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ECONOMIC FREEDOM, HUMAN RIGHTS AND THE RETURNS TO HUMAN CAPITAL: AN EVALUATION OF THE SCHULTZ HYPOTHESIS

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Economic Freedom, Human Rights, and the Returns to Human Capital:
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Abstract

T.W. Schultz (1975) proposed that returns to human capital were highest in economic environments where technology, price or production shocks were common and managerial skills to adapt resource allocations to those shocks were most in need. We hypothesize that variation in returns to human capital across developing countries can be explained in part by government institutions that blunt the magnitude of those shocks or that limit individual abilities to respond to those shocks. Using estimated returns to schooling and experience from 122 household surveys from 86 developing countries, we demonstrate a strong positive correlation between economic freedom and returns to human capital. The positive effect is observed at all quantiles of the wage distribution. Economic freedom benefits the most skilled who get higher returns to schooling; but it also benefits the least skilled who get higher returns from experience.

I. Introduction

Hundreds of studies measure the private returns to schooling, most focusing on a single country or on a small subset of countries. Following the empirical formulation developed by Mincer (1974), inference on returns to schooling and work experience are derived from the regression coefficients of log earnings on years of schooling and quadratic terms in age. Due mainly to the work of George Psacharopolous and his colleagues (Psacharopoulos (1973), Psacharopoulos (1994), Psacharopoulos and Patrinos (2004)), we have compilations of estimated returns to schooling across many countries. These estimates show some remarkable consistencies. Despite differences in estimation methods, specifications, and level of economic development, virtually all studies show that earnings rise with years of schooling and increase at a declining rate in age or work experience. In almost all data sets, the largest percentage annual wage gains are captured by the youngest workers. The wage gain from additional experience gets smaller and may even turn negative with age.

If factors flow easily across markets, we would expect equalization of marginal returns to those factors. For example, a prominent literature in economic development finds that when measured properly, the marginal product of physical capital is nearly equal across rich and poor countries (Lucas Jr. (1990) and Caselli and Feyrer (2007)). The evidence suggests that credit frictions are not retarding capital investments in developing countries. But while physical capital flows easily across countries, human capital does not. Therefore, there could be substantial variation in the marginal returns to human capital across countries, even as the earnings functions display similar tendencies across countries.

In fact, returns per year of schooling tend to vary within a narrow range across developed countries. Estimated private returns to schooling for the United States range narrowly around 10%, despite differences in data sets and methodologies employed. Returns to schooling in other developed countries are similar to the estimated returns in the United States.[1] But labor flows relatively easily across rich countries compared to labor flows between poor and rich countries. For that reason, we might expect more evidence of unequal returns to human capital across developing countries, an expectation that is readily apparent in the data. Despite demonstrating common tendencies in the effects of education and work experience on earnings across developing countries, estimated marginal returns to an additional year of schooling or to an additional year of potential work life vary tremendously.[2]

Figure 1A shows the distribution of estimated returns to schooling across 122 data sets from 86 different developing countries. While the average return is 8%, reasonably consistent with returns estimated for developed countries, the variation is substantial. The 90th percentile return is more than 3 times the 10th percentile return. Figure 1B shows the corresponding distribution of returns to experience across the same sample of countries. The 90th percentile return to experience is over 7 times larger than the 10th percentile return! Given the important

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[1] See Table 4 in Card (1999) for a summary of recent estimated returns to schooling in developed countries. Recent reviews of returns to schooling in developing countries include Orazem and King (2008) and Montenegro and Patrinos (2009).
[2] In our investigation of 122 developing country data sets, only 2 failed to generate positive returns to schooling and 7 failed to generate rising returns to age.

role that human capital plays in economic development, it is important to understand why these differences in returns arise and persist across countries.

T. W. Schultz (1975) advanced an important hypothesis for why returns to schooling might vary across markets. He noted that human capital is most valuable in the presence of unexpected price, productivity or technology shocks that require managerial decisions to reallocate time and resources. If skilled individuals are not exposed to shocks that require resource allocation decisions or if they are denied the freedom to make those decisions, then they will not be able to capture the economic returns from their skills. If countries impose economic or political institutions that either blunt the impact of shocks or hinder individual economic choice, then we should find lower returns to skill in countries that limit exposure and/or individual responses to disequilibria.

A cursory inspection of the data yields support for the hypothesis. Figure 2A divides data from 86 developing countries into three groups based on their relative ranking in the Heritage Foundation's Economic Freedom Index,[3] with 25% each placed in the least and most free economies and the rest being placed in the middle. We then plot the relationship between estimated returns to schooling and real gross domestic product per capita, a measure of each country's level of economic development. Private returns to schooling for the freest economies average 9.7% per year of schooling, 3 percentage points higher than the average returns in the most restrictive economies.[4] Returns for the middle group fall between the two extreme groups.

We repeat the exercise in Figure 2B for private returns to years of potential experience. Again, average returns are highest in countries rated as the most economically free (5%) versus the middle (4.7%) and least free (4.2%) countries. These results are broadly consistent with the proposition that freer economic institutions raise individual returns to human capital.

T. P. Schultz (1998) found that about 70% of the income inequality in the world is due to country-specific fixed effects that would include the impacts of country-specific political and economic institutions on earnings.[5] Acemoglu and Robinson (2005) argued that these institutions were formed in response to exogenous influences existing at the time of a country's founding, and that these institutions tend to persist across generations. We use measures of economic and political institutions to determine if they can alter returns to human capital across countries sufficiently to explain some of the persistent cross-country income inequality reported by T. P. Schultz. We find that, consistent with the T.W. Schultz hypothesis, human capital is significantly more valuable in countries with greater economic freedom. Furthermore, the positive effect is observed at all wage quantiles. Economic freedom benefits the most skilled

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[3] Information on the Heritage Foundation Index is available at http://www.heritage.org/research/features/index/chapters/pdfs/Index2006_Chap5.pdf

[4] We use private returns to schooling as those are the ones that motive individual time allocation choices. Countries may dictate individual educational choices and time allocations in ways to maximize social returns to schooling, but that would not correspond to T.W. Schultz's focus on the returns to individual choice.

[5] Similar findings that 60-70% of world income inequality is due to income inequality between rather than within countries results are reported in reviews by Firebaugh (2003) and Milanovic (2006). Firebaugh (2003), p. 92) argues that between country inequality has fallen recently, but that the between-nation component of global inequality is still "as much as three times the size of the within-nation component."

who get higher returns to schooling; but it also benefits the least skilled who get higher returns from experience.

II.   Government Institutions and Individual Returns

T. W. Schultz (1975) argued that returns to human capital were greatest when there was a need for managerial decisions. Periods of disequilibrium in which input and output prices, technologies, or market opportunities are changing rapidly require an ability to assess opportunities and strategies to capitalize on those opportunities. As these unanticipated shocks increase in frequency, returns to managerial skills rise. Economic systems that blunt these shocks or that insure individuals against the consequences of these shocks will reduce the need for managerial skills. Economic or political institutions that restrict or delay necessary decisions to adapt to shocks such as limiting migration or transfers of capital will lower returns to skill as well. Schultz argued that in the steady state where there are no shocks, traditional rules of thumb are efficient and the need for schooling is minimal.

Returns to managerial skills accrue from the ability to specialize according to comparative advantage, an ability that depends on trading surplus production with other specialists.   The greater the number of potential traders, the greater the returns from specialization.   Government policies can ease or retard trading opportunities by raising or lowering transaction costs. Government institutions that raise transaction costs will reduce the extent of the market. As transaction costs rise, the number of profitable trades is reduced, as are the returns to specialization for talented individuals.   In the limit, institutions that raise transaction costs sufficiently will eliminate all trades and drive the returns to specialized skills to zero (Yang (2003)).

There are many ways that returns to skill will increase with specialization. Rosen (1983) pointed out that returns to rare skills increase with the intensity of their use so in the limit, the rarest skills can claim very large returns. Murphy, Schleifer, and Vishny (1991) demonstrated that if the society does not expropriate earnings excessively, the most able will become entrepreneurs and capture rising returns to their ability, even as their entrepreneurship raises the total productivity of the society. These spillovers from one person's skill or knowledge to that of others in society raises the productivity of all (Romer (1986), Romer (1990), and Lucas Jr. (2002)). The common feature in these models is that individuals are responding to incentives to develop and/or utilize skills because they can trade surplus. If the trade opportunities are removed, the returns to the skills and the incentives to invest are removed. Furthermore, as Lucas emphasized, these trade opportunities have to be incorporated broadly in the expectations of the citizenry.

> "Growth in the stock of useful knowledge does not generate sustained improvement in living standards unless it raises the return to investing in human capital in most families. … For income growth to occur in a society, a large fraction of people must experience changes in the possible lives they imagine for themselves and their children, and these new visions of possible futures must have enough force to lead them to change the way they behave, the number of children they have, and the hopes they invest in their children." (Lucas Jr. (2002), p. 17)

Economic and political institutions are critical to forming and perpetuating these expectations. The studies by Acemoglu and his colleagues show that current political and economic institutions in developing countries have roots that go back centuries. Once installed, these institutions have had a strong tendency to persist,[6] even as the countries face changing economic and political circumstances. That suggests that a test of the Schultz hypothesis would be to establish whether returns to human capital were greatest in countries whose economic or political institutions expose their citizens to more shocks and/or provide the citizens with more freedom to adjust their time or resource allocations in response to those shocks.

Several theoretical models have explicitly linked returns to individual skills to the institutions that regulate individual decision-making. Murphy, Schleifer, and Vishny (1991) show that strong property rights, ease of firm entry, and larger markets will cause the most able to become entrepreneurs, simultaneously increasing overall growth and returns to skill. Rosen (1983) demonstrates that returns to specialized applications of skill to an activity increase as transaction costs fall and the size of the market increases. In the Appendix, we show how a variant of the Pissarides (2000) search model results in rising returns to skill in the presence of more efficient matching institutions. The common feature in these models is that more efficient gains from trade among agents create increasing returns to skill.

A compelling clue that institutions affect returns to human capital comes from the large increases in returns to education observed in the countries that transited from centrally planned to market systems.[7] Fleisher, Sabirianova, and Wang (2005) found that returns to schooling more than doubled from before to after the transition. By 2000, returns in the transition economies were similar to those estimated for Western Europe and North America. McMillan and Woodruff (2002) argued that the successful transition economies were those that fostered the entrepreneurial skills necessary to adapt to the economic shocks. If the change from a more to a less regulated economy increases the return to managerial skills because of the increased need to adapt to shocks (T. W. Schultz (1975)), then we should find similar evidence of the role of economic institutions in explaining the variation in returns to schooling across all countries and not just those in transition.[8]

Virtually all of the empirical work on the role of institutions has examined data aggregated to the country level. Results are inconclusive, and so there is no accepted menu of factors that should be used to measure economic institutions. One reason for the lack of consensus is the tendency to use institutional measures one at a time in separate growth equations.[9] Because institutions may be highly correlated with one another, the coefficient attached to any given individual measure may reflect the correlation between that measure and the excluded institutions. By necessity, studies that try to control for possible endogeneity of

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[6] See Acemoglu, Johnson, and Robinson (2005), p. 316.

[7] Orazem and Vodopivec (2009) used the Schultz hypothesis to explain rising returns to schooling in Slovenia and for transition economies more generally.

[8] The transition economy experience cannot tell us which institutions are important for returns to human capital because many of these institutions such as rule of law, protection of property rights, wage flexibility, monetary reforms, exposure to international trade, were changing simultaneously.

[9] Botero and others (2004) and Djankov, Lopes-de-Silanes, and Schleifer (2002) are prominent examples of this strategy.

economic institutions have to limit the number of institutions because the number of plausible instruments is limited,[10] consequently, studies that aim to correct for endogeneity have to accept a higher probability of missing variables bias.

Studies of institutional effects on labor market outcomes have tended toward the opposite extreme: including an entire menu of labor market institutions as regressors. For example, Nickell and Layard (1999) employ ten measures of unionization, unemployment insurance, employment protection, tax distortions and other labor market policies to explain cross country variation in unemployment rates. Despite the possible problems of endogeneity bias, results using other data sets, additional institutional measures, or different time periods have generally corroborated the findings that more interventionist labor market policies exacerbate unemployment.[11] Some, including Nickell and Layard (1999)and Heckman and Pages (2004) instrument for some but not all labor market institutions, but it would be virtually impossible to fully instrument for all institutions in this strategy.

In this study, we employ the strategy of including many measures of labor market institutions at once without correcting for endogeneity. First, because political and economic institutions in developing countries persist over decades, individuals can form accurate expectations of the institutions and incorporate those expectations in their human capital investment decisions. Consequently, endogeneity should be of less concern than would be the bias caused by excluding those institutions from the analysis. Second, the absence of a consensus on which institutions are important to individual decision-making suggests using a menu of possible factors that could affect economic or political freedom and letting the data speak.

An additional advantage to our strategy lies in our reliance on returns to schooling estimated over samples of individuals. All of the theoretical models tying freer economic institutions to growth presume that individuals are making optimal individual time and resource allocation decisions in response to perceived incentives. Therefore, the effects of these institutions should be most apparent in individual decisions and their private returns to those decisions.

III.   Empirical Measures of Economic and Political Institutions

There are many ways that government regulations or policies may affect an individual's expectations regarding returns to investment or the trend or variation in future economic variables. Because there is no consensus on which institutions matter and which do not, we utilize several different measures that capture different themes in the literature. We provide a general introduction into the measures in the text and provide additional details and summary statistics in Appendix A.

A. *Economic Freedom*

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[10] For examples see the various papers by Acemoglu, Johnson, and Robinson (2001).

[11] Examples include Blau and Kahn (2002), Heckman and Pages (2004), and Nickell, Nunziata, and Ochel (2005).

The closest conceptual measure of the economic environment that an individual confronts comes under the umbrella of economic freedom. There are many potential mechanisms that a government can use to suppress economic shocks in ways that lower the need for managerial decisions. Similarly, there are many government policies that restrict the scope of individual economic decisions. The impact of these policies are often studied individually, including the effects of corruption (Bardhan (2005); Murphy, Schleifer, and Vishny (1991); Murphy, Schleifer, and Vishny (1993); Schleifer and Vishny (1993); property rights Acemoglu, Johnson, and Robinson (2001), Acemoglu, Johnson, and Robinson (2001), Acemoglu, Johnson, and Robinson (2005); Acemoglu and Johnson (2005)); rule of law or contract enforcement (Bardhan (2005); Acemoglu and Johnson (2005)) constraints on entry (Djankov, Lopes-de-Silanes, and Schleifer (2002)); privatization of state enterprises (Frydman and others (1999); Djankov and Murrell (2002)); or monetary policy (Acemoglu and others (2003)). However, these policies are plausibly mutually reinforcing, suggesting that they work more in conjunction with one another than in isolation. For that reason, it may be more convincing to look at an aggregation of policies affecting economic freedom rather than only one or two.

We use the Heritage Foundation's Index of Economic Freedom as our measure of the institutions governing individual economic decisions. The Heritage Foundation has generated a consistent annual series since 1994 across 163 countries on various aspects of economic freedom: the ease with which the team can open or close a business; openness to trade; taxes relative to income; the importance of government in the economy; the quality of monetary policy; openness to foreign investment; the lack of government restrictions on financial or credit markets; protection of property rights; and the lack of corruption in government.[12] Although we do investigate the individual effects of the subcomponents of the index, it seems clear that they are not independent. A single factor loading from a factor analysis of the subcomponents of the Heritage Index explains 92% of the common variance among the components. Nevertheless, we can test whether the individual subcomponents have an effect on returns to skill that differs from the aggregate index.

B. Globalization

International trade and exposure to international capital flows increases the country's exposure to shocks. That alone could have an impact on the returns to schooling. However, there are other avenues through which integration into the international community could affect returns to schooling. Foreign Direct Investment provides access to new technologies that can complement domestic human capital. Xu (2000) argues that countries can only attract foreign direct investment if they have a sufficient base of human capital. Acemoglu, Johnson, and Robinson (2005) argued that openness to trade strengthened the property rights of merchants in Europe, increasing their incentives to invest. Hanushek and Woessmann (2008) provide evidence that openness to foreign trade raises the impact of average cognitive skills on economic growth. It is plausible that openness to trade may also raise returns to human capital.

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[12] We used the Heritage Foundation indices that matched most closely the date of each country household survey. For five countries which were not covered in the Heritage Foundation Index, we use the fitted values from regressions of the index on the six measures included in the World Bank's Governance Indicators (Kaufmann, Kraay, and Mastruzzi (2008)).

We use the Index of Globalization developed by Dreher (2006) for 155 countries from 1970-2006. There were 11 countries that were not covered in this index, although the same source has an index of Political Globalization which includes more countries. We filled in the missing values with the fitted values based on the index of Political Globalization and on the Heritage Foundation's Trade Index. The Index of Globalization is positively correlated with Economic Freedom (ρ=0.58) but there is sufficient independent variation to capture a separate effect of openness to international product and capital markets.

C. Civil Rights

Individual returns to schooling may also depend on the protection of individual political rights. These freedoms can be viewed as the right to act without fear of political retribution as opposed to the economic retribution that would be generated by the country's economic institutions. The Human Rights Dataset by Cingranelli and Richards (2005) provides measures of personal freedoms for 198 countries from 1981-2004.[13] We use the Empowerment Rights Index which is constructed from measures of the extent to which individuals in the country had freedom of movement within or out of the country; freedom of speech without government censorship; freedom to participate in politics; freedom of religion; and worker rights protections. This index is positively correlated with the Economic Freedom Index, but at 0.44, the correlation suggests that the two indexes are not identical. Again we will examine how the subcomponents of the index perform relative to the aggregate index, although a single factor loading explains virtually all of the common variation among the subcomponents.

Individual political freedoms are not as clearly related to the pursuit of the highest return to human capital as are individual economic freedoms, and yet these freedoms could contribute to a climate of creativity and innovation. Florida (2007) emphasizes that acceptance of individual differences fosters innovation and a climate of entrepreneurship.

D. Democracy

Acemoglu and Robinson (2005) present theory and evidence on the development of democracy. They view economies first developing with elites controlling resource allocations and the masses lacking political power or economic rewards. However, with economic growth comes improved education and economic circumstances for the disenfranchised who will be tempted to take control by force. The elite relinquish power by extending political concessions to the middle and lower classes because they want to avoid violent overthrow. Democracy is therefore associated with broad dispersion of the benefits of the economy and greater political freedom. How this affects returns to schooling is unclear. While democracy is positively correlated with rising per capita incomes, the effect is not causal. Furthermore, democracy leads to rising taxation of land and capital and so in relative terms, it is the elite who lose and the lower classes who gain. If the elite are the most educated, then democracy would actually lower returns to schooling.

Democracy has been associated with a general presumption that decentralized allocation of resources improves the efficiency of government services ranging from education, health care,

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[13] We use the data for the year that matches most closely the date of the country household survey.

sanitation, and irrigation. Evaluations find that decentralized decision-making does alter the allocation of resources (Alderman (2001); Faguet (2004); Galasso and Ravallion (2005)). However it is less clear that the resources are allocated in ways that improve desired outcomes. There are numerous reasons why local control may yield poor outcomes. Bardhan (2002) and Bardhan (2005) argue that decentralized decisions are particularly prone to fail in developing countries where local officials may be subjected to undue influence by prominent local families, there may be no tradition of monitoring of local officials by local residents, and local officials may lack the necessary experience or skills to manage resources effectively.

We utilize the Freedom House Imputed Polity measure which rates countries by their democratic institutions. The scale varies from 0 to 10 with 0 being least democratic and 10 being most democratic. One concern is that we will have trouble distinguishing the effects of democratic institutions from those of economic and individual freedoms. In fact, democracies are more likely to have more economic freedoms ($\rho = 0.45$) and are more likely to protect individual political rights ($\rho = 0.74$). Nevertheless, there are countries that provide exceptions. Democratic countries with below average protection of individual rights include Indonesia, Kenya, Turkey. Sierra Leone, Gambia and Haiti are examples of relatively nondemocratic countries that offer above average levels of individual rights. Bahrain and the United Arab Emirates score low on democracy and individual rights, but offer high levels of economic freedom. The Ukraine offers high levels of democracy and individual rights, but below average economic freedoms. The variation across these countries should be sufficient to enable us to identify the independent effects of democratic institutions from those of economic freedom or individual rights.

E. Equal Rights

Returns to education may also depend on how equally the opportunities or personal freedoms are distributed among demographic groups. Countries may have policies that provide economic or political freedoms generally to the populace and yet deny those freedoms to ethnic, racial or religious minority groups or to women. Unequal access to economic mobility would certainly lower returns to schooling for members of the disadvantaged group, as has been shown in many studies of the effect of discrimination on labor market earnings. The unequal access could even limit returns to schooling for members of the majority to the extent that the limitations on economic freedom lower the efficiency of resource allocation in the economy as a whole. The magnitude of this inefficiency due to the misallocation of resources increases with the size of the group that faces discriminatory access. Clark (2007) points to England's broad distribution of human capital and its relatively egalitarian society as why it, and not the more unequal China, India or Japan, was first to foster an Industrial Revolution.

Our measure of equal rights protection and access to economic opportunity focuses on the rights of women. Representing half the population, if women face restricted economic mobility, they are a sufficiently large group to alter average returns to schooling for the country as a whole. In addition, unlike ethnic or racial groups, measures of economic or political power that focus on women can be easily compared across countries. We use the percentage of women in the national legislature as our indication of equal access. Since 1997, the Inter-Parliamentary Union provides a continuous measure of the percentage of seats in the lower house parliament held by women for 188 countries. Melander (2005) has a slightly different measure that includes

women in the upper house that begins in 1965 and covers 175 countries. For the years for which we do not have data from the Inter-Parliamentary Union, we use the Melander's data with an adjustment made for the differences in measurement.

There is little correlation between this measure of equal access and the other measures of institutions. For example, there is virtually zero correlation between the Heritage Foundation Index of Economic Freedom and the fraction of women in parliament.

IV. Do Economic and Political Freedoms Raise Returns to Schooling?

Private returns to schooling are derived from standard Mincerian earnings function estimated over 122 different household data sets. The data sets come from 86 countries, and so we have repeated observations for some countries at different points in time. Four data sets are from Chile, three each from Bulgaria, El Salvador, Guatemala and Uruguay. We have two data sets from 25 other countries. The data sets are dated in various years between 1989 and 2007 with 68% dated 2000 or later. A listing of countries, survey dates, and estimated returns to schooling and potential experience can be found in the Appendix.

In order to standardize our measure of the returns to schooling, we apply the same earnings specification to each data set. Our use of a common specification removes one source of spurious variation in estimated returns across countries. For each country j and year t, we estimate equations of the form

$$\ln(w_{ijt}) = \alpha_{jt} + r_{jt}S_{ijt} + b_{jt}^1 A_{ijt} + b_{jt}^2 A_{ijt}^2 + \sum_{k=1}^{K} \beta_{kjt} X_{kijt} + \varepsilon_{ijt}$$

(1)

where X_{kijt} includes K measures of individual attributes including marital status, gender and urban or rural residence. The estimated return per year of schooling is r_{jt}, the coefficient on years of schooling S_{ijt}. The estimated return per year of experience is $b_{jt} = b_{jt}^1 + 2b_{jt}^2 \overline{A_{jt}}$, computed at the average age in the country.

Returns to human capital have clear advantages as measures of the returns to individual investments in developing countries. Investments in human capital are the most ubiquitous investment in the world. In developing countries where households may be liquidity constrained, households will devote investments to human capital before they invest in physical capital. Only when the anticipated return to an additional investment in human capital falls to the market return on physical capital will a household diversify its investment to include physical capital. Even if the household determines that schooling is not warranted, it will invest in occupational skills. The estimated return to an additional year of life will reflect investments in training on the job. As with schooling, investment in job skills will be undertaken before the household devotes resources to physical capital. Figures 2A and 2B show that while there is considerable variation in estimated returns across countries for both types of human capital investments, almost all are positive with returns to schooling and experience averaging 8.1% and 4.6%, respectively.

Note also that we are agnostic about why human capital generates returns. As shown by T.P. Schultz (1988) , human capital improves individual well-being along many dimensions including better decisions regarding health and fertility as well as labor market performance. To the extent that these other decisions also improve labor market performance, earnings capture, at least in part, several dimensions of improved decision-making that result from human capital investments.

The 122 earnings functions are estimated separately using ordinary least squares.[14] The estimated return to schooling in country j in year t, r_{jt}, will reflect the institutional arrangements that affect the returns to skill in each country. If there are L of these institutions, we can model the variation in estimated returns to schooling and experience by

$$(2) \quad r_{jt} = \gamma_{jt0} + \sum_{l=1}^{L} \gamma_{ljt} M_{ljt} + v_{jt}^r$$

$$b_{jt} = \delta_{jt0} + \sum_{l=1}^{L} \delta_{ljt} M_{ljt} + v_{jt}^b$$

If the lth institution, M_{ljt}, affects returns to schooling or experience, then $\gamma_{ljt} \neq 0$ and $\delta_{ljt} \neq 0$. We estimate (1) and (2) in two steps. The second stage corrects for clustering by country.[15] Results for the cross-country rates of return regressions are presented in Table 1A for the entire working population and then separately for men and women and separately for urban and rural residents. Depending on the demographic sample, the regressions explain 8-19% of the cross country variation in returns to schooling and 8-16% of the cross-country variation in returns to experience, suggesting that institutions have a role in explaining why differences across countries in private returns to human capital can arise and persist.

A. Economic Freedom

The prediction from the Schultz hypothesis that returns to human capital are positively influenced by the presence of and ability to respond to shocks is broadly supported by the data. Higher levels of the Economic Freedom Index are strongly positively correlated with returns to schooling. At sample means, the elasticity is 0.61. A 10% increase in the index raises returns to

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[14] We can only include individuals in the regression if they work for a wage. That means that our estimated returns are potentially subject to selection on labor supply. To investigate the importance of selection, we also estimated the returns using a Heckman selection correction which used aggregate household income and the presence of children as instruments in the probit selection equation. As shown in Appendix Table 2, OLS and selection corrected returns are highly correlated, consistent with the findings in Schultz (1999). We use the OLS estimates because only 90 data sets incorporated sufficient information to identify the selection equation, meaning a sacrifice of 26% of the sample if we limited the results to the selection corrected set.

[15] The unit of observation is the market and not the individual, and so it is not appropriate to weight these regressions by population. Nevertheless, we did perform a population-weighted regression to examine how sensitive our results were to alternative specifications. Because India, Indonesia and Pakistan had such dominant population size compared to the rest of the countries, standard weighting methods forced the coefficients to 'explain' those few large countries, effectively negating the variation across economic institutions in the data. When we use an alternative of eliminating the relatively few very large countries form the data set, we get results comparable to those reported in the paper.

schooling by 0.49 percentage points. To put that sensitivity in perspective, countries at the 75th percentile have Economic Freedom Scores that are more than twice that of countries at the 25th percentile, and so variation in economic freedom is capable of explaining considerable variation in returns to schooling across countries. The impact is virtually identical for men and women. Educated groups in urban areas particularly benefit from freer economic institutions. Returns to schooling in rural areas are largely unaffected by the extent to which economic institutions regulate economic activity.

Table 2A shows how subcomponents of the Heritage Index relate to estimated returns. We cannot reject the hypothesis that it is the overall index that matters and not any one or two elements of economic freedom. While several subcomponents of economic freedom that have been individually emphasized elsewhere as critical to economic growth, such as lack of corruption, low marginal tax rates, private enterprise, low costs of business start-up, or protection of property rights; it is the impact of these components in aggregate rather than any individual institution in isolation that matters for private returns to schooling.

Returns to potential experience are also significantly affected by the extent of economic freedom with an elasticity of 1.06, evaluated at sample means. Again the response is sufficiently sensitive to explain the substantial differences in returns to experience observed across countries. The effect is largely limited to males, presumably because males face a steeper age earnings profile with more potential for gains accruing to the most skilled. Economic freedom increases returns in both urban and rural markets, but the effect is modestly larger in rural labor markets.

We cannot reject that the subindexes can be aggregated into a single index that affects returns to experience. Only three subcategories related to monetary stability, investment climate and the importance of private enterprise significantly affect returns to experience. Nevertheless, the largest elasticity is with respect to the overall index and not any one element of economic freedom.

B. Globalization

Integration with global markets does not have much effect on returns to schooling and it actually has a modest negative impact on returns to experience. Additionally, the Trade Freedom component of the Freedom Index registered no effect. If exposure to foreign trade and capital markets matters for labor demand by skill, it must be too small relative to the overall size of the labor market to have much of an effect. As trade tends to be a small share of developing country labor markets, it may not be as critical to individual human capital decisions as might be implied by some of the macroeconomic growth studies.

C. Civil Rights

Returns to schooling and experience are not strongly tied to protection of individual political rights. The coefficient is positive in all instances with implied elasticities of 0.28 (schooling) and 0.08 (experience), but the effects are never precisely estimated for any of the populations. In exploring the subcomponents, we cannot reject the null hypothesis that the individual subcomponent effects are equal to that of the summation. Only one subcomponent,

Freedom of Religion, retains significance on its own for returns to schooling and none affect returns to experience. Overall, there does not appear to be much impact of individual political rights to individual returns to human capital.

D. Democracy and Equal Rights

There is no evidence that returns to human capital are higher in more democratic political systems. Even though democratic systems may have a role in sustaining economic freedom, it is the economic freedom itself and not the democratic institutions that appear to matter.

However, progress on equal rights, as indicated by the proportion of women among elected officials, does have a positive correlation with estimated returns to schooling. The elasticity is about 0.15 regardless of the demographic group, suggesting that a 10% increase in women's presence in the legislature is correlated with an increased return to schooling of about 0.1 percentage points for men and women and for urban and rural residents. Our interpretation is that improving political access to women is an indicator of more broadly equalizing access for all demographic groups. If true, the benefits of equalizing economic and political mobility raise the returns to schooling for all groups and not just the individual groups targeted for the improved access. Any conclusion about the effect of equal access on returns to human capital more generally must be considered fragile, however, as we fail to find any systematic relationship between political access to women and returns to experience.

V. Are returns to economic freedom robust to alternative hypotheses?

An obvious concern regarding our findings thus far is that our institutions may be correlated with other factors that affect returns to human capital. In fact, there are numerous factors that have been credited with explaining economic growth. Durlauf, Johnson, and Temple (2005) reported that 145 different variables had been shown to explain the cross-country pattern of growth in at least one analysis. Therefore, it is important to consider whether our conclusions are sensitive to the inclusion of these competing explanations. We list these competing factors along with explanations of how they could affect returns to human capital.

A. The extent and pace of economic growth

There are conflicting predictions of how the level or pace of economic development will affect the returns to schooling. In the models of Rosen (1983) and Murphy, Schleifer, and Vishny (1991), the extent of the market raises the returns to entrepreneurial skills. Indeed, in the endogenous growth literature more generally, agglomeration of skills or knowledge generates increased productivity and returns to the innovator. Consequently, we would expect returns to schooling to be greatest in the most technologically advanced societies.

However, there is an alternative view that suggests poorer societies will under invest in human capital which will lead to a higher return to skill for those who are able to afford the investments. In the formulation of Becker and Tomes (1979) and Becker and Tomes (1986), wealthier households will invest in their children's schooling up to the point where the rate of growth of returns to human capital investments equals the rate of return on capital while poorer

households are constrained to cut off schooling at levels where returns to human capital exceed the rate of return on capital. That suggests that poorer economies will have higher returns.

Either view suggests that we must control for the level and pace of economic development to capture the true return to economic institutions. Furthermore, there is an additional complication that as economies develop, they can better afford liberal institutions such as democracy, redistributive taxes and transfers, rule of law, protection of property rights and from corrupt governments, and so on. Because the level and pace of economic development will be correlated with the levels of economic or political freedom, democratic institutions, we must include controls for economic development to avoid missing variables bias.

We use the log of real gross domestic product per capita as our measure of economic development and the growth rate of real GDP per capita to reflect the pace of economic development. Finally, we include the log of the country population as a crude measure of the size of the market. These measures are all available for all our countries from the national accounts compiled by the United Nations Statistics Division.

B. Life expectancy

In Becker (1994) formulation of the theory of human capital investment, individuals will continue to specialize in schooling as long as the net present value of the investment is positive. That implies that an individual who expects to live longer will optimally spend more time in school and, if human capital investments are subject to diminishing returns, will get a lower annual return per year of schooling. Too understand why, consider two otherwise identical individuals with different life expectancies who complete the same year of schooling. Both will generate the same marginal increase in human capital product after completing that year, generating the same resulting marginal change in annual earnings. However, the present value of the returns from that year of schooling will be greater for the individual with greater longevity. As a result, the longer-lived individual will spend more time in school, generating successively lower annual increments in earnings from the additional time investing in human capital. Life expectancy at birth is available for all countries through the World Development Indicators.[16], [17]

C. Foreign aid

There are sharp differences of opinion on the role of foreign aid in economic development. Some have argued that increased levels of foreign aid are critically necessary to foster economic development (Sachs (2005)) while others have suggested that foreign aid has been ineffective (Easterly (2006), Easterly (2009)). Still others emphasize the need for internally or externally generated political stabilization (Collier (2007)) or a culture of capitalism (Clark (2007)) before any economic development can occur.

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[16] When exact matches on years were not available, we interpolated between years.
[17] We also experimented with using average years of schooling. Results are similar-- years of schooling are negatively correlated with average returns to schooling, consistent with the hypothesis of diminishing returns. However, years of schooling responds to other factors besides life expectancy including expectations of returns to schooling, and so life expectancy can more plausibly be viewed as a factor shifting outward the country's demand for schooling rather than a response to returns to schooling.

To our knowledge, the debate on foreign aid has not dealt greatly with how or whether aid benefits or hinders economic mobility within the country. Aid may be critical to the expansion of schooling opportunities and to the improvement of existing schools, in which case it should raise returns to schooling. Furthermore, to the extent that the aid is accompanied by technical assistance on setting and implementing good policies, we might expect that aid would improve economic institutions that could support higher returns. Foreign aid could also insulate the country from shocks which would lower the returns to schooling in a Schultz world. Finally, foreign aid could be misused, in which case its impact would be negligible. We use the log of real net foreign aid per capita provided by the World Development Indicators as our measure of the importance of foreign aid in the economy.

D. The distribution of skills in the labor force

A major factor in changing returns to skill in the developed countries has been the role of skill-biased technological change. Information technologies and other capital; innovations have tended to shift relative labor demand toward more skilled workers. Depending on the speed with which the relative supply of skills responds to that shift in demand, relative returns to skill can be affected. As documented by Katz and Autor (1999) and Autor, Katz, and Kearney (2008), the demand-side shifts have dominated supply responses since 1980 in the U.S. and many other developed countries, leading to a rising return to skill. How these technological shifts affect less developed economies is unclear in that production methods in low-wage environments will be less capital intensive. Nevertheless, we incorporate a measure of skill share in the labor market as a control for the relative supply of skilled versus unskilled labor. We use the fraction of the labor force with at least 8 grades of completed schooling as the measure of skill intensity by country.

The reason for adding these controls is readily apparent when examining the correlation matrix in Table 3. Several of these control variables are highly correlated with measures of economic institutions, especially life expectancy, GDP per capita and skill share in the labor force. Therefore it is important to assess whether the estimated returns to economic institutions are really a result of these competing explanations.

Note that these control variables may themselves be subject to reverse causality. Level and growth of production per capita, ability to attract foreign aid, skill share of the workforce, and length of life might themselves reflect the level of and returns to skills in the country. In adding these factors to the regression, we are only interested in establishing the sensitivity of our conclusions to competing explanations, whether or not those explanations meet a rigorous test of cause and effect.

E. Results from the Expanded Model

The estimated model including these control variables is included in Table 1B. Their inclusion raises the share of explained variation in returns to human capital to as much as 40%. Infusions of foreign aid per capita lower returns to human capital, particularly with respect to returns to experience overall and for private returns to schooling in rural areas. As suggested by

human capital investment theory, life expectancy has a consistently large negative effect on returns to schooling and returns to experience that applies to all populations. Returns to schooling rise with the level of economic development, as indexed by GDP per capita, but decline with the growth rate of GDP per capita. Returns to potential experience decrease as the share of skilled labor in the workforce rises, suggesting that skill and work experience may be substitutes.

Despite the correlation between these factors and estimated returns to human capital, the conclusions from 1A hold up reasonably well. In regressions explaining private returns to education, the coefficient on economic freedom retains significance but is about one-fifth smaller with the elasticity falling from 0.61 to 0.5. The coefficient on the fraction of parliamentary seats held by women falls by about 25% but also retains significance. We still conclude that that returns to education are enhanced by economic institutions that allow shocks to occur, that allow individuals to act in response to those shocks with the expectation of retaining profits from their actions, and that spread those rights broadly in the population. Those benefits go to both men and women and both urban and rural residents, although the benefits are somewhat larger to urban workers. Therefore, differences in economic freedom explain part of the persistent cross-country variation in incomes identified by T. P. Schultz (1998).

Conclusions regarding returns to potential experience are more sensitive to the inclusion of these competing factors. None of the effects of these institutions significantly affect returns to experience in the presence of these competing factors. The most important factor in Table 1A, that on economic freedom, falls by half or more and loses statistical significance. Consequently, we cannot conclude that the variation in returns to experience across countries is tied to the degree to which economic rights are protected.

A topic that has generated considerable interest is whether variation in returns to schooling really reflects an underlying difference in school quality (Hanushek and Woessmann (2008)). We replicated the regressions in 1A with measures of expenditures per pupil for the subset of countries for which information was available. None of our conclusions regarding how economic freedom affects returns to human capital are sensitive to inclusion of that measure of school quality.

VI. Do Freer Economic Institutions Increase Wage Inequality Within Countries?

We have established strong evidence that freer economic institutions lead to higher average returns to schooling. That does not mean that all parties benefit. There are strong reasons to suspect that the most skilled benefit most from freer economic institutions. The models of Rosen and Murphy et al suggest that it is the most uniquely skilled whose returns are suppressed under more restrictive economic policies, and so they would benefit most from their relaxation. To the extent that maximizing returns to human capital requires geographic or occupational mobility, it is the most educated who are the most mobile (T.P. Schultz (1988)).

Many of the restrictive economic policies are aimed at redistributing income from the wealthy to the poor. Moderating or eliminating progressive tax rates, usury laws, minimum wages, and government services would all raise measured economic freedom, but their

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elimination might disadvantage the poorest segments of society, even as they benefit the wealthier groups.

All of these reasons justify an evaluation of how economic or political freedoms affect returns to schooling at all points along the wage distribution. We address these issues by using quantile regressions to generate the cross-country distribution of estimated returns to schooling and experience at various points on the wage distribution. The quantile regressions applied the specification in (1) to the 0.1, 0.2, 0.25, 0.5, 0.75, 0.8, and 0.9 quantiles. We use the specification in Table 1A, but similar qualitative and quantitative results obtains when we add the potentially endogenous covariate controls as in Table 1B. It is useful to interpret the quantile regressions as moving up the distribution of unobserved skills. As we move from the lowest to highest quantile, returns to schooling fall slightly from 8.3% to 7.7%, but returns to experience fall from 5.2% to 4.2%. One could interpret that finding as suggesting that unobserved human capital is complementary with schooling but substitutable by work experience in developing countries.

Armed with our estimated quantile returns for each country, we repeated the estimation strategy in (2) to explain the variation in estimated returns to schooling at each of the quantiles. We also examine evidence for changes in the effect of institutions as we go from the lower to the upper quantiles. The results are shown in Table 4. To conserve space and aid comparisons, we only report the results for the 0.1, 0.5 and 0.9 quantiles. We also include a test of whether the change in coefficients between the 10th and 90th quantiles is statistically significant.

There is modest evidence that the benefits of economic institutions are shared unequally across the distribution of unobserved skills, but the pattern does not suggest that more market-oriented policies systematically increase inequality within countries. The effect of Economic Freedom is always positive, and so no quantile group does worse in a freer economic climate. In addition, gains to the upper-tail of the unobserved ability distribution from higher returns to schooling are counteracted by gains to the lower-tail from higher returns to experience. The Economic Freedom Index becomes more important for returns to schooling as we move up the earnings quantiles, but its impact on returns to experience gets smaller. Both patterns of coefficient change are statistically significant as we move up the quantiles.

There is modest evidence that stronger civil rights protection benefit the upper-tail most from higher returns to experience. The upper tail also benefits more from equal rights as indicated by female access to political power, although the coefficient changes are not precisely estimated. The effects of globalization and democracy are spread equally across the quantiles.

Perhaps surprisingly, there is no systematic evidence that freer economic or political institutions cause greater wage inequality. While returns to human capital are influenced by these institutions, the benefits are distributed similarly across the quantiles in almost all cases. Even the most dramatic significant departure from equally distributed benefits resulted in the upper tail receiving higher returns to schooling as the lower tail garnered higher returns to experience, effectively neutralizing the effects on the wage distribution. On the other hand, imposing government institutions that lower economic freedom will lower wages for all groups compared to earnings of similarly skilled workers in other countries whose policies are more

favorable to human capital returns. Consequently, when a developing country raises its level of economic freedom, it raises the wages of its citizens compared to earnings in the developed world which would lower inequality across countries without experiencing appreciable increases in inequality within its boundaries.

VII. Conclusions

There are sharp differences across developing countries in returns to years of schooling and work experience that are large enough to explain why between-nation income differences are the dominant source of the world income inequality documented by T.P. Schultz (1988). T.W. Schultz (1975) argued that countries that limit the magnitude of economic shocks or that limit the degree to which individuals can react to those shocks will eliminate much of the source of the return to human capital. This paper suggests that if T.W. Schultz was correct, then differences in economic institutions across countries that limit or enhance economic freedom should be a source of the persistent differences in income levels documented by T.P. Schultz.

Using the Heritage Foundation's Economic Freedom Index as a gauge of the extent to which a country is open to market forces and allows market responses, we find broad support for the Schultz hypothesis. Private returns to schooling are significantly higher in more economically free countries. The higher returns to schooling persist even when we add measures other political institutions that might affect returns and when we add controls for the level and pace of economic development, life expectancy, skill intensity and population in the country. There is no one element of economic freedom that seems to be the key factor; economic freedom in one arena appears to complement economic freedom in other markets. We find similarly higher returns to work experience in more economically free countries which persist when other political institutions are added, but the evidence weakens when controls for the level of economic development are added.

There is no evidence that more market-oriented economic institutions exacerbate within-country wage inequality. While policies that enhance economic freedom raise returns to schooling most for workers at the upper-tail of the ability distribution, they raise returns to experience most for those at the bottom-tail of the ability distribution. More to the point, they do not lower wages at any point along the ability distribution, and so they improve the lot of all workers. Furthermore, they raise wages for men and women and for urban and rural dwellers. Concerns that these policies raise inequality within countries appear overblown. On the other hand, because they raise wages in developing countries compared to the world average, more market-oriented policies in developing countries will tend to lower the between-country component of world income inequality.

An interesting implication of these findings for international migration is that individuals will experience the largest gains in private returns to human capital when they migrate from economically repressed to economically free countries. Should appropriate data exist for international migrants, we should find the largest gap in estimated returns to schooling or experience between expatriates and nonmovers from countries that are the least economically free. Similarly, looking at the expatriates from a given country, we should find the highest returns to human capital for the expatriates in the most economically free countries. The least

market-oriented countries will experience the greatest brain-drain, or else they will have to use other means to suppress the desires of their citizens to leave.

Table 1A: Cross-country regressions explaining variation in returns to schooling and returns to experience, by gender and region

Institutions	Total		Male		Female		Urban		Rural	
	$Ed: r_{jt}$	$Exp: b_{jt}$	$Ed: r_{jt}$	$Exp: b_{jt}$	$Ed: r_{jt}$	$Exp: b_{jt}$	$Ed: r_{jt}$	$Exp: b_{jt}$	$Ed: r_{jt}$	$Exp: b_{jt}$
Economic Freedom Index	0.089**	0.086**	0.082**	0.099**	0.088**	0.044	0.084**	0.086**	0.057	0.091**
	(2.44)	(2.48)	(2.18)	(2.69)	(2.35)	(0.96)	(2.12)	(2.57)	(1.23)	(2.27)
Globalization Index	-0.001	-0.048*	-0.003	-0.039	-0.018	-0.074*	0.007	-0.076**	0.001	-0.018
	(0.01)	(1.82)	(0.08)	(1.39)	(0.51)	(1.91)	(0.19)	(2.76)	(0.02)	(0.56)
Empowerment rights index	0.209	0.058	0.117	0.041	0.229	0.303	0.198	0.092	0.304	0.070
	(1.07)	(0.33)	(0.65)	(0.24)	(1.04)	(0.87)	(1.06)	(0.45)	(1.12)	(0.36)
Democracy (Freedom House/Imputed Polity)	-0.057	-0.219	0.031	-0.220	-0.157	-0.366	-0.011	-0.349*	-0.207	-0.202
	(0.29)	(1.17)	(0.16)	(1.16)	(0.76)	(1.17)	(0.06)	(1.66)	(0.78)	(0.88)
Women in Legislature	0.107**	-0.008	0.094*	0.004	0.101*	-0.024	0.128**	0.019	0.097*	-0.013
	(2.12)	(0.28)	(1.95)	(0.11)	(1.91)	(0.64)	(2.46)	(0.51)	(1.74)	(0.34)
Constant	0.98	3.51**	0.865	2.22	4.20**	6.65**	0.63	5.67**	2.58	0.88
	(0.48)	(2.32)	(0.43)	(1.31)	(1.99)	(2.24)	(0.29)	(3.22)	(0.98)	(0.43)
R2	0.17	0.11	0.16	0.10	0.10	0.09	0.19	0.16	0.08	0.08
Number of observations	122	122	122	122	122	122	122	122	113	113

t-statistics corrected for clustering by country are reported in parentheses. ** p<0.05, * p<0.1

Table 1B: Cross-country regressions explaining variation in returns to schooling and returns to experience, by gender and region

	Total		Male		Female		Urban		Rural	
Institutions	$Ed.{:}r_{jt}$	$Exp.{:}b_{jt}$	$Ed.{:}r_{jt}$	$Exp.{:}b_{jt}$	$Ed.{:}r_{jt}$	$Exp.{:}b_{jt}$	$Ed.{:}r_{jt}$	$Exp.{:}b_{jt}$	$Ed.{:}r_{jt}$	$Exp.{:}b_{jt}$
Economic Freedom Index	0.073**	0.038	0.065*	0.051	0.063*	-0.010	0.069**	0.035	0.043	0.060
	(2.30)	(1.23)	(1.95)	(1.36)	(1.74)	(0.24)	(2.08)	(1.16)	(1.06)	(1.57)
Globalization Index	0.009	0.011	0.014	0.019	-0.001	0.001	0.028	-0.011	0.016	0.043
	(0.22)	(0.34)	(0.34)	(0.47)	(0.01)	(0.01)	(0.72)	(0.30)	(0.30)	(1.20)
Empowerment rights index	0.259	0.043	0.171	0.021	0.271	0.322	0.234	0.124	0.440*	0.009
	(1.44)	(0.28)	(1.07)	(0.13)	(1.26)	(0.94)	(1.32)	(0.66)	(1.74)	(0.05)
Democracy (Freedom House/Imputed Polity)	0.081	-0.050	0.170	-0.054	0.009	-0.194	0.156	-0.187	-0.160	-0.088
	(0.43)	(0.29)	(0.93)	(0.31)	(0.04)	(0.60)	(0.88)	(0.94)	(0.63)	(0.36)
Women in Legislature	0.087**	-0.021	0.071*	-0.003	0.080*	-0.052	0.105**	0.006	0.090*	-0.013
	(2.13)	(0.93)	(1.76)	(0.12)	(1.92)	(1.61)	(2.44)	(0.21)	(1.91)	(-0.55)
Controls										
Log of Real Aid per Capita	-0.240	-0.402*	-0.173	-0.444*	-0.210	-0.599**	-0.091	-0.334	-0.508*	-0.444
	(0.94)	(1.75)	(0.69)	(1.71)	(0.75)	(2.03)	(0.35)	(0.92)	(1.75)	(1.58)
Log of Life Expectancy at Birth, Total (Years)	-12.56**	-5.63**	-12.17**	-4.66	-13.10**	-6.94**	-13.43**	-5.39*	-12.23**	-4.68
	(-4.71)	(2.67)	(-4.47)	(1.59)	(4.88)	(3.19)	(4.95)	(1.93)	(3.95)	(1.32)
Log of real GDP per capita	0.904*	0.515	0.858*	0.361	1.069*	0.501	0.893*	0.482	0.606	0.434
	(1.74)	(1.00)	(1.72)	(0.58)	(1.85)	(0.96)	(1.71)	(0.86)	(0.95)	(0.702)
Growth Rate of Real GDP per Capita (%)	-0.146**	-0.066	-0.126**	-0.083	-0.159**	-0.011	-0.161**	-0.073	-0.188**	-0.084
	(2.58)	(1.27)	(2.28)	(1.46)	(2.19)	(0.14)	(2.69)	(1.33)	(2.99)	(1.44)
Log of Population	0.156	0.082	0.187	0.068	0.227	0.019	0.180	0.339	0.363	-0.018
	(0.69)	(0.41)	(0.97)	(0.30)	(0.80)	(0.07)	(0.82)	(1.53)	(1.34)	(0.07)
Employment Share with 8+ years of Schooling	0.011	-0.041**	0.007	-0.040**	0.001	-0.047**	0.008	-0.042**	0.021	-0.043**
	(0.79)	(3.41)	(0.53)	(2.63)	(0.061)	(3.30)	(0.53)	(3.20)	(1.08)	(3.07)
Constant	43.58**	22.30**	41.54**	18.19	47.20**	31.14**	46.16**	19.51*	41.22**	17.32
	(3.54)	(2.51)	(3.41)	(1.52)	(3.65)	(3.75)	(3.59)	(1.83)	(3.37)	(1.04)
R2	0.41	0.42	0.40	0.35	0.36	0.25	0.44	0.42	0.32	0.28
Number of observations	122	122	122	122	122	122	122	122	113	113

Table 2A: Coefficients and elasticities of how the Economic Freedom Index and its subcomponents affect returns to schooling

Heritage Foundation Subindex	Marginal Returns to Education	Marginal Returns to Experience
Economic Freedom Index	0.089**	0.086**
	(2.44)	(2.48)
	[0.61]	[1.06]
Business Freedom	0.050**	0.007
	(2.91)	(0.90)
	[0.24]	[0.14]
Freedom from Corruption	0.027*	0.010
	(1.87)	(0.49)
	[0.09]	[0.06]
Financial Freedom	0.001	0.014
	(0.01)	(0.72)
	[0.002]	[0.15]
Fiscal Freedom	0.047*	0.027
	(1.90)	(1.10)
	[0.47]	[0.47]
Freedom from Government	0.027*	0.045**
	(1.70)	(3.51)
	[0.25]	[0.74]
Investment Freedom	0.033*	0.051**
	(1.53)	(2.78)
	[0.21]	[0.57]
Monetary Freedom	0.001	0.032**
	(0.04)	(2.08)
	[0.005]	[0.47]
Property Rights	0.060**	0.017
	(3.45)	(0.91)
	[0.31]	[0.16]
Trade Freedom	0.014	0.006
	(0.54)	(0.29)
	[0.10]	[0.08]
$F_{(8, 108)}$[a]	1.11	2.06**

Each estimate is from a separate regression of returns to schooling or returns to experience using the model specification used in Table 1A. The complete results are available from the authors on request

t-statistics corrected for clustering are in parentheses. Associated elasticities are in brackets.

[a]Test that the sum of the 9 subindex effects equals the effect of the overall Economic Foundation Index

Table 2B. Coefficients and estimated elasticities of the impact of the Empowerment Rights Index and its subcomponents on the returns to schooling

Empowerment Rights Subindex	Marginal Returns to Education	Marginal Returns to Experience
Empowerment rights index	0.209	0.058
	(1.07)	(0.33)
	[0.277]	[0.08]
Freedom of movement	-0.184	-0.469
	(0.20)	(0.64)
	[-0.03]	[-0.08]
Political participation	-0.393	0.905
	(0.71)	(1.42)
	[-0.11]	[0.26]
Freedom of religion	1.631**	0.418
	(2.16)	(0.61)
	[0.24]	[0.06]
Freedom of speech	0.900	0.299
	(1.54)	(0.76)
	[0.21]	[0.07]
Workers rights	0.126	-0.260
	(0.20)	(0.57)
	[0.024]	[-0.05]
$F_{(4, 108)}$[a]	1.84	1.38

Each estimate is from a separate regression of returns to schooling or returns to experience using the model specification used in Table 1A.

The complete results are available from the authors on request.

t-statistics corrected for clustering are in parentheses. Associated elasticities are in brackets.

[a]Test that the sum of the 5 subindex effects equals the effect of the overall Empowerment Index.

Table 3: Correlation between Measured Economic Institutions and Measures of Country Economic Status

Institutional Measure	Log of real aid per capita	Life Expectancy at Birth, Total (Years)	Log of real GDP per capita	Growth Rate of Real GDP per Capita (%)	Log of population	Employment Share with 8+ years of Schooling
Economic Freedom Index	-0.28	0.41	**0.51**	-0.14	-0.14	0.17
Globalization Index	-0.23	**0.62**	**0.79**	-0.07	-0.07	**0.59**
Empowerment Rights Index	-0.01	0.42	0.45	-0.15	-0.15	0.17
Democracy (Freedom House/Imputed Polity)	-0.10	**0.53**	**0.57**	-0.02	-0.02	0.39
Women in the Legislature	0.03	-0.12	0.01	0.24	0.24	0.06

Notes: Based on the 122 developing country-year combinations for which we have household data sets. Correlations above 0.5 are bolded.

Table 4: Cross-country regressions explaining variation in returns to schooling and returns to experience estimated at selected quantiles

	Quantile							
	0.10		0.50		0.90		90-10	
	$Ed:r_{jt}$	$Exp:b_{jt}$	$Ed:r_{jt}$	$Exp:b_{jt}$	$Ed:r_{jt}$	$Exp:b_{jt}$	$Ed:r_{jt}$	$Exp:b_{jt}$
Economic Freedom Index	0.034	0.124***	0.078**	0.077**	0.103***	0.072**	0.068*	-0.053**
	(0.82)	(3.10)	(2.02)	(2.62)	(2.72)	(2.05)	(1.88)	(2.29)
Globalization Index	-0.025	-0.059*	0.007	-0.033	0.016	-0.045	0.041	0.014
	(0.56)	(1.86)	(0.20)	(1.30)	(0.47)	(1.61)	(1.01)	(0.65)
Empowerment rights index	0.151	0.087	0.247	0.018	0.179	0.351*	0.028	0.265*
	(0.60)	(0.36)	(1.18)	(0.12)	(0.91)	(1.88)	(0.12)	(1.68)
Democracy (Freedom House/Imputed Polity)	0.030	-0.327	-0.140	-0.277	0.018	-0.342*	-0.012	-0.014
	(0.12)	(1.34)	(0.67)	(1.61)	(0.09)	(1.98)	(0.05)	(0.08)
Women in Legislature	0.032	0.002	0.122**	0.016	0.109**	0.011	0.077	0.009
	(0.69)	(0.08)	(2.26)	(0.54)	(2.09)	(0.42)	(1.60)	(0.35)
Constant	6.212***	2.928	1.054	3.162**	-1.284	2.421		
	(2.78)	(1.52)	(0.48)	(2.27)	(0.62)	(1.52)		
R2	0.030	0.123	0.145	0.106	0.234	0.136		
Number of observations	122	122	122	122	122	122		
F(5, 85)[a]							2.88**	1.71

Dependent variable in the first six columns is the estimated return to schooling or return to experience from the associated quantile earnings function.
t-statistics corrected for clustering are in parentheses. Associated elasticities are in brackets.
[a]Joint test of changes in the five coefficients between the 90th and 10th quantiles, correcting for clustering

t-statistics corrected for clustering are in parentheses. ** p<0.05, * p<0.1

Figure 1: Histograms of estimated returns to schooling and to potential work experience across developing countries
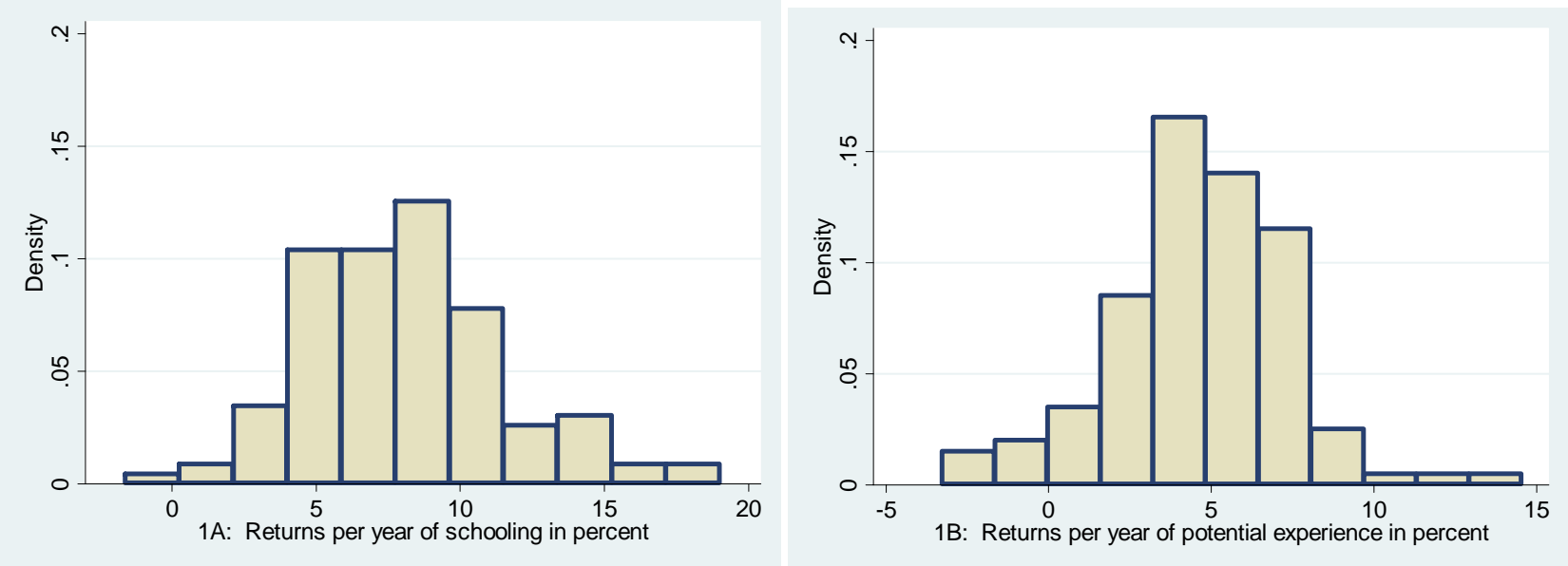
Source: Authors' calculations based on the coefficients from earnings function regressions applied to 122 household survey data sets covering 86 countries

Figure 2A: Returns to Schooling by Level of Development and Economic Freedom

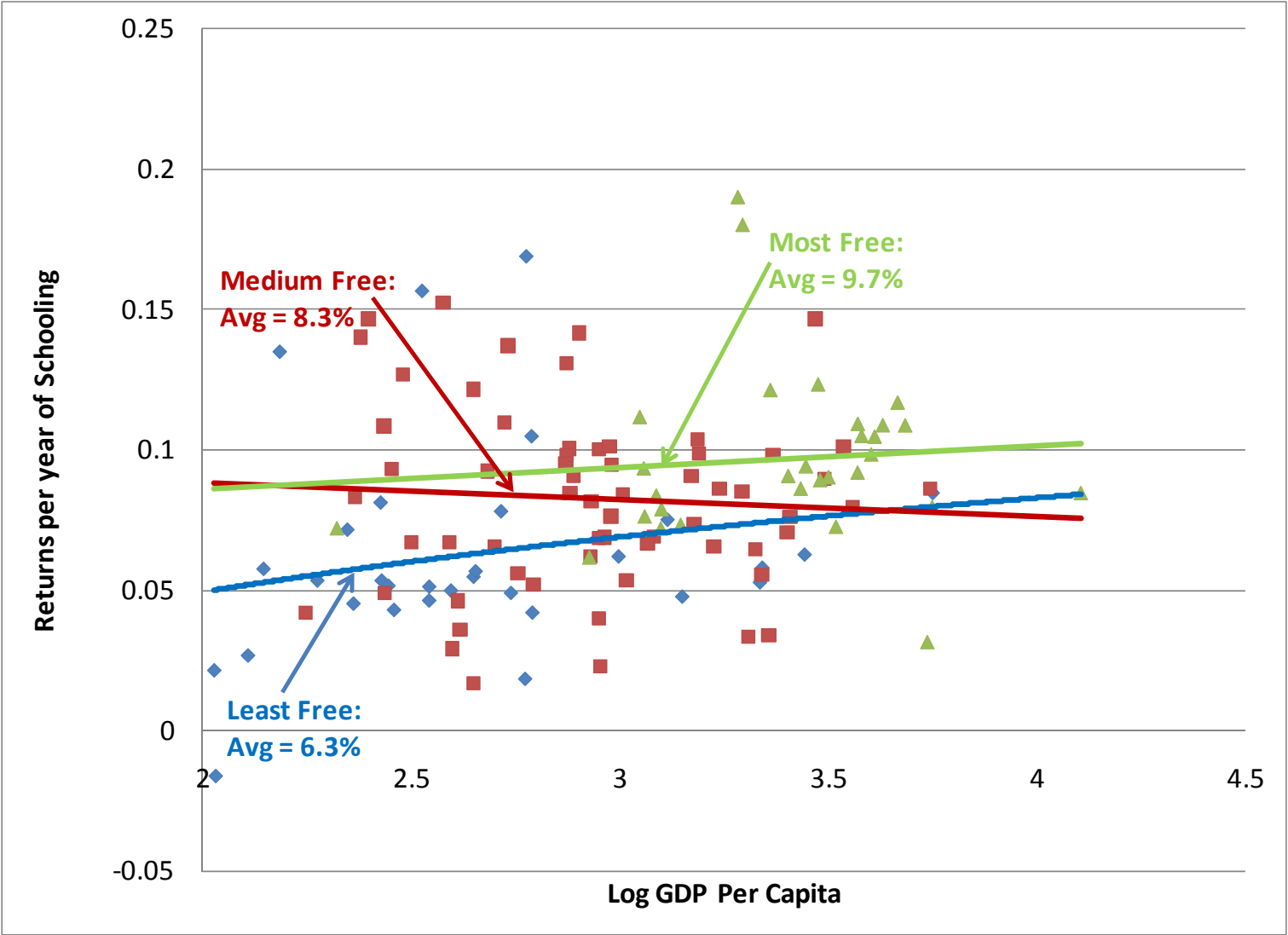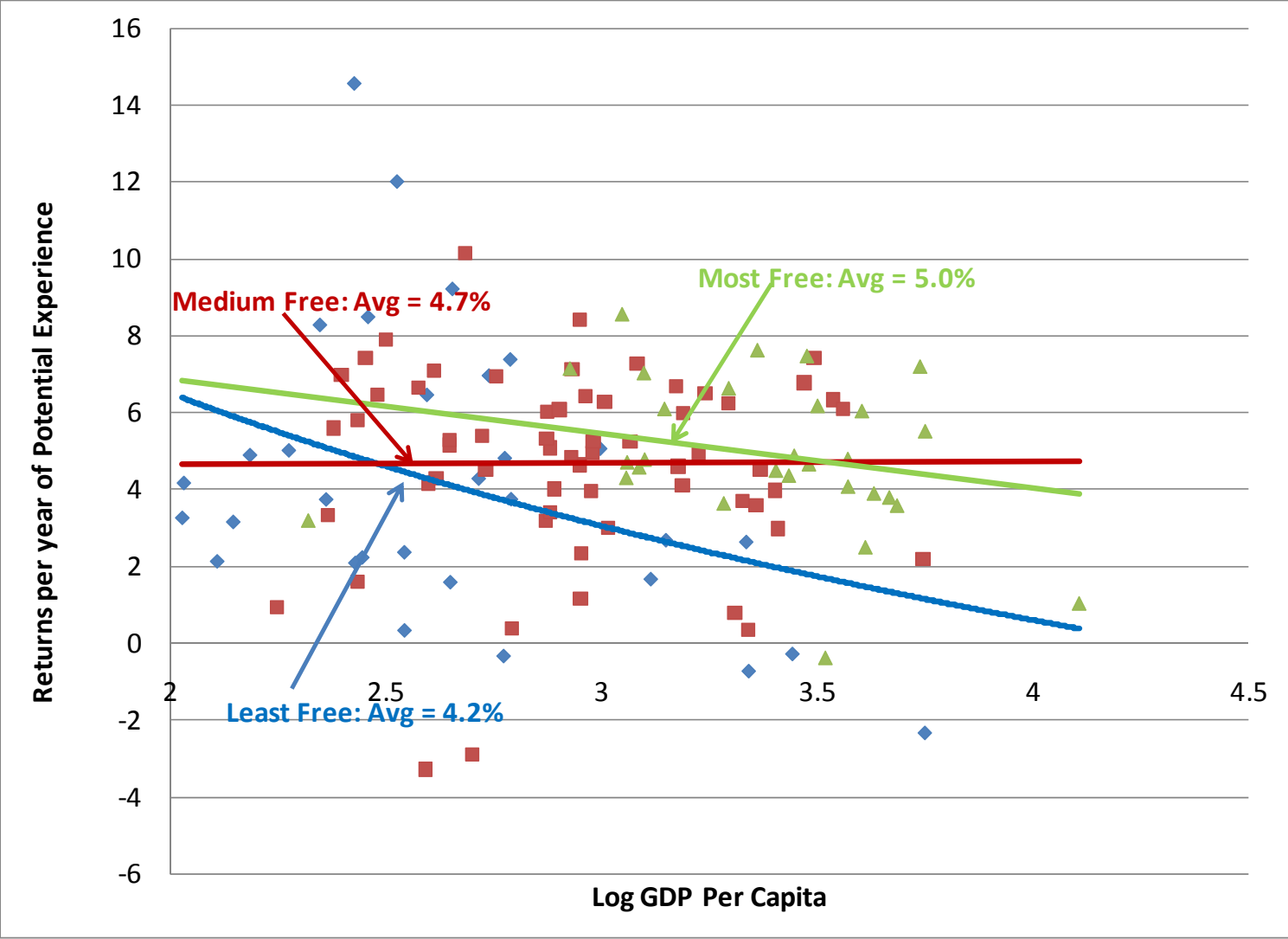**Figure 2B: Returns to Experience by Level of Development and Economic Freedom**

Appendix A. Picking indicators

Developing indices has become a growth industry. The review by the Quality of Government Institute (Teorell and others (2009)) listed 82 sources, most with multiple sub-indicators. The indexes are collected for different purposes and they measure different things. The indicators are quantitative, qualitative, objective, subjective, descriptive and abstract.

To narrow the set of indicators, we used the following criteria:

- The indicator had to be comprehensive in the number of countries included.
- The indicator had to use comparable data across countries to insure comparability.
- The indicator had to have been used consistently over a long time period to insure comparability across years.
- The indicator had to relate to measures of individual freedom, whether in the economic, political or social realm. The best measures related to whether there were constraints placed on individual choice that could force the individual to make suboptimal choices of where to live, where to work, whether to open a business, whom to associate with, what to produce or what to buy.
- We had to be able to understand the description of the indicator sufficiently to know what it measures and to replicate the measure if necessary. This became particularly important when there was a need to interpolate or extrapolate beyond the available data.

Our selection was greatly aided by the data compilation made available by the Quality of Government Institute. Our included measures were:

Economic Freedom: The Heritage Foundation Index of Economic Freedom is available from 1994-2006. We used the closest value to the year. The Index is the average of 9 subindexes, each of which varies between 0 (least free) to 100 (most free):

- Business Freedom: Rises with the ease of starting or closing a business;
- Trade Freedom: Rises as the levels of tariff and nontariff barriers are reduced;
- Fiscal Freedom: Increases as marginal tax rates on personal and corporate income and total taxes as a fraction of GDP fall;
- Freedom from Government: Rises as the importance of state-owned enterprises and government expenditure as a share of GDP are reduced;
- Monetary Freedom: Rises as inflation rates fall and as the imposition of price controls are reduced;
- Investment Freedom: Rises with quality of investment climate for both foreign and domestic investors;
- Financial Freedom: Rises as regulations on banking and other financial institutions are eased;
- Property Rights: Rises with legislation and enforcement that protect individual property;
- Freedom from Corruption: Rises with the country's score on Transparency International's Corruption Perception Index.

A Labor Freedom index was added recently, but we do not use it because of the lack of a long time series. The Empowerment rights include a measure of worker rights to organize.

There were 5 countries that were not covered by the Heritage Foundation Index. To correct for the missing data, we projected the Heritage Foundation measures on the 6 World Bank Governance Indicators: Voice and Accountability; Political Stability; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption (Kaufmann, Kraay, and Mastruzzi (2008)). We then used the projected values based on the 6 World Bank indicators to replace the missing Heritage values for the 5 countries.

Empowerment Rights: We used the Empowerment Index from Cingranelli and Richards (2005): Human Rights Dataset, 2005 The data are available for all countries from 1981-2004. For data sets of vintage 2005 or later, we used the 2004 data. The Index is composed of 5 subindexes:

- Freedom of Movement: Indicates the extent to which domestic or foreign travel is unrestricted;
- Freedom of speech: Indicates the extent that speech and the media is free from government censorship;
- Worker's Rights: Indicates the extent to which workers have the right to bargain collectively and that internationally recognized worker rights are protected;
- Political Participation: Indicates the extent to which political participation is free and open;
- Freedom of Religion: Indicates the extent to which the government allows free religious practices.

Globalization Index: Dreher (2006) developed the KOF Index of Globalization.which is available for most countries between 1970 and 2006. The index is a weighted average of Economic Globalization (based on trade and capital flows and restrictions on those flows); Political Globalization (based on participation in international organizations and embassies hosted); and Social Globalization (access to telephones, Internet, tourism and books within the country). We generated a predicted index for the 11 cases where the overall index was missing, using a regression of the KOF Index of Globalization on the Political Globalization subindex and the Heritage Foundation's Trade Freedom Index.

Life Expectancy at Birth. Available from the World Development Indicators, for all countries and for various years between 1960 and 2006. When an exact match of dates was not available, we used interpolations of preceding and subsequent year's data.

Democracy: Freedom House reports an Imputed Polity indicator between 1972 and 2007 for all countries. The measure ranges from 0-10 with 0 being least democratic and 10 being most democratic.

Percent women in legislature: The Inter-parliamentary union reports the percentage of women in the lower house of parliament for all countries between 1997 and 2008. Melander (2005) reports a similar series from 1965-2002 except that it is the percent of women in the upper house of parliament. To fill in the missing IPUW data, we regressed the IPUW series on Melander's series

for years when both observations were available. We then used the predicted IPUW values to replace missing values where needed.

Other data
Real GDP per Capita and the Growth rate of Real GDP per Capita were obtained from the United Nations Statistics Divisions' National Accounts.

Real Foreign Aid per Capita was generated by using the World Development Indicators Foreign Aid Series divided by country population obtained from the United Nations Statistics Divisions' National Accounts. The resulting series was then converted into constant U.S. dollars using the U.S. Department of Commerce GDP deflator.

Appendix Table A1: Sample Statistics

Variable	Mean	Std. DEV
Returns to Education		
Total	8.09	3.51
Male	7.28	3.32
Female	9.74	3.79
Urban	8.29	3.68
Rural	7.50	4.04
Returns to Experience		
Total	4.64	2.73
Male	4.60	2.95
Female	4.52	4.16
Urban	5.09	3.17
Rural	3.99	3.13
Economic Freedom Index	55.25	10.81
Globalization Index	51.79	12.72
Empowerment rights index	6.14	2.76
Democracy (Freedom House/Imputed Polity)	6.26	2.74
Women in the Legislature	11.79	8.02
log(Life Expectancy at Birth)	4.15	0.17
log(GDP per Capita)	6.86	1.03
Growth Rate: GDP per Capita (%)	3.18	5.00
log(Aid per Capita)	-1.43	1.37

Appendix Table A2: Correlation between Selection Corrected and Least Squares Returns to Schooling

Selection Corrected estimates	Least squares estimates				
	Total	Male	Female	Urban	Rural
Total	0.92				
Male		0.85			
Female			0.91		
Urban				0.89	
Rural					0.89

Based on 90 observations of 122 possible

Appendix B. An illustrative model of matching and returns to human capital

We turn to a variation of the Pissarides (2000) model of two-sided labor market search to show how more flexible market institutions, reflected in a more efficient mechanism matching firms to workers, raises returns to human capital. Other models can yield a similar prediction. For example, Murphy, Schleifer, and Vishny (1991) show that strong property rights, ease of firm entry, and larger markets will cause the most able to become entrepreneurs, simultaneously increasing overall growth and returns to skill. Rosen (1983) demonstrates that returns to specialized applications of skill to an activity increase as transaction costs fall and the size of the market increases. The common feature in these models is that more efficient gains from trade among agents create increasing returns to skill.

Let $q(\theta)$ be a matching function that defines the rate at which a vacant job is matched to an available unemployed worker. θ is a measure of labor market tightness: the ratio of job vacancies to unemployed workers. As θ gets larger, the number of vacancies rises relative to the number of unemployed available to fill the jobs. The probability that a given vacancy is filled falls as θ increases, and so $q'(\theta) < 0$. Job seekers of equal ability are randomly assigned to vacancies for which they qualify. The expected duration of a job remaining vacant is $1/q(\theta)$, and so jobs stay unfilled longer when the matching process is inefficient. In our framework, better market institutions would raise $q(\theta)$ at the same level of θ, and so good institutions yield matches faster at any given level of labor market tightness. In essence, the unemployed are sorted into available vacancies more efficiently, workers waste less time searching and more time working, and the overall level of production in the economy rises.

Job seekers are sorted into groups based on their exogenously given abilities, H. Each firm can only hire one worker and so jobs and firms are synonymous. Job vacancies and job seekers are indexed by a required minimum level of H. That level of human capital also defines the value of output produced by the firm. The firm faces a cost in filling a vacant job equal to cH, $c<1$, and so it is more expensive to fill jobs requiring greater skill.

Job Creation

A firm decides to create a job vacancy if it can do so profitably, and so in competitive markets, the expected profit from an additional vacancy must be zero. Let J be the present value from a filled job and V be the present value of an unfilled vacancy evaluated at the interest rate r. The zero expected profit condition requires that:

$$(1) \qquad rV = -cH + q(\theta)(J - V)$$

so that the stream of earnings expected from a vacancy is equal to the probability of filling the vacancy times the added return from a filled job net of the search costs. Competitive forces will drive V to zero, and so in equilibrium,

$$(2) \qquad J = \frac{cH}{q(\theta)}.$$

A filled job generates a stream of earnings such that:

$$(3) \qquad rJ = H - w - \lambda J$$

So that the value of the job reflects the value of output net of the wage, w, minus the expected loss of future revenue if the job disappears. The parameter λ is the random probability that the firm experiences an adverse shock large enough to drive the firm out of business. These shocks

could be due to a loss of productivity or to taste shifts that lower the value of output. Inserting (2) into (3) and rearranging yields what Pissarides calls the job creation condition:

$$w = H - \frac{(r + \lambda)cH}{q(\theta)}$$

(4)

which is similar to a standard derived demand for labor, save that the firm sets the wage equal to the value of the marginal product net of the expected hiring costs. Lower frictions in hiring as measured by a high value of $q(\theta)$ will increase the firm's pay offers. Economic or political institutions that make matching less efficient will lower firm demands for labor.

Wage Determination

Just as firms decide whether or not to offer a job vacancy, workers will decide whether to enter the labor market. Individuals have a value of time outside the labor market, $z = \rho w$ which we assume is proportional to the market wage. The parameter may reflect the nonmarket uses of time or it may be a policy parameter such as an unemployment insurance benefit which ties earnings outside the labor market to what can be earned while employed. If W and U are respectively, the present values of being employed and being unemployed, then the stream of returns from a job will be:

(5) $rW = w - \lambda(W - U)$,

where the returns include the probability of job loss in the event of an adverse shock. The stream of returns to unemployment will be:

(6) $rU = \rho w + \theta q(\theta)(W - U)$,

where $\theta q(\theta)$ turns out to be the rate of job entry from unemployment to employment.

The firm and the worker set the wage so as to maximize their weighted net return from the match. The worker's gain is $(W - U)$ and the firm's gain is $(J - V)$. The joint net gain from the match is $(W - U + J - V)$. The worker's share of the gain is defined as ψ. Therefore the net gain to the worker is:

(7) $W - U = \psi(W - U + J - V)$

Substituting in (2), (5) and the requirement that $V=0$ in equilibrium yields an equilibrium wage $w = (1 - \psi)rU + \psi H$. Inserting (2) and the requirement that $V=0$ into (7) allows us to derive a term for $(W - U)$ which when inserted into (6) generates $rU = \rho w + \theta \frac{\psi}{1 - \psi} cH$. Substituting this into the wage equation and rearranging yields the wage equation:

$$w = \frac{\psi H(1 + \theta c)}{1 - (1 - \psi)\rho}$$

(8)

Equilibrium

Equations (4) and (8) provide two equations in two unknowns, w and θ.[18] The job creation equation (4) is downward sloping in market tightness, θ, and the wage equation (8) is upward sloping in θ. The two equations generate unique equilibrium values of w and θ, as illustrated in Figure 1A. Inserting (8) into (4) yields an implicit function in θ:

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[18] In the Pissarides (2000) formulation, a third equation fixes the unemployment rate, but it turns out that when nonmarket time is proportional to the market wage, unemployment does not enter either the equilibrium job creation or the wage equations.

$$1 - \frac{\psi(1 + c\theta)}{1 - (1 - \psi)\rho} - \frac{(r + \lambda)c}{q(\theta)} = 0$$

(9)
     Equation (9) implies that the equilibrium value for θ is fixed by $\theta^*(r, \lambda, c, \psi, \rho)$ which is independent of skill. Therefore, the degree of job market tightness does not depend on the distribution of skills in the economy. Instead, equilibrium job market tightness θ^* decreases at higher interest rates, exposure to adverse shocks, higher search costs, higher value of nonmarket time, and higher labor share of match rents.

     Countries with better matching mechanisms, say from institutions that improve information flows in the economy, will have higher values of $q(\theta^*)$ at any level of labor market tightness, θ^*. This shifts the job creation curve outward, but it does not affect the wage equation.[19] As shown in Figure 1A, the outward shift in job creation caused by a more efficient match mechanism raises both equilibrium wage and market tightness. Because the outward shift in the job creation curve is larger for workers with greater skill, the most skilled benefit most from better matching mechanisms in the labor market. If education or on-the-job training are positively correlated with the exogenous skill H, then we will observe higher returns to education or experience in economies with institutions that generate better matching mechanisms.

Figure Appendix-B1: Equilibrium wages and market tightness
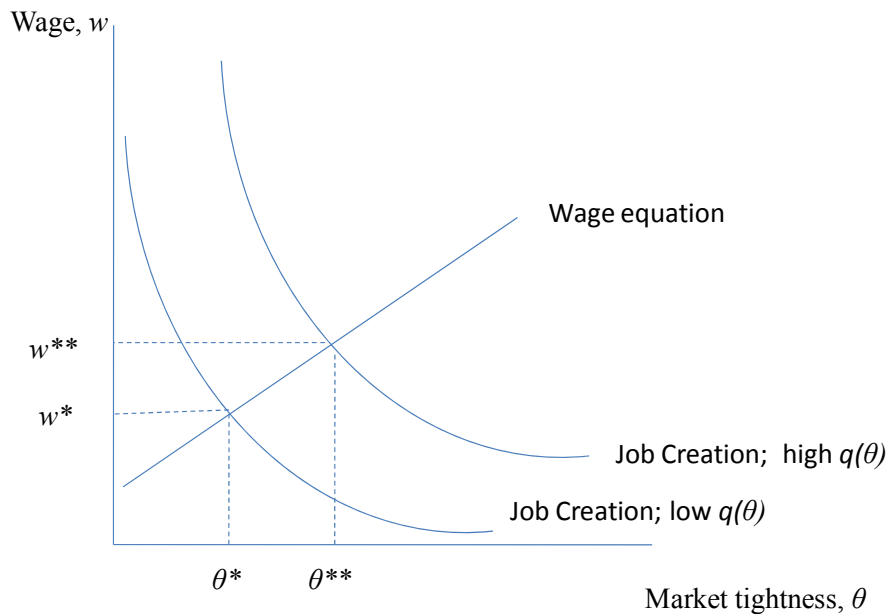
Job Creation: $w = H - \frac{(r + \lambda)cH}{q(\theta)}$ Wage equation: $w - \frac{\psi H(1 + \theta c)}{1 - (1 - \psi)\rho}$

---

[19] It turns out that in markets with more efficient match mechanisms, filled jobs generate lower rents even as they increase the speed at which vacancies are filled, and so the worker's present value of time spent searching does not vary with $q(\theta^*)$. As a result, worker incentives to accept wages are unaffected by $q(\theta^*)$.

Appendix C. Returns to education and experience

The estimated returns to education and experience used in the cross-country regressions were derived from Montenegro and Patrinos (2009). They use an earnings function where the natural logarithm of earnings (hourly, weekly, monthly, etc.) is a function of schooling and experience in the labor market. The specification they use is the following:

$$LnW_i = a + \beta_1 S_i + \beta_2 X_i + \beta_3 X^2{}_i + +\beta_4 DG_i + \sum_j \delta P_{ji} + \mu_i$$

where LnW is the natural log (of hourly or annual, depending on data) earnings for the ith individual; S_i is years of schooling (as a continuous variable); X_i is labor market experience (estimated as: age$_i$ - S$_i$ - 6); X$_i^2$ is experience-squared; DG$_i$ is a dummy variable that takes the value 1 for females; $\sum_j \delta P_{ji}$ is a set of control dummy variables (P$_j$) to take into account the periodicity of the earnings; and μ_i is a random disturbance term reflecting unobserved abilities. Therefore, β_1 can be viewed as the average rate of return to years of schooling and $\beta_2 - 2\beta_3 \overline{X}$ as the average rate of returns to years of experience.

Montenegro and Patrinos (2009) estimated this Mincerian specification equation for men and women jointly and separately, and also for urban versus rural. Their sample includes all workers 14-65 years of age with positive employment earnings, and positive labor market experience. Their estimates include all the countries with appropriate information that were available in the sample described in detail in Montenegro and Hirn (2008).

Appendix Table C1 presents the Montenegro and Patrinos (2009) calculations:

Appendix Table C1: Country household data sets used in the analysis including year, returns to education and experience for the total sample and by demographic group, and sample size

Country	year	Returns to Education total sample	male	female	urban	rural	Returns to Experience total sample	male	female	urban	rural	Sample size (*)
East Asia and the Pacific (EAP)												
Cambodia	1997	4.23	1.70	7.14	4.77	4.08	0.94	0.64	1.90	6.75	-2.21	215
Cambodia	2004	4.92	3.29	6.97	3.80	5.81	1.60	4.51	0.10	0.85	2.49	6375
Indonesia	2002	10.12	8.61	12.55	10.54	9.14	3.97	4.82	2.80	4.19	3.69	109581
Micronesia	2000	10.38	10.49	10.09	10.38	n.a.	4.10	3.23	6.22	4.10	n.a.	12265
Mongolia	2002	5.23	5.37	5.29	5.90	2.99	0.39	1.03	-0.53	0.84	-1.07	2623
Philippines	1998	13.08	10.37	17.17	12.68	13.65	5.32	5.98	3.86	4.57	6.28	34426
Philippines	2002	14.17	11.49	17.78	13.67	14.85	6.08	6.70	4.93	5.63	6.71	34022
Thailand	2002	12.12	11.46	12.41	10.87	13.14	7.63	7.26	7.92	6.83	8.03	28174
Thailand	2006	9.41	8.93	9.73	9.35	9.35	4.88	4.65	5.17	4.01	5.34	32426
Timor-Leste	2001	5.33	5.31	4.65	6.30	4.00	2.09	0.56	2.01	5.32	-1.97	439
Vietnam	1992	-1.62	-1.88	-1.28	-1.00	-2.60	4.17	3.92	4.91	4.93	3.97	1590
Vietnam	2002	5.34	4.35	6.76	5.10	5.33	5.02	5.12	4.70	6.21	5.16	19903
MEAN EAP:		7.72	6.62	9.10	7.70	7.25	3.85	4.03	3.67	4.52	3.31	
Europe and Central Asia (ECA)												
Albania	2002	4.01	3.11	6.43	5.36	1.03	1.16	0.89	-0.03	1.25	1.25	2204
Albania	2005	5.37	4.51	7.80	6.60	2.52	3.00	1.75	3.52	2.72	4.30	3158
Armenia	1999	1.71	0.78	2.58	1.74	0.71	5.16	6.20	2.35	5.65	4.32	3004
Azerbaijan	1995	5.12	4.41	6.75	3.40	7.39	0.34	-0.39	0.01	1.35	0.17	1015
Bosnia and Herzegovina	2001	8.45	6.60	11.92	10.19	7.60	-2.33	-2.41	-3.81	-0.52	-2.91	3474
Bulgaria	1995	5.27	5.08	5.45	5.53	3.91	2.64	2.44	2.89	2.75	2.05	1647
Bulgaria	2001	3.42	3.15	3.66	3.29	3.90	3.60	4.48	2.40	4.47	1.20	1758
Bulgaria	2003	7.64	7.71	7.58	8.15	5.65	2.99	2.44	3.37	3.71	1.39	2475
Croatia	2004	8.64	7.78	9.54	8.93	8.06	2.19	2.79	1.03	2.46	1.80	4463
Hungary	2004	11.68	12.02	11.37	12.17	10.58	3.80	3.39	3.80	3.35	4.48	5132
Kyrgyzstan	1997	5.75	5.81	5.64	3.89	7.94	3.16	2.44	3.25	3.86	1.99	2114
Latvia	2004	7.25	6.44	7.94	7.25	n.a.	-0.37	-0.40	-0.57	-0.37	n.a.	2085
Macedonia	2005	5.58	4.78	6.78	6.50	3.54	0.35	0.18	0.38	0.90	-0.39	10356
Moldova	2002	6.71	6.62	6.82	6.00	8.63	-3.28	-2.87	-3.61	-4.51	-1.72	2859
Moldova	2005	6.57	6.33	6.79	6.01	7.42	-2.90	-3.29	-2.46	-1.12	-4.96	983
Romania	1994	4.76	4.37	5.39	5.01	3.99	2.68	2.29	2.92	2.85	2.42	19360
Russian Federation	2003	8.97	7.98	9.74	8.03	13.11	7.41	7.22	7.64	8.25	-0.49	28228
Serbia and Montenegro	2002	5.79	4.47	7.27	5.79	n.a.	-0.72	-0.57	-0.81	-0.72	n.a.	596
Serbia and Montenegro	2006	6.26	5.14	7.66	6.26	n.a.	-0.27	0.85	-1.60	-0.27	n.a.	694
Slovakia	2003	9.18	8.81	9.41	10.68	9.08	4.79	4.53	4.87	4.25	4.78	18928
Tajikistan	2003	4.51	3.18	6.61	3.64	5.21	3.74	3.84	2.36	3.16	3.46	4018
Turkey	2005	7.95	7.22	10.30	8.01	7.53	6.10	6.72	3.89	6.27	5.45	71799
Turkmenistan	1998	5.47	4.16	7.79	5.20	5.98	1.59	0.91	1.84	1.69	1.20	2379
MEAN ECA:		6.35	5.67	7.44	6.42	6.19	1.95	1.89	1.46	2.24	1.49	
Latin America and the Caribbean (LAC):												
Argentina	1994	7.95	7.76	8.42	7.95	n.a.	5.52	5.12	5.24	5.52	n.a.	15190
Argentina	2001	3.13	2.98	3.38	3.13	n.a.	7.20	7.88	5.88	7.20	n.a.	18228
Belize	1995	9.83	8.37	12.40	8.75	9.84	4.50	5.75	1.50	1.29	5.49	641
Bolivia	2002	6.15	5.33	7.52	6.50	4.06	7.15	6.93	7.15	7.37	5.83	3181
Bolivia	2005	6.86	6.18	8.07	7.25	4.88	4.65	4.32	4.12	4.41	5.37	2384
Chile	1990	9.06	9.16	8.94	9.49	6.43	4.50	4.88	3.71	4.87	2.77	24513
Chile	1996	10.92	11.03	10.75	11.34	6.98	4.08	4.35	3.30	4.43	1.79	32989
Chile	2003	10.87	10.83	11.02	11.05	8.76	3.90	4.22	3.05	4.08	2.51	58113
Chile	2006	10.86	10.46	11.75	11.17	7.96	3.58	3.79	3.09	3.72	2.17	66014
Colombia	1995	9.87	7.84	12.53	10.75	6.89	5.99	5.42	7.09	6.85	3.66	26538
Colombia	2000	9.09	8.04	10.54	9.37	8.64	6.70	6.81	6.21	6.44	6.88	24127
Costa Rica	1995	8.61	7.74	10.29	8.89	8.10	4.36	4.38	4.43	5.49	3.59	26538
Costa Rica	2001	8.91	7.73	10.83	9.13	8.42	4.66	4.54	4.73	5.06	4.10	9328
Dominican Republic	1997	6.58	5.70	7.77	6.93	5.55	4.92	4.71	5.53	5.53	3.43	3024
Dominican Republic	2004	8.52	7.57	9.52	8.98	7.15	6.24	7.20	4.60	6.27	5.91	6426
Ecuador	1995	6.68	5.99	8.32	7.05	4.59	5.26	4.98	4.49	5.57	3.76	3975
El Salvador	1995	7.62	5.95	9.68	7.83	6.35	4.71	4.19	5.67	5.80	3.27	7424
El Salvador	2002	8.36	6.75	10.32	8.83	6.53	4.58	3.75	5.57	4.99	4.01	12760

Appendix Table C1: Country household data sets used in the analysis including year, returns to education and experience for the total sample and by demographic group, and sample size
(continued)

Country	year	Returns to Education					Returns to Experience					Sample
		total sample	male	female	urban	rural	total sample	male	female	urban	rural	size (*)
El Salvador	2005	7.87	6.48	9.64	8.09	6.90	4.78	4.85	4.41	5.05	4.71	13750
Guatemala	1989	10.06	8.46	13.10	10.26	9.29	5.08	4.78	5.23	5.85	4.25	7451
Guatemala	2002	6.90	7.86	5.08	7.19	5.64	6.44	4.92	10.65	7.55	5.54	2438
Guatemala	2006	9.48	8.82	10.70	9.83	8.35	5.26	4.70	6.23	5.63	4.86	11579
Guyana	1992	4.19	3.57	5.70	8.47	1.03	3.75	2.59	4.83	4.16	4.29	1081
Haiti	2001	8.11	6.38	10.89	5.42	18.59	14.55	10.58	36.43	20.15	-0.78	519
Honduras	1995	9.10	8.16	10.85	8.68	9.47	4.02	3.48	5.52	3.91	4.01	5274
Honduras	2003	6.22	5.96	6.16	5.72	6.99	4.83	3.35	7.22	5.98	3.20	6047
Jamaica	1996	18.02	14.30	21.47	20.25	16.17	6.63	11.18	0.33	5.84	7.23	726
Jamaica	2002	19.01	16.12	20.37	20.66	17.60	3.64	8.02	-1.39	2.26	4.58	2107
Mexico	1998	10.13	9.46	11.47	10.27	8.28	6.34	6.70	5.42	6.68	5.09	10219
Mexico	2006	9.83	8.66	11.68	9.82	9.56	6.04	5.95	5.45	6.33	4.72	21658
Nicaragua	1993	10.47	12.29	7.90	9.06	14.19	7.38	10.53	0.35	10.51	3.04	2875
Nicaragua	2001	8.49	7.79	9.66	9.18	6.02	3.40	2.93	4.31	3.25	3.89	3715
Paraguay	1995	9.33	9.17	9.69	9.52	8.17	4.31	5.09	3.08	4.49	3.93	3648
Paraguay	2001	8.42	7.74	9.20	8.66	7.59	6.29	6.74	4.84	6.02	7.12	6212
Peru	1994	7.37	6.44	9.26	7.30	7.48	4.61	4.35	5.55	4.72	4.91	2516
Peru	2002	8.63	7.07	10.68	9.15	7.52	6.50	6.11	7.57	6.54	6.13	13082
Suriname	2001	7.50	6.53	8.73	7.50	n.a.	1.67	0.40	4.22	1.67	n.a.	433
Uruguay	1995	9.01	7.92	10.39	9.01	n.a.	6.18	6.24	5.59	6.18	n.a.	18437
Uruguay	2003	12.32	10.46	14.49	12.32	n.a.	7.47	8.20	6.09	7.47	n.a.	14652
Uruguay	2006	10.49	8.79	12.20	10.53	8.47	6.69	7.05	6.00	6.80	5.31	68582
Venezuela	1995	7.06	6.47	8.14	7.36	6.51	3.99	3.92	3.96	3.89	4.12	17966
MEAN LAC:		**8.97**	**8.06**	**10.23**	**9.24**	**8.19**	**5.42**	**5.51**	**5.54**	**5.75**	**4.30**	
Middle East and North Africa (MENA)												
Djibouti	1996	9.83	8.52	12.37	9.89	6.70	6.03	7.37	1.96	6.01	7.88	1418
Egypt	1998	2.32	2.13	2.95	2.73	1.58	2.34	2.54	-0.24	1.72	3.75	4529
Iraq	2006	1.83	1.43	5.97	2.06	1.43	-0.33	-1.40	4.57	1.05	-3.01	4815
Jordan	2002	7.31	6.94	10.05	7.69	5.74	6.10	6.11	4.54	6.15	5.62	11001
Morocco	1991	6.94	6.17	9.79	7.30	2.81	7.28	6.23	8.67	8.58	6.35	1990
Morocco	1998	7.18	6.27	10.27	7.11	5.00	7.03	7.46	4.45	7.69	7.58	3910
Tunisia	2001	6.47	6.40	6.43	6.46	6.28	3.70	3.84	3.70	3.58	4.88	23892
Yemen	2005	2.94	2.69	6.06	3.72	2.28	4.17	3.76	7.41	5.80	3.31	10392
MEAN MENA:		**5.60**	**5.07**	**7.99**	**5.87**	**3.98**	**4.54**	**4.49**	**4.38**	**5.07**	**4.55**	
Other High Income												
Bahamas	2001	8.45	7.35	9.22	7.32	9.80	1.04	-3.13	3.31	-1.56	4.20	470
South Asia (SAS)												
Bangladesh	2000	4.63	4.31	10.30	6.02	3.67	2.37	2.72	1.16	3.74	1.79	3433
Bangladesh	2005	3.60	3.04	6.59	3.81	3.17	4.28	4.90	4.70	5.63	3.83	6541
India	1999	7.80	7.61	8.26	8.23	7.20	4.28	4.73	3.48	6.17	3.79	82951
Maldives	2004	3.37	2.46	5.31	5.10	1.76	0.81	1.16	-0.11	-0.47	2.12	1173
Nepal	2003	5.15	4.88	6.98	0.82	6.30	2.23	3.50	-0.05	2.87	2.13	485
Pakistan	1991	11.00	10.77	13.58	10.30	11.56	5.39	5.76	1.55	7.62	4.34	3624
Pakistan	2001	5.60	4.46	10.68	5.75	5.10	6.95	6.96	5.90	8.46	5.62	12500
Sri Lanka	2002	9.54	9.06	10.25	9.86	9.44	3.19	4.01	1.58	3.96	3.09	16605
MEAN SAS:		**6.34**	**5.82**	**8.99**	**6.24**	**6.03**	**3.69**	**4.22**	**2.28**	**4.75**	**3.34**	
Sub-Saharan Africa (SSA)												
Burkina Faso	2003	9.25	8.52	12.42	9.44	8.94	10.15	9.90	8.17	10.48	9.60	1605
Burundi	1998	13.48	13.45	15.00	12.95	14.04	4.89	3.09	6.47	5.36	4.68	2395
Cameroon	2001	10.02	9.27	13.31	10.40	9.56	8.42	7.02	10.91	6.45	10.79	2166
Cameroon	2007	7.65	7.30	9.27	8.25	5.15	4.95	4.68	3.59	5.49	2.53	3186
Chad	2002	4.29	3.89	7.91	4.33	4.15	8.49	8.71	9.95	9.64	6.81	1157
Comoros	2004	4.98	3.97	8.64	5.93	3.94	6.46	6.07	9.44	3.49	8.28	875
Congo, Dem. Rep.	2005	2.14	1.52	4.82	7.22	-2.63	3.26	2.59	2.89	3.86	2.86	2050
Cote d'Ivoire	2002	8.16	7.80	9.79	7.90	9.16	7.13	4.97	10.44	8.59	5.37	2789
Ethiopia	2005	14.02	12.76	15.67	12.73	15.67	5.60	5.91	4.24	7.48	4.19	21829

Appendix Table C1: Country household data sets used in the analysis including year, returns to education and experience for the total sample and by demographic group, and sample size (continued)

Country	year	Returns to Education					Returns to Experience					Sample size (*)
		total sample	male	female	urban	rural	total sample	male	female	urban	rural	
Gambia	1998	6.71	5.88	8.86	7.03	3.00	7.90	7.09	8.86	7.70	8.28	665
Ghana	1991	4.63	3.40	6.70	5.90	3.82	7.10	7.94	5.58	6.62	7.53	3399
Ghana	2005	13.71	12.87	16.23	14.32	12.45	4.51	4.05	4.03	5.47	2.84	2122
Kenya	2005	12.16	11.43	13.76	12.91	11.61	5.29	5.17	3.55	5.78	5.08	6012
Madagascar	2001	8.35	7.93	8.88	8.70	7.94	3.34	4.63	2.23	5.16	2.02	2837
Malawi	2005	10.86	10.45	12.66	16.22	7.71	5.81	5.69	8.77	5.00	6.62	1862
Mauritania	2000	4.89	4.07	9.18	4.12	8.92	6.96	6.61	5.51	8.03	1.78	1703
Mozambique	1996	7.15	6.66	10.14	7.44	6.41	8.28	8.07	7.34	7.77	8.87	1899
Niger	2002	9.33	8.68	13.05	8.20	9.50	7.43	5.87	8.93	6.05	7.70	822
Nigeria	2003	5.67	5.26	7.14	5.46	6.21	9.21	8.25	9.52	8.57	10.50	2119
Rwanda	1997	15.65	13.65	17.87	12.19	17.17	12.00	13.88	10.18	17.45	9.01	1755
Rwanda	2005	15.24	14.41	16.62	17.44	12.97	6.66	8.53	4.56	10.28	5.17	4044
Sao Tome and Principe	2000	6.19	4.50	9.29	7.36	4.10	5.06	5.48	3.58	4.21	6.16	1789
Sierra Leone	2003	2.67	2.57	3.72	1.81	5.63	2.13	0.26	6.39	4.35	-8.84	468
South Africa	2000	14.67	12.53	17.43	16.11	11.77	6.78	6.81	6.88	5.69	9.29	18792
Swaziland	2000	11.16	9.64	14.24	11.54	10.71	8.56	9.99	6.78	8.41	9.44	1975
Tanzania	2006	14.67	13.67	17.12	13.30	15.85	6.98	5.67	7.81	6.77	7.54	4413
Uganda	1992	7.19	6.96	7.59	7.91	6.51	3.20	2.36	2.76	5.45	2.03	3469
Uganda	2002	12.69	11.66	14.92	13.90	11.84	6.46	6.22	6.98	7.55	5.44	2700
Zimbabwe	2003	16.88	16.33	18.56	17.79	14.46	4.82	3.55	5.82	5.45	2.75	4012
MEAN SSA:		9.46	8.66	11.75	9.96	8.85	6.48	6.17	6.63	6.99	5.67	

(*) Note: The sample sizes correspond to the estimations when using the total sample.

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SDT 320

ECONOMIC FREEDOM, HUMAN RIGHTS AND THE RETURNS TO HUMAN CAPITAL: AN EVALUATION OF THE SCHULTZ HYPOTHESIS

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Santiago, julio 2010