but where the transition has not been as abrupt as in the countries considered in Table VI. Both countries experienced a steady opening up of their political systems during the second half of the 1980s. In December 1987, Korea held its first direct presidential election in 16 years—an election that was marred however by accusations of fraud by the opposition. Five years later, in December 1992, Kim Young Sam became the first civilian to hold the presidency since the military coup of 1961. In Taiwan, martial law was lifted in 1987 (after four decades), and multiple-party elections were held in 1989. The first fully democratic elections for the legislature were held in 1992.

[23] Some of the individual episodes shown in Table VI 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 one of the advantages of econometrics compared to case studies.

In both cases, the figures reveal that labor compensation has outstripped productivity between 1987 and the early 1990s, the period of transition to democracy. (Note that Figures III and IV combine labor compensation data from BLS with MVA/worker data from the WBLMDB/UNIDO data set.) The case of Korea is especially striking, as this country went from being a relatively low wage country (relative to its per-capita GDP) prior to democracy to one with high wages by the mid-1990s.

IV. WHY DOES DEMOCRACY MATTER TO WAGES?

Our findings indicate that democratic institutions tend to shift the functional distribution of income in manufacturing from profits to wages, or alternatively that authoritarian regimes transfer income from labor to employers. To anyone familiar with the recent economic history of Latin America, Southern Europe, or the Middle East, these results should not be counter-intuitive. However, identifying the specific channels of causation is an interesting and important task that also deserves careful study. I make only a beginning here, by taking a first pass at the evidence.

The simplest way to understand how political institutions can influence wages (independently of labor productivity) is to think of wages as the outcome of a bargain struck by workers and employers. More concretely, think of how the enterprise surplus, itself determined by labor productivity, is split between labor compensation (w) and profits (p). Let the output price and the employment level both be normalized to unity, and let the surplus (which is also total and average labor productivity) be denoted by a. Profits are then given by $p = a - w$. Let the outside options for employers and employees be given by p^* and w^* (with the assumption that $p^* + w^* < a$). We can imagine that the outside options (or reservation wages) of workers are

determined by employment opportunities in the public sector or in the informal sector, while the employers' alternatives are defined by exit opportunities in foreign countries. Finally, let the bargaining strengths of the two partners be described by *(1-a)* and a, for employers and employees respectively ($1 < \alpha < 0$).

In a Nash-bargaining framework, we can characterize the outcome to this problem as the solution to the following:

$$\underset{p,w}{Max} \quad (p - p^*)^{1-a} (w - w^*)^a \qquad s.t.\ p + w = a.$$

This yields the intuitive solution:

$$w = a(a - p^*) + (1 - a)w^*.$$

We note from this equation that three factors other than labor productivity (a) determine the equilibrium level of wages: (a) the relative bargaining strength of labor (α)[24]; (b) the value of outside options (or the reservation wage) for labor (w^*); and (c) the value of outside options for employers (p^*). Political institutions can affect all of these.

One can think, in particular, of four categories of reasons for why democracies might be friendly to labor. First, democracy may matter because democratic regimes are more likely to follow the rule of law. This may enhance the bargaining power of labor by enabling bureaucratic or judicial redress against employers. Second, democracies are less prone to political instability and discontinuity, and this too may work to workers' advantage by enhancing the outside options of employees (relative to those of employers). Third, democracies may directly enhance the bargaining power of labor by allowing greater freedom of association and of collective bargaining. Finally, as the median-voter model would suggest, the process of political participation,

[24] It may not be immediately obvious from the equation that w is increasing in a. That is the case since $p^* + w^* < a$, by assumption.

competition, and contestation may increase the bargaining power and/or reservation wage of workers by producing a wide range of legislation and institutions that are more partial to workers' interests.

These are to some extent over-lapping reasons, and it may be too much to expect the data to deliver a clear verdict that sharply distinguishes among them. This caveat notwithstanding, the evidence seems to favor the last explanation over the others. It is the openness of the political system to competition and participation that seems to matter the most.

The results are summarized in Table VII. I use the benchmark regression from column (1) of Table II, and then add various proxies for the four categories of reasons listed above. I will focus on regressions with the WBLMDB/UNIDO data, but will also report some results with the smaller, BLS sample. The first column of Table VII reproduces the benchmark regression, for ease of comparison with subsequent results.

Columns (2)-(3) employ two indicators of the rule of law. The first of these is an index deriving from the International Country Risk Guide (*ICRG*) and was first used in work by Knack and Keefer [1995].[25] This index is based on evaluations by locally-based respondents on questions relating to the rule of law, bureaucratic quality, corruption, expropriation risk, and governmental repudiation of contracts. The other measure (*bureaucratic efficiency*) derives from a similar survey of the correspondents of Business International, and has been computed by Mauro [1995]. This index of is based on a simple average of ratings on the efficiency of the judiciary system, the extent of red tape, and the extent of corruption. Both indices range from 0 to 10, with higher values indicating greater rule of law and superior bureaucratic institutions. As expected, these indices are highly correlated with measures of democracy (the correlation

[25] My source for the ICRG data is Easterly and Levine [1997], who average observations for the years 1980-1989.

coefficients with the Freedom House measure are 0.67 and 0.58, respectively). Yet, as the results in Table VII reveal, neither of the rule-of-law indices enters near significant levels once democracy is already included. By contrast, the estimated coefficient on democracy remains statistically significant, and does not change much.

In column (4), I check for the effect of political instability. The measure I use (*pinstab*) comes from Barro and Lee [1994] and is an equally weighted average of the number of assassinations (per million population per year) and the number of revolutions (per year).[26] It turns out that *pinstab* is virtually uncorrelated with either measure of democracy in this sample, and its inclusion in the regression makes very little difference. The estimated coefficient on democracy remains significant, while that on *pinstab* is insignificant.

Next, I check for the importance of labor-market institutions directly. I use two measures of labor rights: (a) the unionization rate, and (b) the number of conventions ratified by a country among the ILO's six basic workers' rights conventions.[27] The unionization and coverage rates come from the ILO [1998] and the ratifications measure from Rodrik [1996]. These measures are moderately highly correlated with democracy. The correlation coefficients between unionization and the Freedom House measure are 0.25 and 0.40 for 1985 and 1995, respectively. The correlation coefficient between ILO ratifications and the Freedom House measure is 0.22.

The results using the WBLMDB/UNIDO data do not yield significant coefficients on any of the measures of labor rights (columns 5 and 6). However, the results are much stronger in the smaller (but higher-quality) BLS sample (columns 7 and 8). The measure related to ILO

[26] I use the average for 1980-1984, which is the latest period for which Barro and Lee [1994] provide data. Adding *pinstab* to the 1980-1984 regression instead of the 1985-1989 regression makes no difference to the results reported.

ratifications is highly significant in this sample. The unionization rate barely misses significance at the 95 percent level. However, in all of these experiments, the estimated coefficients on democracy remain statistically significant (typically by a comfortable margin), and the magnitude of the coefficients changes very little (compared to the estimates reported in Table III).[28] One interpretation of these findings is that our measures of democracy are better proxies for labor market institutions that enhance workers' rights than specific indicators of unionization, collective bargaining, or ratifications of ILO conventions.

Alternatively, democracy serves to raise wages in part through other channels than the freedom of association and collective bargaining. Competition among political parties and access by workers to political institutions can shape a whole range of legislation and institutions that determine labor-market outcomes. Rules on arbitration and on the hiring and firing of workers, minimum wages, provisions on social insurance and other benefits, the generosity of public-sector wages, and a myriad other public policies have a bearing on the general level of wages in a country because they affect the bargaining strength of labor and the value of outside options available to workers and employers. Political regimes that are more responsive to workers can be expected to yield more labor-friendly outcomes along such dimensions. Some indirect evidence in favor of this interpretation of our results is shown in columns (9)-(11).

First, I exploit the fact that the Freedom House index is an equally-weighted average of two sub-indices, one pertaining to *political rights* and the other to *civil liberties*. The former

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[27] The ILO conventions included are those on forced labor, freedom of association, right to organize and collective bargaining, abolition of forced labor, non-discrimination, and minimum age of work (Conventions 29, 87, 98, 105, 111, and 138 respectively).

[28] I have also experimented with the collective bargaining coverage rate, defined as the proportion of formal-sector employees covered by collective agreements. This measure enters significantly in the BLS sample (and with a positive coefficient). But the coefficient on democracy remains unaffected once again. We note that the impact of the added controls on the estimated coefficient on democracy is clouded somewhat by the fact that the sample sizes keep changing. However, these controls do not affect the democracy variable even when run on identical samples.

refers to the rights to vote, to compete for public office, and to have elected representatives with a decisive say in policy making, while the latter refer to rights of free speech and free association. Note, in particular, that the Freedom House checklist for *civil liberties* includes specific questions on the presence of free trade unions, effectiveness of collective bargaining, and freedom from exploitation by employees. Hence, of the two components, it is *civil liberties* that gauge specific labor rights, while *political rights* measure the degree of competitiveness of the political system.

These two components are very tightly correlated with each other: the correlation coefficient is a high as 0.95 for the 1985-1989 cross-section. So it is difficult to distinguish statistically between their separate influences. Interestingly, however, when both are introduced in the regression, more of the work seems to be done by *political rights*. See for example the 1985-1989 cross-section for the BLS sample shown in column (9). Here, *political rights* enter with a statistically significant coefficient, while the estimated coefficient on *civil liberties* is insignificant. The same is true for the panel regressions with fixed effects (using the BLS data) as well: the coefficient on *political rights* remains significant while that on *civil liberties* is not only insignificant, but actually negative (results not shown). Results with the WBLMDB/UNIDO data, although less strong, also point in the direction of the dominant influence of the *political rights* variable.[29]

Two East Asian countries, Taiwan and Singapore, exemplify this finding. Both countries have a Freedom House democracy rating of 0.43 in 1985-1989. But Singapore is rated lower on *political rights* than on *civil liberties* (0.37 versus 0.5), while Taiwan's situation is opposite and symmetric (0.5 on *political rights* versus 0.37 on *civil liberties*). Singapore turns out to be a

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[29] Typically, both components enter insignificantly, although the coefficient on *political rights* is always higher, and the coefficient on *civil liberties* is sometimes negative.

"low wage" country compared to Taiwan, in line with the regression's preference for the *political rights* measure.

A similar exercise can be carried out using the components of the Polity III index as well. This democracy measure has been coded by the authors on the basis of a complicated weighting scheme that depends on ratings along four dimensions: (a) *competitiveness of political participation*; (b) *competitiveness of executive recruitment*; (c) *openness of executive recruitment*; and (d) *constraints on the chief executive* (see the discussion in Gurr 1997).[30] When these components are entered together in the benchmark regression, it is *competitiveness of political participation* that has the largest coefficient and is significant (or borderline significant) in all versions of the regressions. The results with the other three components are more ambiguous and tend to vary across samples and regressions. Column (10) shows the results with the WBLMDB/UNIDO cross-section for 1985-1989. When entered on its own, *competitiveness of political participation* is highly significant, with a coefficient that is twice as large as that for the aggregate Polity III measure of democracy (column 11; cf. Table II, column 2). Indeed, *competitiveness of political participation* does systematically better in the cross-section and the fixed-effect regressions (in terms of the level of significance and the magnitude of its estimated coefficient) than the Polity III measure itself (results not shown).

The variable *competitiveness of political participation* is defined by the authors as the "extent to which non-elites are able to access institutional structures for political expression." It is highly correlated with the Polity III measure ($r = 0.95$ in the 1985-1989 cross-section). But there are a few interesting discrepancies. South Africa (before the end of apartheid) and India, for example, have low scores on *competitiveness of political participation* relative to their ratings on

[30] All of these have been normalized to a scale 0-1.

the democracy index, presumably because of the exclusion of blacks, in the former case, and lower-caste groups, in the latter, from the political process. Mexico is rated relatively higher on *competitiveness of political participation*, presumably because of the extent of popular mobilization despite an effectively one-party system.

One can only draw tentative conclusions from all this. But the data seem to suggest that this paper's central finding on the relationship between democracy and wages is a consequence of political competition and political participation at large, rather than of the rule of law, political stability, civil liberties, or specific labor rights.

Finally, it should be noted that there could be other, non-bargaining channels through which political participation influences labor's share of manufacturing product. For example, democratic regimes may be more consumer-oriented and encourage greater product-market competition than authoritarian regimes that tend to favor a narrow set of producer interests ("cronies"). If so, mark-ups will be higher under authoritarian regimes, and the labor share of total product lower. Alternatively, non-democratic societies may erect greater restrictions on labor mobility, thereby enhancing the monopsony power of employers. Testing for these and other hypotheses will require a combination of detailed case studies and more finely-tuned cross-national data sets than are available at present.

V. CONCLUDING REMARKS

Institutions matter to distributive outcomes. The results in this paper strongly suggest that democratic institutions tend to be friendly to labor: they are associated with higher wages and a larger factor share for labor in manufacturing. This is perhaps not entirely unexpected. What is more surprising is that the effects show up so strongly in the data.

There are a number of research avenues opened up by these results. First, it would be desirable to sort out some of the causality issues in greater detail. Is there perhaps a two-way relationship between wages and democracy, with a larger middle class sustained by relatively high wages rendering democracy more likely and more durable? What are the specific policy outcomes through which political participation and contestation lead to higher labor compensation?

Second, bearing in mind that our findings pertain to manufacturing alone, it would be worthwhile to check whether similar results are obtained for other indicators of distribution, including the dispersion of wages and economy-wide measures of inequality such as the Gini coefficient. Preliminary work (by the author) indicates that there is a negative association across countries between democracy and economy-wide income inequality. If borne out by further research, this would suggest that democracy is associated with less skewed income distribution overall.

Finally, what are the economic consequences of the regularity identified here? How do employers and owners of capital respond to the higher level of wages fostered by democracy? One hypothesis is that democracies allow more efficient bargains by removing the impediments that authoritarian regimes install so as to repress wages. A competing hypothesis would be that democracies introduce inefficiencies in order to raise wages. Note that there is little evidence that democracy is negatively associated with long-run economic performance; if anything, the reverse seems to be true [Rodrik 1997]. This would tend to favor the first hypothesis. Alternatively, it could be that democracy provides other advantages—such as more secure property rights and greater political stability—that offset the cost of high wages.

APPENDIX

A. Sources and methods

The U.N. Industrial Development Organization (UNIDO) provides annual data on average "wages and salaries" per employee and value added per worker in manufacturing for a large sample of countries.[31] My source for this data is the World Bank's Labor Market Data Base (WBLMDB, Rama [1996]), where the original UNIDO data are collated. Martin Rama kindly made the data available. I converted the WBLMDB/UNIDO data on wages and MVA/worker to U.S. dollars using contemporaneous exchange rates from the World Bank's World Data 1995 and from national sources (for Taiwan). The factor shares of labor in manufacturing value added were calculated by dividing average 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 sample is restricted to the 138 countries for which Barro and Lee [1994] provide comparative data.

The BLS data on hourly compensation for production workers in manufacturing (in U.S. dollars) are available on an annual basis since 1975 for all 29 countries covered.[32] The BLS converts local-currency values into dollars at current (contemporaneous) market exchange rates. The 29 countries are United States, Canada, Mexico, Australia, Hong Kong, Israel, Japan, Korea, New Zealand, Singapore, Sri Lanka, Taiwan, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom. Details on data construction can be found in BLS [1998].

[31] Manufacturing value added, as reported by individual countries, is typically calculated by subtracting the value of intermediate inputs from the total value of shipments.

[32] There are also unpublished data for ten of these countries that go back to 1960. However, since all ten are democratic countries, I did not make use of this additional data. I am grateful to Susan Fleck of the Foreign Labor Statistics Department of the Bureau of Labor Statistics for help and information.

GDP per capita and the price level of consumption come from the Penn World Tables, via Barro and Lee [1994]. Unlike MVA/worker, which is converted at current (contemporaneous) market exchange rates, the GDP/capita data are in purchasing-power-adjusted terms. Openness comes from the Penn World Tables, via Barro and Lee [1994], and schooling from Barro and Lee [1994]. Urbanization is from World Bank's World Data 1995.

B. Cross-national comparability in the WBLMDB/UNIDO data set and robustness checks[33]

As mentioned in the text, there are some problems in the cross-national comparability of the wage data originating from the WBLMDB/UNIDO source. Two basic definitions are used in this source. Wages and salaries include all payments in cash or in kind made to "employees" during the reference year in relation to work done for the establishment. These payments include:

- direct wages and salaries;
- remuneration for time not worked;
- bonuses and gratuities;
- housing allowances and family allowances paid directly by the employer;
- payments in kind.

Compensation of employees is equivalent to wages and salaries plus employers' contributions on behalf of their employees paid to social security, pension and insurance schemes, as well as the benefits received by employees under these schemes and severance and termination pay.

The majority of the countries claim to report wages and salaries as defined above. A large group of countries report compensation of employees. Only a handful of countries (mostly OECD economies) give detailed descriptions of what is included in wages and salaries different from either of the two blanket categories. Some countries differ in coverage (whether home workers

[33] This section is written jointly with Vladimir Kliouev.

are included, whether labor contractors are included, and so on). Some (South Africa, Hong Kong, India, and the UK) explicitly state that they do not include payments in cash. Peru does not include bonuses; the Netherlands excludes sick leave compensation.

To the extent that country notes allow meaningful distinctions, the most common categories seem to be the following:

1. Wages and salaries
2. Wages and salaries plus employers' contributions to social security
3. Wages and salaries plus severance pay
4. Compensation of employees.

I created a set of dummies for each country, identifying which (if any) of these categories it belongs.

A few countries are difficult to classify. *South Africa* includes some employers' contributions to pension, holiday and medical aid funds, but excludes their contributions for unemployment insurance and workmen's compensation. (In checking for robustness, South Africa was put alternatively in category 1 and then 2). *Israel* covers "all payments appearing on the pay-roll on which income tax is due." It is classified as 1. In *Turkey* wages and salaries relate to "gross payments made for work done, including bonuses, social security and pension fund premium, and payments in kind." Assuming that the "premium" is paid by the employers, Turkey is classified as 2. *Finland* claims to report compensation of employees, but the detailed description fails to mention severance payments. *Malta* explicitly excludes employees' insurance contributions but includes those by employers. *Hungary* excludes gratuities, certain subsidies, family allowances, and housing allowances. Finally, UNIDO yearbooks provide no information

on a number of countries, and these have been classified as missing for the purpose of coding of wage coverage.

In terms of variation in statistical procedures within countries over time, there appear to be some minor changes once in a while, but mostly countries stick to their reporting conventions. A selective check reveals no significant revision of the definitions in any country over the period covered.

The coverage dummies constructed in the fashion discussed above were introduced in both the cross-section and panel regressions (with the exception of the fixed-effects regression where doing so would be redundant). The goal was to see if there were any biases originating from differences in countries' reporting of wages. In all but two of the cases, the estimated coefficients on the democracy measures were hardly affected, while their level of significance remained unchanged. In two instances (the random-effects regressions using the Freedom House measure), the coefficients on democracy were reduced somewhat and their significance dropped to 95 percent (from 99 percent). But these were the result of reductions in sample size due to missing wage coverage codes for a number of countries, rather than the introduction of the dummies itself. The coverage dummies themselves were rarely statistically significant. These results are available upon request.

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REFERENCES

Barro, Robert J., “Determinants of Economic Growth: A Cross-Country Empirical Study,” NBER Working Paper 5698, August 1996.

_____, and Jong-Wha Lee, "Data Set for a Panel of 138 Countries," Harvard University, January 1994.

Belsley, D.A., E. Kuh, and R.E. Welsch, Regression Diagnostics (New York: John Wiley & Sons, 1980).

Bhalla, Surjit S., “Freedom and Economic Growth: A Virtuous Cycle?” in Axel Hadenius, ed., Democracy’s Victory and Crisis: Nobel Symposium 1994 (New York: Cambridge University Press, forthcoming).

Blau, Francine D., and Lawrence M. Kahn, “International Differences in Male Wage Inequality: Institutions versus Market Forces,” Journal of Political Economy, CIV (August 1996), 791-837.

Bureau of Labor Statistics, “International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 1975-1996” Supplementary Tables, February 9, 1998 (ftp://ftp.bls.gov/pub/special.requests/ForeignLabor/supptab.txt).

Card, David, Francis Kramarz, and Thomas Lemieux, “Changes in the Relative Structure of Wages and Employment: A Comparison of the United States, Canada, and France,” NBER Working Paper No. 5487, March 1996.

Chandra, Siddharth, “On Pillars of Democracy and Economic Growth,” Graduate School of Public and International Affairs, University of Pittsburgh, February 1998.

DiNardo, John, Nicole M. Fortin, and Thomas Lemieux, “Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semi-Parametric Approach,” Econometrica, LXIV (September 1996), 1001-1044.

Easterly William, and Ross Levine, “Africa’s Growth Tragedy: Policies and Ethnic Divisions,” Quarterly Journal of Economics, CXII (November 1997), 1203-1250.

Freeman, Richard, “A Global Labor Market? Differences in Wages Among Countries in the 1980s,” Department of Economics, Harvard University, July 1994.

Gastil, Raymond D., and followers, Freedom in the World (Westport, CT: Greenwood Press, various years).

Golub, Stephen S., “The Political Economy of International Labor Standards,” Department of Economics, Swarthmore College, 1997.

Gurr, Ted Robert, “Polity II: Political Structures and Regime Change: 1800-1986,” Inter-university Consortium for Political and Social Research, Ann Arbor, Michigan, Limited Revised Edition, December 1997.

Helliwell, John, “Empirical Linkages Between Democracy and Economic Growth,” British Journal of Political Science, XXIV (1994), 225-248.

International Labor Organization, World Labor Report 1997-98 (Geneva: ILO, 1998).

Jaggers, K., and T.R. Gurr, “Tracking Democracy’s Third Wave with Polity III Data,” Journal of Peace Research, XXXII (1995), 469-482.

Knack, Stephen, and Philip Keefer, “Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures,” Economics & Politics, VII (November 1995), 207-228.

Mauro, Paolo, “Corruption and Growth,” Quarterly Journal of Economics, CX (August 1995), 681-712.

Przeworski, Adam, and Fernando Limongi, “Political Regimes and Economic Growth,” The Journal of Economic Perspectives, VII (Summer 1993), 51-69.

Quinn, Dennis P., and John T. Woolley, “Democracy and National Economic Performance: The Search for Stability,” School of Business, Georgetown University, June 1998.

Rama, Martin, "A Labor Market Cross-Country Database," World Bank, Washington, DC, 1996.

Rodrik, Dani, "Labor Standards in International Trade: Do They Matter and What Do We Do About Them?" in R. Lawrence et al., Emerging Agenda for Global Trade: High Stakes for Developing Countries (Washington, DC: Overseas Development Council, 1996).

_____, “Democracy and Economic Performance,” John F. Kennedy School of Government, Harvard University, December 1997.

United Nations Industrial Development Organization (UNIDO), International Yearbook of Industrial Statistics 1998 (New York: United Nations, 1998).

Table I

Descriptive statistics for core variables used in regressions

variable	*n*	*mean*	*std. dev.*	*min.*	*max.*
A. WBLMDB/UNIDO sample (1985-1989 averages)					
wages and salaries (manuf., per worker), $	93	7350	7180	102	26992
log of wages and salaries (manuf.)	93	8.37	1.15	4.63	10.20
democracy (Freedom House)	93	0.59	0.33	0.00	1.00
democracy (Polity III)	89	0.49	0.44	0.00	1.00
manuf. value added /worker, $	93	19671	15585	235	65479
log of manuf. value added /worker	93	9.50	1.01	5.46	11.09
log GDP/capita	93	8.08	1.01	5.65	9.71
log price level	93	-0.66	0.40	-1.74	0.06
schooling	81	5.49	2.71	0.84	12.04
urbanization, %	92	54.18	24.96	5.60	100.00
openness, %	93	66.76	46.21	14.18	343.75
B. BLS sample (1990-1994 averages)					
hourly compensation (manuf.), $	29	13.51	7.05	0.40	24.61
log hourly compensation (manuf.), $	29	2.36	0.90	-0.91	3.20
democracy (Freedom House)	29	0.90	0.19	0.43	1.00
democracy (Polity III)	28	0.89	0.25	0.10	1.00
manuf. value added /worker, $	28	49091	20362	3405	92582
log of manuf. value added /worker	28	10.67	0.64	8.13	11.44
log GDP/capita	29	9.30	0.46	7.70	9.82
log price level	29	-0.39	0.33	-1.57	0.01

For sources, see text and the appendix.

Table II

Democracy and wages: Cross-section results using WBLMDB/UNIDO data (1985-1989)

	dependent variable: log wages and salaries in manufacturing, 1985-1989 average						
	OLS	*OLS*	*OLS*	*OLS*	*2SLS*	*2SLS*	*2SLS*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
democracy							
Freedom House index	0.60*		0.63*		1.14**	0.52**	
	(0.16)		(0.19)		(0.46)	(0.20)	
Polity III index		0.28**		0.29**			0.45*
		(0.11)		(0.13)			(0.15)
log MVA/worker	0.74*	0.74*	0.74*	0.74*	0.76*	0.75*	0.75*
	(0.06)	(0.06)	(0.06)	(0.07)	(0.05)	(0.06)	(0.06)
log GDP/cap.	0.27*	0.27*	0.32*	0.28**	0.21**	0.26*	0.24*
	(0.07)	(0.07)	(0.09)	(0.11)	(0.09)	(0.07)	(0.07)
log price level	0.46*	0.43*	0.51*	0.46*	0.53*	0.45*	0.46*
	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)	(0.13)	(0.14)
schooling			-0.02	-0.01			
			(0.02)	(0.02)			
urbanization (/100)			-0.12	-0.05			
			(0.29)	(0.32)			
openness (/100)			0.05	0.06			
			(0.08)	(0.08)			
oil exporters			-0.07	-0.06			
			(0.15)	(0.17)			
N	93	89	93	89	93	89	89
Root MSE	0.31	0.32	0.32	0.33	0.33	0.31	0.32
R^2	0.93	0.93	0.94	0.93	..	..	..

Regressions include a constant term and dummies for East Asia, Latin America, Sub-Saharan Africa, socialist countries, and OECD members (coefficent estimates not shown).

In columns (3) and (4) missing observations for schooling and urbanization have been assigned a value of zero; these regressions include two dummy variables indicating missing data for these two variables.

A set of colonial dummies and an oil exporter dummy are used as instruments in column (5). The Polity III and Freedom House indices are used as instruments for each other in columns (6) and (7). Robust standard errors are reported in parenthesis.

Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table III

Democracy and wages: Cross-section results using BLS data (1990-1994)

	dependent variable: log hourly compensation costs for production workers in manufacturing			
	(1)	*(2)*	*(3)*	*(4)*
democracy				
Freedom House index	1.57*		1.77*	
	(0.30)		(0.32)	
Polity III index		0.60*		0.55**
		(0.15)		(0.24)
log MVA/worker	0.33*	0.42*		
	(0.09)	(0.12)		
log GDP/cap.	0.58*	0.53***	0.61*	0.66**
	(0.16)	(0.28)	(0.17)	(0.26)
log price level	0.58**	0.61***	1.03*	1.10*
	(0.24)	(0.30)	(0.24)	(0.34)
N	28	27	29	28
Root MSE	0.20	0.23	0.23	0.26
R^2	0.96	0.95	0.95	0.93

Regressions include a constant term and dummies for East Asia and OECD members (coefficient estimates not shown).

Robust standard errors are reported in parenthesis. Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table IV

Democracy and wages: Panel results using WBLMDB/UNIDO data (1960-1994)

	log wages (manuf.)				*log factor share of labor (manuf.)*			
	OLS (1)	*fixed effects* (2)	*OLS* (3)	*fixed effects* (4)	*OLS* (5)	*fixed effects* (6)	*OLS* (7)	*fixed effects* (8)
democracy								
Freedom House index	0.28*	0.15**			0.41*	0.14**		
	(0.06)	(0.07)			(0.07)	(0.07)		
Polity III index			0.16*	0.12*			0.20*	0.11**
			(0.04)	(0.04)			(0.04)	(0.05)
log MVA/worker	0.77*	0.75*	0.78*	0.74*				
	(0.03)	(0.03)	(0.03)	(0.03)				
log GDP/cap.	0.27*	0.34*	0.23*	0.34*	0.16*	0.20*	0.13*	0.17*
	(0.03)	(0.06)	(0.03)	(0.05)	(0.03)	(0.06)	(0.03)	(0.05)
log price level	0.30*	0.20*	0.27*	0.26*	0.12**	0.09***	0.12*	0.12*
	(0.06)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)
period dummies	yes	yes	yes	yes	yes	yes	yes	yes
country dummies	no	yes	no	yes	no	yes	no	yes
N	441	441	548	548	441	441	548	548
R^2	0.94	0.99	0.95	0.98	0.43	0.87	0.44	0.83

Estimated using five-year averages covering 1960-1964, 1965-1969, 1970-1974, 1975-1979, 1980-1984, 1985-1989, and 1990-1994. Regressions using Freedom House index do not cover 1960-1964 and 1965-1969. OLS regressions include a constant term and dummies for East Asia, Latin America, Sub-Saharan Africa, socialist countries, and OECD members (coefficent estimates not shown). Robust standard errors are reported in parentheses for OLS regressions. Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table V

Democracy and wages: Panel results using BLS data (1975-1994)

	dependent variable: log hourly compensation costs for production workers in manufacturing			
	OLS (1)	*fixed effects* (2)	*OLS* (3)	*fixed effects* (4)
democracy				
Freedom House index	0.97*	0.75*		
	(0.21)	(0.19)		
Polity III index			0.44*	0.40*
			(0.11)	(0.15)
log MVA/worker	0.42*	0.60*	0.46*	0.70*
	(0.06)	(0.11)	(0.07)	(0.11)
log GDP/cap.	0.53*	0.44*	0.56*	0.34***
	(0.07)	(0.16)	(0.09)	(0.19)
log price level	0.60*	0.16	0.53*	0.16
	(0.09)	(0.11)	(0.10)	(0.11)
period dummies	yes	yes	yes	yes
country dummies	no	yes	no	yes
N	106	106	105	105
R^2	0.97	0.99	0.97	0.99

Estimated using four five-year averages covering 1975-1979, 1980-1984, 1985-1989, and 1990-1994. OLS regressions include a constant term and dummies for East Asia and OECD members (coefficent estimates not shown). Robust standard errors are reported in parentheses in columns (1) and (3). Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Table VI

Consequences of transitions in political regime

		factor share of labor (manuf.)	
year	*country*	*pre-transition*	*post-transition*
A. Transitions fom democracy to autocracy			
1973	Chile	0.24	0.13
1980	Turkey	0.38	0.25
1976	Argentina	0.31	0.19
1964	Brazil	0.26	0.19
	mean	*0.30*	*0.19*
B. Transitions fom autocracy 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
	mean	*0.30*	*0.34*

The factor share of labor refers to the ratio of average wages and salaries to MVA per worker, or the wage bill divided by value added in manufacturing. Pre- and post-values are calculated using up to three observations prior to and following the year of transition indicated.

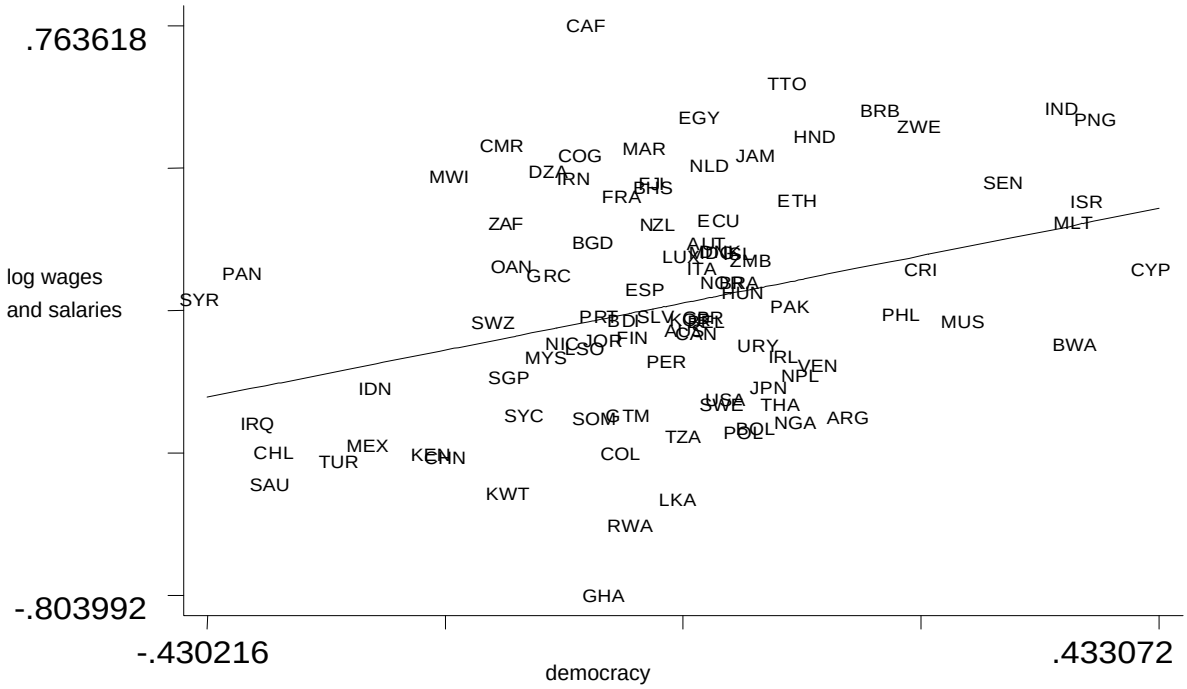
Table VII

Tests of some possible channels of causation from democracy to manufacturing wages

	benchmark	*rule of law*		*political instability*	*worker bargaining/rights*				*political competition/participation*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*
democracy (Freedom House)	0.60*	0.43**	0.73*	0.64**	0.59*	0.61*	1.58*	1.56*			
	(0.16)	(0.21)	(0.23)	(0.24)	(0.21)	(0.18)	(0.29)	(0.25)			
ICRG index		0.01									
		(0.03)									
bureaucratic efficiency			-0.01								
			(0.03)								
pinstab				0.04							
				(0.45)							
unionization ratio					-0.16		0.44***				
					(0.21)		(0.21)				
basic worker rights						0.00		0.11*			
						(0.03)		(0.02)			
political rights									1.46**		
									(0.63)		
civil liberties									0.31		
									(0.55)		
competitiveness of political participation										0.57**	0.54*
										(0.28)	(0.17)
competitiveness of executive recruitment										-0.38	
										(0.27)	
openness of executive recruitment										0.50*	
										(0.16)	
constraints on the chief executive										0.10	
										(0.27)	
N	93	80	59	60	53	92	27	27	27	89	89
Root MSE	0.31	0.30	0.31	0.36	0.21	0.32	0.20	0.14	0.21	0.30	0.31
R^2	0.93	0.94	0.94	0.91	0.97	0.93	0.93	0.98	0.97	0.94	0.93

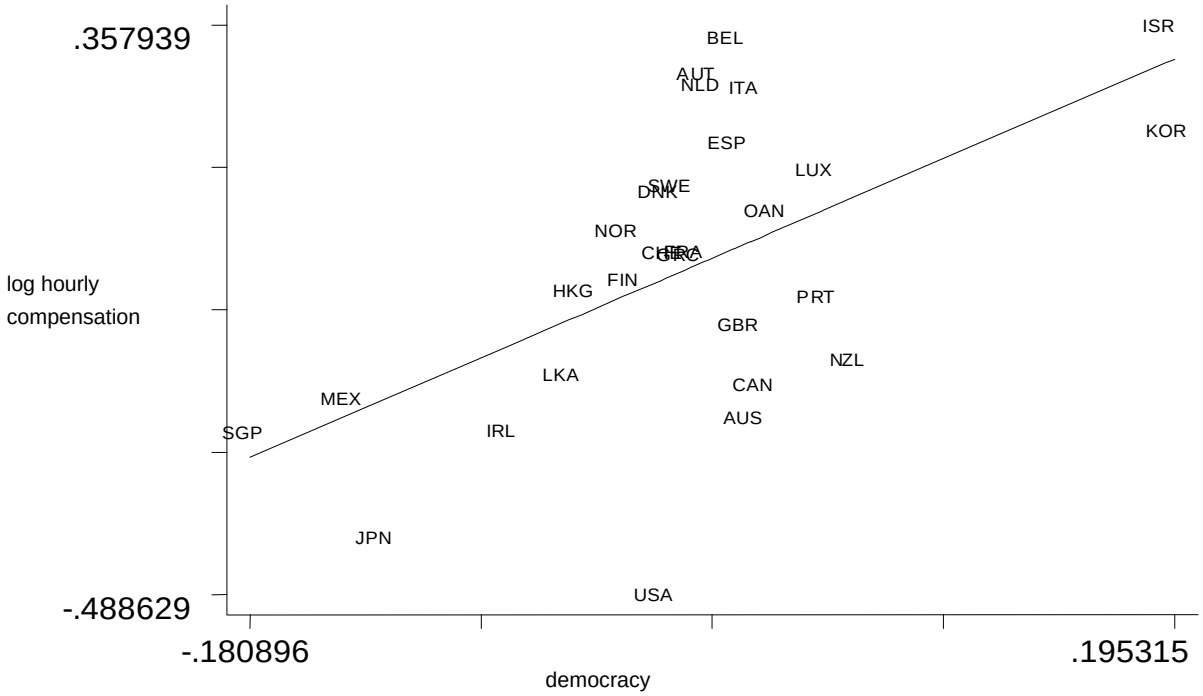
All regressions (except those in columns 8-11) use WBLMDB/UNIDO wage data for 1985-1989 and include a constant term, log MVA per worker, log per-capita GDP, log price level and dummies for East Asia, Latin America, Sub-Saharan Africa, socialist countries, and OECD members (coefficent estimates not shown).
Regressions in columns (8)-(11) use BLS data for 1990-1994. Robust standard errors are reported in parenthesis. Levels of statistical significance are indicated by asterisks: * 99 percent; ** 95 percent; *** 90 percent.

Figure I



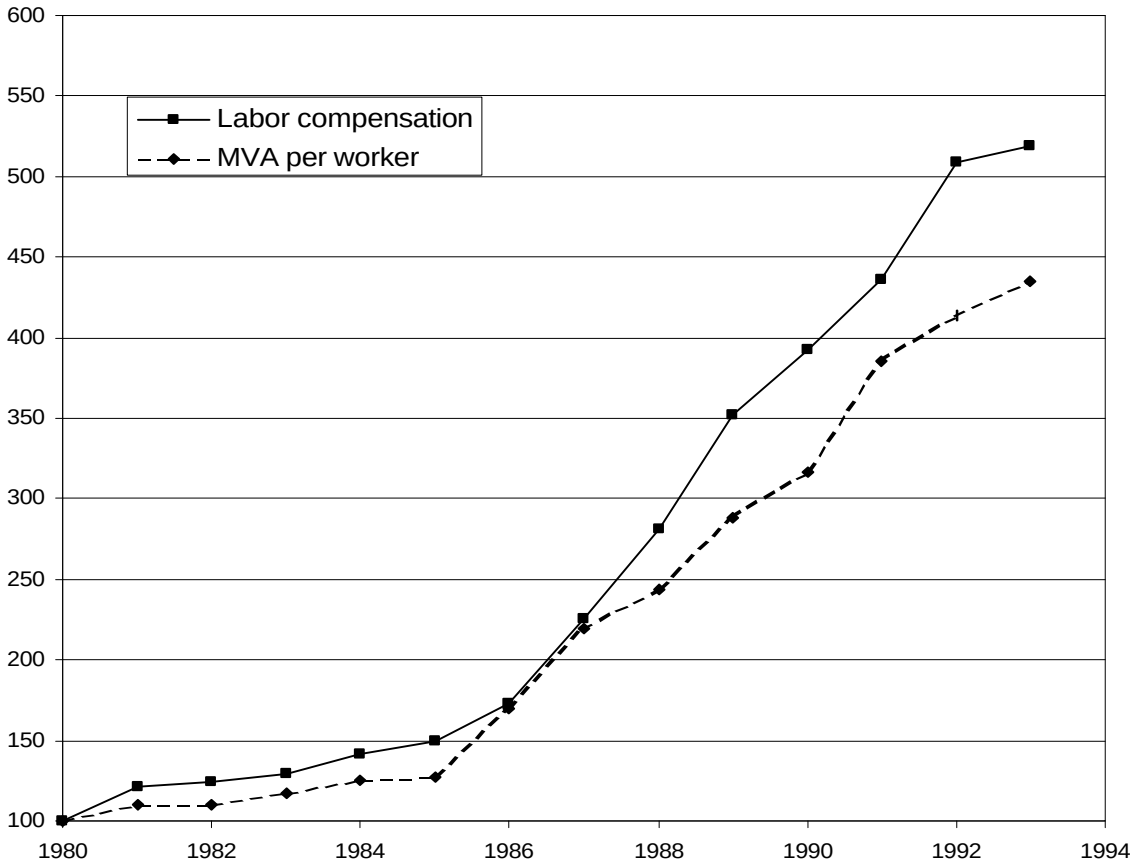
Partial scatter plot of log wages against democracy (based on column 1 of Table II; the axes represent components orthogonal to other regressors)

Figure II



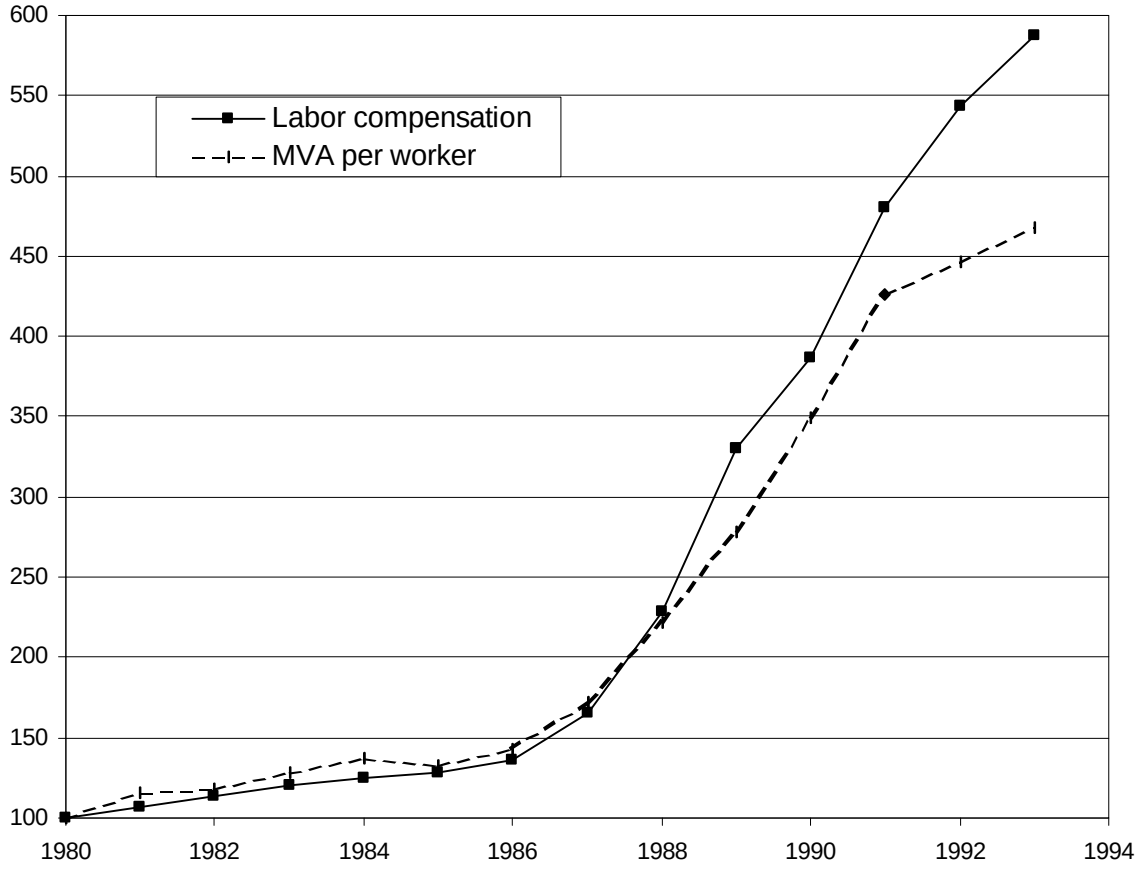
Partial scatter plot of log hourly compensation against democracy, BLS sample (based on column 1 of Table III; the axes represent components orthogonal to other regressors)

Figure III



Taiwan: Labor costs and productivity
(1980=100, dollar basis)

Figure IV



Korea: Labor costs and productivity
(1980=100, dollar basis)