# What Have We Learned from the Measurement of Economic Freedom?

James Gwartney and Robert Lawson

> *When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind.*
>
> —Lord Kelvin, 1883

Milton Friedman is the godfather of the Economic Freedom of the World (EFW) project. Michael Walker of the Fraser Institute traces the origins of the project to the 1984 session of the annual meeting of the Mont Pelerin Society. In responding to the paper presented by the historian Paul Johnson, Walker quoted the following passage from one of Friedman's classic works, *Capitalism and Freedom*:

> [H]istorical evidence speaks with a single voice on the relation between political freedom and a free market. I know of no example in time or place of a society that has been marked by a large measure of political freedom, and that has not also used something comparable to a free market to organize the bulk of economic activity.

This quotation led to a rather heated discussion about the distinction between political and economic freedom. Over lunch following the session, Mike Walker convinced Milton and Rose Friedman to cohost a conference on this topic and soon thereafter persuaded Neil McLeod of the Liberty Fund of Indianapolis, Indiana, to provide the necessary funding. Walker recognized that Milton's participation in the project would make it possible to recruit a number of the world's finest minds to participate. He was right. Lord Peter Bauer, Gary Becker, Douglass C. North, Armen Alchain, Arnold Harberger, Alvin Rabushka,

Gordon Tullock, and Sir Alan Walters were among the early participants. The initial meeting led to a series of conferences between 1988 and 1994 that focused on the development of a clear definition of economic freedom and presentations concerning how it might be measured. The Economic Freedom of the World measure is a direct result of these conferences.

While I was not among those participating in the first two conferences, I read the proceedings of those sessions and began attending with the third of what eventually became a series of six meetings.[1] Participants looked to Milton for direction, and he certainly provided it. Two things made a vivid impression on me. First, Milton was convinced that despite the complex and multidimensional nature of economic freedom, it could be measured. Moreover, it was important to do so. He told conference participants that social scientists at the University of Chicago often argued, "If you can't measure it, measure it anyway." This view reflects the 1883 quotation from Lord Kelvin that opens this paper. Milton's position provided inspiration that a reasonably good measure of economic freedom could be developed.

Second, both Milton and Rose were constantly reminding us that our goal was the development of a scientific instrument that could be used to quantify the degree of economic freedom across a large number of countries. To the fullest extent possible, the measure needed to be based on objective data. We did not want our subjective views to influence the rating of any country. We wanted to develop an index that others could replicate and that even those who disagreed with us would utilize as a research tool.

## CHARACTERISTICS OF THE EFW INDEX

The foundation of the EFW index is the proposition that individuals own themselves; they are not owned by the government. Because of this self-ownership, the protection of individuals and their property against aggression by others is the core of economic freedom. Of course, ownership also implies the right to enter markets and exchange goods and services with others at mutually agreeable terms. Thus, the four cornerstones of economic freedom are (1) private ownership, (2) personal choice, (3) voluntary exchange, and (4) free entry into markets. The EFW index is designed to measure the degree to which a nation's institutions and policies are consistent with these four cornerstones.

Initially, the EFW index was based on seventeen quantifiable components like government expenditures as a share of GDP (see Gwartney, Lawson, and Block 1996). This focus on objectively quantifiable variables led to a problem: Important legal and regulatory elements that influence economic freedom were omitted from the index. To correct this deficiency, additional components based on survey data were added to the index during 1997–2000.[2] As seen in the appendix to this article, the index now contains thirty-eight components (and

subcomponents) that are divided into five major areas: (1) size of government, (2) legal structure and security of property rights, (3) access to sound money, (4) freedom to exchange with foreigners, and (5) regulation of credit, labor, and business. Country ratings for each of the thirty-eight components are derived on a zero-to-ten scale and then used to derive the summary and area ratings for the 123 countries covered by the index.[3] The EFW data are available for approximately 100 countries continuously (at five-year intervals) throughout 1980–2001.[4] Ratings are available for a smaller set of countries as far back as 1970. For additional details on how the components are transformed to a zero-to-ten scale and used to derive the area and summary ratings, see Gwartney and Lawson (2003) or the web site www.freetheworld.com.

For a country to achieve a high EFW rating, its government must do some things while refraining from others. Perhaps most important, the country's legal institutions must protect the property rights of owners and provide for the even-handed enforcement of contracts. Citizens must also be provided with access to sound money. This may be done by either following monetary policies that keep inflation at a low and steady rate or by removing obstacles that limit the use of alternative currencies. Like poorly defined property rights, polluted money retards voluntary exchange and thereby the exercise of economic freedom. But governments must refrain from other activities. When government spending, taxes, and regulations restrict exchange, limit entry into markets, and substitute regulations and mandates for private contracts, governments are limiting the economic freedom of their citizens.

In their best-selling book *Free to Choose*, the legacy of which is the focus of this conference, Milton and Rose Friedman proposed a number of amendments to the U.S. Constitution designed to preserve the economic liberty of Americans. These amendments included (1) a tax-spending limitation, (2) prohibition of duties on both imports and exports, (3) no price controls on either prices or wages, (4) no government licenses restricting entry into occupations and businesses, (5) the requirement that all direct taxes be levied at a flat rate, and (6) a money supply growth rule and inflation protection amendment designed to ensure that citizens have access to sound money. While the EFW index understandably provides more detail, it clearly reflects the same concept of economic freedom as that outlined by the Friedmans in their proposed economic bill of rights.[5]

## WHAT HAVE WE LEARNED FROM THE EFW PROJECT?

Since the time of Adam Smith, market economy supporters have argued that countries that rely more heavily on markets to organize economic activity will grow more rapidly and achieve higher income levels than their more politically driven counterparts. Is this proposition really true? Without a comprehen-

sive measure of economic freedom, the answer to this question is problematic.

When analyzing issues of growth and income levels, it is important to focus on a lengthy period of time. Short-term fluctuations in growth rates will be influenced by a number of factors, such as business cycle conditions and changes in the world price of important import or export items. In the short run, these largely random factors may dominate and conceal the strength of the relationship between economic freedom and growth. Moreover, credibility will influence the response to a policy change. Before decisionmakers will be willing to make major behavioral changes, they must be convinced that the change in policy direction is permanent rather than temporary. Furthermore, it will take time for information to be transmitted and markets to adjust fully to a new economic environment. Thus, the primary response to a policy change will often be delayed, and the full response will almost always be greater in the long run than in the short run.

Because the EFW data are both comprehensive and available over a lengthy time period, they are particularly suitable for the systematic analysis of cross-country differences in income levels and the long-run growth process. Using a database of the ninety-nine countries for which the EFW ratings were continuously available at five-year intervals during 1980–2000, the following tables summarize seven of the most important findings of this research.[6] The appendix at the end of this article contains variable definitions and sources as well as descriptive statistics for help in interpreting the table data.

## 1. The maintenance over a lengthy period of time of institutions and policies consistent with economic freedom is a major determinant of current cross-country differences in per capita GDP.

The mean EFW rating over the two decades of 1980–2000 provides a measure of long-term institutional quality. To achieve a high mean rating, a country would have to follow policies largely consistent with economic freedom throughout the lengthy period. Similarly, a low mean rating would be indicative of long-term policies inconsistent with economic freedom. As Table 1 shows (Equation 1), cross-country differences in the mean EFW rating during 1980–2000 explain 63.2 percent of the cross-country variation in 2000 per capita GDP.[7] When the percentage of a country's population residing in the tropics (a variable popularized by Jeffrey Sachs) is added to the model (Equation 2), the explanatory power increases to 75.1 percent. Clearly, long-term differences in institutional quality exert an enormous impact on per capita income levels.

## 2. An institutional and policy environment consistent with economic freedom is a key determinant of investment.

Table 2 shows the relationship between long-term economic freedom and various measures of investment after the effects of location, geography, and ini-

tial income level are taken into account. As Equation 1 shows, a one-unit increase in the mean EFW rating during 1980–2000 was associated with a $1,281 (1995 U.S. dollars) increase in annual real investment per worker during the two decades.

The investment per worker figures of Equation 1 include both private sector and public sector investment. Foreign direct investment (FDI) per worker provides an alternative measure that will be almost entirely reflective of private investment flows. Furthermore, the FDI figures will reflect the attractiveness of a country's investment climate to those residing outside of the country. As Equation 2 (Table 2) shows, economic freedom exerts a positive and significant impact on the inflow of foreign investment. A one-unit increase in EFW was associated with a $546 increase in annual FDI per worker during 1980–2000. A higher initial income level was associated with more foreign investment per worker, but the geographical variables did not exert a significant impact on FDI.

Equation 3 (Table 2) illustrates the impact of EFW on investment as a share of GDP (I/GDP). Once again, the EFW rating is positive and statistically significant. Other things constant, a one-unit increase in long-term EFW enhances investment as a share of GDP by 2.16 percentage points. Equation 4 (Table 2) considers the impact of economic freedom on the growth of capital per worker. Again, the impact is positive and significant. A one-unit increase in a country's mean EFW rating during 1980–2000 enhanced the annual growth rate of physical capital per worker by an estimated 1.24 percentage points.

Taken as a group, the regressions of Table 2 indicate that a country's insti-

Table 1

## Economic Freedom and Cross-Country Differences in GDP per Capita

Dependent Variable: GDP per Capita, 2000
(*t*-ratio in parentheses)

| Independent Variables | (1) | (2) |
|---|---|---|
| EFW rating, 1980–2000 | 651 | 529 |
| | (13.00) | (11.91) |
| Tropics | | –8,472 |
| | | (7.03) |
| Intercept | –11,183 | –2,575 |
| $R^2$ (adjusted) | 63.2 | 75.1 |
| Number of countries | 99 | 99 |

tutional environment exerts a strong impact on capital formation. Countries that adopt policies and institutions that are consistent with economic freedom will have higher rates of capital formation, while countries that adopt unsound institutions will find that capital will flow elsewhere.

## 3. Economic freedom not only exerts an impact on the level of investment, it also influences growth by improving the productivity of investment.

Table 3 illustrates this point. The dependent variable in Table 3 is the growth of per capita GDP during 1980–2000. As Equation 1 shows, investment as a share of GDP exerts a highly significant positive impact on long-term growth. Equation 2 (Table 3) interacts the investment variable with economic freedom. The first independent variable multiplies I/GDP by one if a nation's

Table 2

Economic Freedom, Geography, and Location as Determinants of Investment

|  | Dependent Variable (*t*-ratio in parentheses) | | | |
|---|---|---|---|---|
|  | Investment per Worker (US$), 1980–2000 | FDI per Worker (US$), 1980–2000 | I/GDP, 1980–2000 | Growth of Kpw, 1980–1999 |
| **Independent Variables** | **(1)** | **(2)** | **(3)** | **(4)** |
| EFW rating, 1980–2000 | 1,281 (4.12) | 546 (4.00) | 2.16 (3.09) | 1.24 (3.76) |
| GDP per capita, 1980 (in 1000s US$) | 834 (8.46) | 122 (2.92) | –0.60 (2.70) | –0.51 (4.76) |
| Tropics | –563 (0.92) | –16 (0.06) | –3.76 (2.74) | –2.36 (3.69) |
| Coastal | –535 (0.83) | –43 (0.16) | 3.00 (2.06) | 0.53 (0.77) |
| Intercept | –6,457 | –2,883 | 12.28 | –2.04 |
| $R^2$ (adjusted) | 79.2 | 51.2 | 18.5 | 22.0 |
| Number of countries | 99 | 97 | 99 | 91 |

Note: Hong Kong and Taiwan were omitted from Equation 2 above because the FDI data were unavailable.

EFW rating is 7 or above and zero otherwise. The second independent variable does the same for nations with an EFW rating between 5 and 6.99, and the third independent variable separates out countries with an EFW rating below 5. The key feature of the regression is the relative size of the coefficients. For countries with EFW ratings of 7 or above, the coefficient is 0.275, which is greater than the 0.236 coefficient for the countries with ratings from 5 to 6.99, which in turn is greater than the 0.197 coefficient on the countries with ratings below 5. This indicates that a unit increase in investment enhances growth by a larger amount in countries with higher EFW ratings. This simple equation including only the interaction of EFW and investment explains almost half of the variation in GDP growth across countries.

Equation 3 (Table 3) adds the geographical variables to the model. The magnitudes of the coefficients for the I/GDP variables all fall by a small amount,

Table 3

Economic Freedom and the Productivity of Investment

Dependent Variable: Average Annual Growth Rate of GDP per Capita, 1980–2000 (*t*-ratio in parentheses)

| Independent Variables | (1) | (2) | (3) |
|---|---|---|---|
| I/GDP, 1980–2000 | 0.244 (8.74) | | |
| I/GDP, 1980–2000 x EFW > 7.0 | | 0.275 (9.40) | 0.242 (7.81) |
| I/GDP, 1980–2000 x 5.0 < EFW < 7.0 | | 0.236 (8.76) | 0.212 (7.56) |
| I/GDP, 1980–2000 x EFW < 5.0 | | 0.197 (6.52) | 0.183 (6.21) |
| Tropics | | | –0.937 (2.93) |
| Coastal | | | 0.344 (0.83) |
| Intercept | –3.96 | –3.72 | –2.91 |
| R$^2$ (adjusted) | 43.5 | 49.7 | 53.1 |
| Number of countries | 99 | 99 | 99 |

but the pattern remains the same. The coefficient of 0.242 on the group with EFW ratings of 7 or more is 13.6 percent higher than the coefficient of 0.212 on the middle group of countries. Similarly, investment in the highest-rated group of countries is 31.7 percent more productive than in the lowest-rated group (EFW < 5.0), where productivity is measured as the impact that a given level of investment has on the rate of per capita GDP growth. Thus, investment is more productive—it exerts a stronger impact on growth—when it is undertaken in countries with higher EFW ratings.

**4. When both direct (through improved efficiency) and indirect (through enhancement of the investment rate) effects are taken into account, a one-unit increase in EFW increases long-term growth by about one and a quarter percentage points.**

Table 4 incorporates the key institutional, geographic-locational, and capital formation variables into combined models and uses them to analyze the growth of per capita GDP during 1980–2000. It also incorporates a methodology capable of capturing both the direct (through improvements in efficiency and productivity) and indirect (through capital formation) effects of economic freedom on the long-term growth of per capita GDP.

The dependent variable in Table 4 is the growth rate of real GDP per capita during 1980–2000. In Equation 1 the independent variables are mean EFW (1980–2000), changes in physical and human capital (Kpw and Hpw), percentage of population residing in the tropics (Tropics), percentage of population living within 100 kilometers of an ocean coastline (Coastal), and initial per capita GDP.[8] The independent variables all have the expected sign, and together they explain almost 60 percent of the cross-country variation in growth rates during 1980–2000.

The 0.81 coefficient on the EFW variable indicates that a one-unit difference in the 1980–2000 mean EFW rating is associated with 0.81 of a percentage point increase in growth during the period after the effects of the other independent variables, including Kpw, have been taken into account. Thus, the EFW coefficient of Equation 1 reflects only its direct impact on growth as a result of its impact on the efficiency of resource use. But this is only part of its impact on growth. As illustrated in Table 2, EFW also influences investment and the growth of the capital stock (Kpw). As Equation 4 of Table 2 shows, a one-unit increase in a country's EFW rating is associated with a 1.24 percent increase in the growth rate of a country's capital stock per worker. The EFW coefficient in Equation 1 of Table 4 will not reflect this indirect impact.

To capture both the direct (resulting from a more efficient use of resources) and indirect (resulting from higher investment levels) effects of EFW, the residuals from Equation 4 of Table 2 were substituted for the change in Kpw variable in the model of Table 4. These residuals indicate the cross-country vari-

ation in Kpw that is unrelated to EFW and the other independent variables of Equation 1 of Table 4. When this substitution is made, the coefficients for EFW and the other independent variables in the model will register both their direct and indirect (through changes in the growth of Kpw) effects on the growth of per capita GDP. Equation 2 (Table 4) indicates that the combined direct and indirect effects of a one-unit change in EFW enhance long-term growth by an estimated 1.24 percentage points.

Thus, higher institutional quality, as measured by the EFW rating, has two reinforcing effects on the relationship between investment and GDP growth:

Table 4

**Economic Freedom, Investment, Geography, and Location as Determinants of Economic Growth**

Dependent Variable: Average Annual Growth Rate of GDP per Capita, 1980–2000 (*t*-ratio in parentheses)

| **Independent Variables** | **(1)** | **(2)** |
| --- | --- | --- |
| EFW rating, 1980–2000 | 0.81 | 1.24 |
| | (4.00) | (6.67) |
| Growth of Kpw, 1980–1999 | 0.35 | |
| | (5.70) | |
| Growth of Kpw, 1980–1999 (residuals) | | 0.35 |
| | | (5.70) |
| Growth of Hpw, 1980–1999 | 0.42 | 0.42 |
| | (2.08) | (2.08) |
| Tropics | −1.30 | −2.12 |
| | (3.37) | (5.90) |
| Coastal | 0.49 | 0.68 |
| | (1.25) | (1.73) |
| GDP per capita, 1980 (in 1000s US$) | −0.16 | −0.33 |
| | (2.33) | (5.58) |
| Intercept | −3.51 | −4.21 |
| $R^2$ (adjusted) | 59.1 | 59.1 |
| Number of countries | 91 | 91 |

Note: The residuals for Growth of Kpw in Equation 2 above are from Table 2, Equation 4.

Better institutions both increase the level of investment and enhance its productivity. When both of these effects are taken into account, a one-unit change in EFW increases long-term growth by an estimated 1.24 percentage points. Because this is a change in a growth rate, it will have a large cumulative effect. Over a thirty-year period, for example, a one-unit increase in a country's EFW index would increase the country's per capita GDP by approximately 43 percent.

These findings illustrate why so much of the growth literature based on the production function approach of Solow is highly misleading. Until recently, almost all of the production function growth models failed to include institutional measures. Thus, they omitted both the direct and indirect effects of institutional quality. Moreover, even the more recent growth models that sometimes include various indicators of institutional quality along with investment fail to register the indirect effects of institutions. Thus, they continue to understate the importance of institutional quality (and economic freedom). Hopefully, incorporation of the EFW measure into the growth models of the future will help alleviate some of the misleading impressions created by the omissions of the past.

## 5. Changes in economic freedom enhance long-term growth.

Even though countries with higher EFW ratings grow more rapidly, some might still question whether changes in economic freedom enhance long-term growth. Table 5 sheds light on this issue. The dependent variable in Table 5 is the annual growth rate of per capita GDP during 1980–2000. In addition to the mean 1980–2000 EFW rating, changes in EFW during the decades of the 1980s and the 1990s are included in the analysis. Equation 1 includes the change in physical and human capital per worker (Kpw and Hpw), along with the three economic freedom variables. These five variables explain 58.5 percent of the cross-country variation in annual growth rates during 1980–2000.

The change in EFW during the 1980s exerted a positive and significant impact on the annual growth rate over the two decades. A one-unit increase in EFW during the 1980s enhanced growth during 1980–2000 by an estimated 0.71 percentage point. The change in EFW during the 1990s was positive but insignificant. The insignificance of the change during the 1990s is not surprising given the expected time lag accompanying an institutional change and the fact that a change during the 1990s would potentially impact growth for only a fraction of the two decades.

Equations 2 and 3 (Table 5) add two additional variables, tropical location and initial income level, that prior analysis suggests exert a significant impact on the growth of per capita GDP. The addition of these two variables increases the explanatory power of the model to 62.4 percent. Both the tropical and initial income variables are significant and have the expected sign, but they exert little impact on either the pattern or the significance of the other variables in the model. The change in EFW during the 1980s is significant in both Equations 2

and 3, and its estimated impact on the growth rate of per capita GDP remains near seven-tenths of a percentage point. The change in EFW during the 1990s continues to be positive, but it falls just short of significance at the 90 percent confidence level.

The pattern of these results sheds light on the impact of institutional change. The size and robustness of the change in EFW during the 1980s suggest that changes in institutional factors make a difference and that they will continue to exert an impact on economic growth over a long period of time. Correspondingly, the size and insignificance of the change in EFW during the 1990s indicate that the full impact of an institutional change will take time and that the immediate effects may be relatively small.

Table 5

Changes in Economic Freedom and Economic Growth

Dependent Variable: Average Annual Growth Rate of GDP per Capita, 1980–2000
(*t*-ratio in parentheses)

| Independent Variables | (1) | (2) | (3) |
|---|---|---|---|
| EFW rating, 1980–2000 | 0.59 | 0.50 | 0.89 |
| | (4.17) | (3.38) | (4.35) |
| Change in EFW rating, 1980–1990 | 0.71 | 0.65 | 0.68 |
| | (3.09) | (2.84) | (3.08) |
| Change in EFW rating, 1990–2000 | 0.23 | 0.19 | 0.27 |
| | (1.34) | (1.13) | (1.62) |
| Growth of Kpw, 1980–1999 | 0.42 | 0.41 | 0.33 |
| | (7.67) | (7.54) | (5.69) |
| Growth of Hpw, 1980–1999 | 0.47 | 0.45 | 0.49 |
| | (2.33) | (2.23) | (2.51) |
| Tropics | | –0.57 | –1.15 |
| | | (1.86) | (3.12) |
| GDP per capita, 1980 | | | –0.17 |
| (in 1000s US$) | | | (2.66) |
| Intercept | –4.15 | –3.19 | –4.40 |
| R$^2$ (adjusted) | 58.5 | 59.7 | 62.4 |
| Number of countries | 91 | 91 | 91 |

## 6. The EFW measure explains the divergence/convergence puzzle.

Economic theory suggests two major reasons why the income levels of less developed economies will converge toward their higher income counterparts. First, in a world of diminishing returns, the neoclassical model implies that the productivity of capital will be lower in high-income countries where capital is more plentiful than in lower income countries where it is more scarce. In turn, the higher productivity of capital in the low-income countries will cause capital to flow in their direction, thereby enhancing their growth and promoting the convergence of cross-country income levels. Second, low-income countries will be able to emulate and adopt, either freely or at a low cost, the proven technologies and successful business techniques employed in the more advanced nations. In contrast, new technologies and better business practices will have to be discovered, perhaps through costly research and development, in the more developed economies. Thus, technology and entrepreneurial activity should exert a more positive impact on growth in the less developed areas. This too should lead to convergence.

Table 6

Divergence, Convergence, and Economic Freedom

Dependent Variable: Average Annual Growth Rate of GDP per Capita, 1980–2000
(*t*-ratio in parentheses)

| Independent Variables | (1) | (2) | (3) |
|---|---|---|---|
| GDP per capita, 1980 (in 1000s US$) | 0.12 (2.25) | –0.14 (2.10) | –0.16 (2.30) |
| EFW rating, 1980–2000 | | 1.28 (5.49) | 0.87 (4.49) |
| Growth of Kpw, 1980–1999 | | | 0.35 (5.78) |
| Growth of Hpw, 1980–1999 | | | 0.44 (2.17) |
| Tropics | | | –1.24 (3.23) |
| Intercept | 0.81 | –5.38 | –3.71 |
| $R^2$ (adjusted) | 4.0 | 26.2 | 58.8 |
| Number of countries | 99 | 99 | 91 |

Thus, traditional economic theory indicates that capital should move toward low-income countries and that these countries should grow more rapidly than their higher income counterparts. But the real world is inconsistent with this view; most low-income countries have grown less rapidly than their high-income counterparts. Income divergence rather than convergence is the norm (Dollar 1992, Pritchett 1997). Many economists have been puzzled by this phenomenon.

As Equation 1 of Table 6 shows, there was a positive and significant relationship between initial (1980) income level and the growth of per capita GDP during 1980–2000 for the ninety-nine countries of our basic data set. This positive relationship indicates that there was a tendency for high-income countries to grow more rapidly than those with low initial income levels. These findings reflect the divergence trend documented by others. However, Equation 2 (Table 6) illustrates the source of the divergence. Once the EFW variable is introduced into the model, the sign of the initial (1980) per capita GDP variable switches from positive to negative and the *t*-ratio (2.10) indicates significance at more than the 95 percent level of confidence. The expected trend toward income convergence is indeed present for countries with similar amounts of economic freedom. Further, as Equation 3 (Table 6) shows, this trend toward convergence is unaffected by the introduction of the physical capital, human capital, and tropical location variables into the model. Thus, when the consistency of a nation's institutions and policies with economic freedom is held constant, lower income countries grow faster than higher income countries, providing empirical support for models that predict convergence.[9]

## 7. A sound legal system is essential for sustained growth and achievement of high-income levels.

Protection of privately owned property and the evenhanded enforcement of contracts are essential ingredients for the achievement of prosperity. Without the legal protection of private property, the incentive of individuals to develop productive resources and engage in entrepreneurial activities is eroded. Correspondingly, without the enforcement of contracts, trade and the accompanying realization of gains from division of labor and specialization are stifled.[10]

The works of Douglass C. North and Friedrich von Hayek explain why a country's legal system is a vitally important determinant of its prosperity. Our modern living standards are the result of what North calls "depersonalized exchange," that is, trade between parties that do not know each other and will probably never meet. These exchanges are coordinated by what Hayek refers to as the "extension of the market" from the local town or village to the region, nation, and indeed to the far corners of the world. Almost everything that households in North America, Europe, and other parts of the developed world consume is the result of gains from depersonalized exchange and extension of the market. Without these gains, high levels of per capita income and modern

Table 7

Quality of Legal System, per Capita GDP, and Economic Growth

| Countries with Average Legal Rating > 7.0 during 1980–2000 | Legal System Rating | Per Capita GDP 2000 (US$) | Growth of per Capita GDP, 1980–2000 |
|---|---|---|---|
| Switzerland | 8.65 | 27,780 | 0.82 |
| United States | 8.61 | 33,960 | 2.12 |
| Netherlands | 8.58 | 26,910 | 1.98 |
| New Zealand | 8.51 | 17,840 | 1.29 |
| Austria | 8.49 | 26,420 | 1.99 |
| Luxembourg | 8.45 | 53,410 | 4.26 |
| Denmark | 8.41 | 28,680 | 1.74 |
| Finland | 8.36 | 24,160 | 2.27 |
| Germany | 8.36 | 25,100 | 1.70 |
| Canada | 8.32 | 26,840 | 1.69 |
| Norway | 8.31 | 29,200 | 2.42 |
| Australia | 8.29 | 24,550 | 1.96 |
| Iceland | 8.08 | 28,910 | 1.67 |
| Sweden | 8.05 | 23,650 | 1.66 |
| Belgium | 7.97 | 25,220 | 1.91 |
| United Kingdom | 7.91 | 23,580 | 2.29 |
| Ireland | 7.91 | 30,380 | 4.91 |
| Singapore | 7.89 | 23,700 | 4.92 |
| Japan | 7.84 | 25,280 | 2.34 |
| Portugal | 7.50 | 17,710 | 2.91 |
| France | 7.48 | 23,490 | 1.72 |
| Hungary | 7.16 | 11,960 | 1.31 |
| Hong Kong | 7.16 | 25,180 | 4.07 |
| Taiwan | 7.03 | 13,279 | 6.00 |
| **Average** | **8.05** | **25,716** | **2.50** |

| Countries with Average Legal Rating < 4.0 during 1980–2000 | Legal System Rating | Per Capita GDP 2000 (US$) | Growth of per Capita GDP, 1980–2000 |
|---|---|---|---|
| Indonesia | 3.90 | 2,970 | 3.69 |
| Senegal | 3.84 | 1,450 | 0.57 |
| Sri Lanka | 3.67 | 3,400 | 3.49 |
| Pakistan | 3.66 | 1,870 | 2.46 |
| Honduras | 3.62 | 2,830 | –0.13 |
| Syria | 3.56 | 3,280 | 0.64 |
| Iran | 3.55 | 5,720 | 1.09 |
| Nicaragua | 3.54 | 2,450 | –2.26 |
| Peru | 3.52 | 4,630 | –0.24 |
| Philippines | 3.49 | 3,790 | –0.02 |
| Algeria | 3.47 | 6,150 | –0.20 |
| Colombia | 3.43 | 7,010 | 1.04 |
| Uganda | 3.42 | 1,450 | 2.23 |
| Nigeria | 3.34 | 860 | –0.93 |
| El Salvador | 3.27 | 5,240 | 0.57 |
| Congo, Republic of | 3.27 | 950 | 0.37 |
| Bolivia | 3.20 | 2,310 | –0.28 |
| Bangladesh | 3.19 | 1,540 | 2.57 |
| Guatemala | 3.02 | 4,430 | –0.08 |
| Haiti | 2.98 | 1,920 | –2.39 |
| Congo, Democratic Republic of | 2.38 | 730 | –5.31 |
| **Average** | **3.40** | **3,094** | **0.33** |

living standards would be impossible. But these gains from depersonalized trade cannot be realized without a legal system that protects property rights and enforces contracts in an evenhanded manner. The failure of a country's legal system to perform these functions places a tight constraint on its prosperity.

The findings of the Economic Freedom Project are highly consistent with this view. The Legal System Area indicates the consistency of a nation's legal structure with protection of property rights, unbiased enforcement of contracts, independence of the judiciary, and rule-of-law principles. Among the approximately 100 countries for which data were available throughout the 1980–2000 period, twenty-four countries had an average Legal System Area rating of 7 or more. As Table 7 shows, these twenty-four countries had an average per capita GDP in 2000 of $25,716 and an average annual real growth rate of 2.5 percent over the two-decade period. Among these countries with a relatively sound legal system, the lowest 2000 per capita income levels were $11,960 and $13,279 for Hungary and Taiwan, respectively. The 2000 per capita GDP for twenty-two of the twenty-four countries exceeded $17,500. Perhaps even more important, all twenty-four of the countries with sound legal systems achieved positive real growth of per capita GDP over the two decades. In fact, only one of the twenty-four had an annual growth rate of less than 1.3 percent (Switzerland, at 0.82). Thus, all of the countries with sound legal systems grew and achieved relatively high levels of per capita income.

At the other end of the spectrum, there were twenty-one countries with an average 1980–2000 Legal System Area rating of less than 4. Among these countries, the average 2000 per capita GDP was $3,094 and the average growth rate during 1980–2000 was 0.33 percent. Both of these figures were approximately one-eighth of the parallel levels for the countries with sound legal systems. The highest 2000 per capita GDP among the twenty-one countries with a low-quality legal system was Colombia's $7,010. While five of these countries had growth rates of more than 2 percent, all of the five were exceedingly poor (per capita GDP of $3,400 or less). None of the twenty-one countries with low-quality legal systems was able to achieve both a 2000 per capita income of more than $3,400 and a growth rate during 1980–2000 of more than 1.1 percent. Thus, none of the countries with unsound legal systems was able to sustain a solid rate of growth once income levels rose above the $3,500 range!

All of this suggests that it will be virtually impossible for countries with legal systems that fail to protect property rights and enforce contracts to move up to even lower middle income status. These findings are also consistent with the view that countries lacking a legal system capable of enforcing contracts between parties who do not know each other and may well reside in different parts of the world will find it extremely difficult to achieve income levels that are the result of the gains derived from specialization, economies of scale, and depersonalized exchange.

## CONCLUSION

During a debate with Milton Friedman about the Phillips curve and other aspects of stabilization policy during the late 1960s, Walter Heller attempted to refute Friedman's arguments by stating that he was an optimist. Friedman responded, "I am an empiricist." Milton Friedman has always been an empiricist, and that is why he was interested in developing a measure of economic freedom.

Some fifteen years ago, when I became involved with the project, I remember Milton Friedman stating that he was convinced that countries that were more economically free would grow more rapidly and achieve higher levels of income. However, he went on to note that without a measure of economic freedom, we were unable to directly test the validity of these hypotheses. The EFW measure now makes it possible for us to do so, and indeed, we have discovered that Friedman was right. But this is only part of the story. Critics often argue that a market economy leads to excessive income inequality, environmental degradation, extreme poverty, poor working conditions, and the like.[11] The EFW measure makes it possible for researchers to address these issues empirically. I believe that the major contribution of the EFW project will come from the use of the data as an empirical tool. Moreover, I'm sure that this contribution is one that will bring satisfaction to Milton Friedman.

## NOTES

[1] For details on this series of conferences, see Walker (1988), Block (1991), and Easton and Walker (1992).

[2] The survey data are from the *International Country Risk Guide* (PRS Group 2001) and the *Global Competitiveness Report* (World Economic Forum 2003), two highly respected sources of information.

[3] Of course, a government may do a pretty good job in some areas, access to sound money and freedom of international exchange for example, and at the same time impose regulations that restrict economic freedom in other areas. The EFW area ratings can help identify the consistency of a country's policies with economic freedom in each of the five areas.

[4] Because some of the components are missing, particularly for years prior to 1990, a chain-link methodology similar to that used by national income accountants was employed to derive summary ratings for years prior to 2000. This chain-link methodology means that differences in a country's rating for years prior to 2000 will always reflect changes in the value of components available during overlapping years. This methodology enhances the comparability of country ratings across time periods.

[5] While the concept of economic freedom provides the compass for the design of the EFW index, the index can also be viewed in other ways. For example, some may perceive of the index as a measure of the quality of a country's institutional environment, a factor that has been stressed

in the writings of economists like Douglass North (1990), Peter Bauer (1957), Friedrich von Hayek (1960), Hernando de Soto (1989) and Gerald Scully (1988 and 1992).

[6] The EFW data were continuously available for 103 countries during 1980–2000. Because their per capita GDP figures and growth rates were dominated by conditions in the world market for crude oil, four of the countries (Bahrain, Kuwait, Oman, and the United Arab Emirates) are omitted from the analysis presented here.

[7] While the ratings for the 38 components of the EFW index are on a zero-to-ten scale, the range of the summary ratings is smaller. The mean summary rating for 1980–2000 for the ninety-nine countries of this study ranged from the 8.61 rating of Hong Kong to the 3.51 rating of the Democratic Republic of the Congo. The mean 1980–2000 summary rating for the ninety-nine countries was 5.69.

[8] The number of observations in the analysis of Table 4 is 91 (rather than 99) because the data on the growth of capital per worker (Kpw) were unavailable for eight countries. All of the omitted countries had a population of less than 1 million. The data on capital per worker are from Baier, Dwyer, and Tamura (2002).

[9] See Knack (1996) for additional evidence on the importance of institutions as a source of income convergence among nations.

[10] The following statement by Milton Friedman, made at the 2001 annual meeting of the Economic Freedom of the World Network held in San Francisco, highlights the importance of legal structure as a source of growth and prosperity:

> Just after the Berlin Wall fell and the Soviet Union collapsed, I used to be asked a lot: "What do these ex-communist states have to do in order to become market economies?" And I used to say: "You can describe that in three words: privatize, privatize, privatize." But, I was wrong. That wasn't enough. The example of Russia shows that. Russia privatized but in a way that created private monopolies—private centralized economic controls that replaced government's centralized controls. It turns out that the rule of law is probably more basic than privatization. Privatization is meaningless if you don't have the rule of law. What does it mean to privatize if you do not have security of property, if you can't use your property as you want to?

[11] For a survey article on economic freedom and a number of these topics, see Berggren (2003).

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## APPENDIX

### The Areas and Components of the EFW Index

**1. Size of Government: Expenditures, Taxes, and Enterprises**
   A. General government consumption spending as a percentage of total consumption.
   B. Transfers and subsidies as a percentage of GDP.
   C. Government enterprises and investment as a percentage of GDP.
   D. Top marginal tax rate (and income threshold to which it applies).
      i.   Top marginal income tax rate (and income threshold at which it applies).
      ii.  Top marginal income and payroll tax rate (and income threshold at which it applies).

**2. Legal Structure and Security of Property Rights**
   A. Judicial independence: The judiciary is independent and not subject to interference by the government or parties in disputes.
   B. Impartial courts: A trusted legal framework exists for private businesses to challenge the legality of government actions or regulation.
   C. Protection of intellectual property.
   D. Military interference in rule of law and the political process.
   E. Integrity of the legal system.

**3. Access to Sound Money**
   A. Average annual growth of the money supply in the last five years minus average annual growth of real GDP in the last ten years.
   B. Standard inflation variability in the last five years.
   C. Recent inflation rate.
   D. Freedom to own foreign currency bank accounts domestically and abroad.

**4. Freedom to Exchange with Foreigners**
   A. Taxes on international trade.
      i.   Revenue from taxes on international trade as a percentage of exports plus imports.
      ii.  Mean tariff rate.
      iii. Standard deviation of tariff rates.
   B. Regulatory trade barriers.
      i.   Hidden import barriers: no barriers other than published tariffs and quotas.
      ii.  Costs of importing: The combined effect of import tariffs, license fees, bank fees, and the time required for administrative red tape raises costs of importing equipment by (10 = 10% or less; 0 = more than 50%).
   C. Actual size of trade sector compared with expected size.
   D. Difference between official exchange rate and black market rate.

E. International capital market controls.
   i.   Access of citizens to foreign capital markets and foreign access to domestic capital markets.
   ii.  Restrictions on the freedom of citizens to engage in capital market exchange with foreigners—index of capital controls among 13 IMF categories.

5. **Regulation of Credit, Labor, and Business**
   A. Credit market regulations.
      i.    Ownership of banks: percentage of deposits held in privately owned banks.
      ii.   Competition: Domestic banks face competition from foreign banks.
      iii.  Extension of credit: percentage of credit extended to private sector.
      iv.   Avoidance of interest rate controls and regulations that lead to negative real interest rates.
      v.    Interest rate controls: Interest rate controls on bank deposits and/or loans are freely determined by the market.
   B. Labor market regulations.
      i.    Impact of minimum wage: The minimum wage, set by law, has little impact on wages because it is too low or not obeyed.
      ii.   Hiring and firing practices: Hiring and firing practices of companies are determined by private contract.
      iii.  Share of labor force whose wages are set by centralized collective bargaining.
      iv.   Unemployment benefits: The unemployment benefits system preserves the incentive to work.
      v.    Use of conscripts to obtain military personnel.
   C. Business regulations.
      i.    Price controls: extent to which businesses are free to set their own prices.
      ii.   Administrative conditions and new businesses: Administrative procedures are an important obstacle to starting a new business.
      iii.  Time with government bureaucracy: Senior management spends a substantial amount of time dealing with government bureaucracy.
      iv.   Starting a new business: Starting a new business is generally easy.
      v.    Irregular payments: Irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection, or loan applications are rare.

## Variable Definitions and Sources

| Variable Name | Variable Definitions | Variable Source |
|---|---|---|
| GDP per capita | GDP per capita (PPP US$) | World Bank (2003) |
| Annual growth rate of per capita GDP (1980–2000) | Average annual rate of growth in GDP per capita (real LCU) from 1980 to 2000 | World Bank (2003) |
| I/GDP (1980–2000) | Average gross capital formation as a percentage of GDP from 1980 to 2000 | World Bank (2003) |
| Investment per worker (1980–2000) | Average gross capital formation (US$) per worker from 1980 to 2000 | World Bank (2003) |
| FDI per worker (1980–2000) | Average foreign direct investment (US$) per worker from 1980 to 2000 | World Bank (2003) |
| EFW rating | Chain-weighted economic freedom rating | Gwartney and Lawson (2003) |
| Tropics | Percentage of population between Tropics of Cancer and Capricorn | Gallup, Sachs, and Mellinger (1998) |
| Coastal | Percentage of population within 50 km of coast | Gallup, Sachs, and Mellinger (1998) |
| Air distance | Distance by air from capital to New York, Rotterdam, or Tokyo (whichever is closest), 1,000s of km | Gallup, Sachs, and Mellinger (1998) |
| Kpw | Capital stock per worker (US$) | Baier, Dwyer, and Tamura (2002) |
| Hpw | Human capital stock per worker | Baier, Dwyer, and Tamura (2002) |

## Descriptive Statistics

| Variable | N | Mean | Median | StDev | Min | Max |
|---|---|---|---|---|---|---|
| EFW rating, 1980–2000 | 99 | 5.69 | 5.57 | 1.09 | 3.51 | 8.61 |
| Change in EFW rating, 1980–1990 | 99 | 0.50 | 0.57 | 0.65 | −1.64 | 2.11 |
| Change in EFW rating, 1990–2000 | 99 | 0.88 | 0.69 | 0.89 | −0.69 | 4.04 |
| GDP per capita, 2000 (US$) | 99 | 10,669 | 6,033 | 10,564 | 490 | 50,061 |
| GDP per capita, 1980 (US$) | 99 | 4,263 | 2,551 | 3,825 | 362 | 14,534 |
| Average annual growth rate of GDP per capita, 1980–2000 | 99 | 1.32 | 1.19 | 2.06 | −4.58 | 8.15 |
| I/GDP, 1980–2000 | 99 | 21.63 | 21.75 | 5.60 | 9.56 | 38.58 |
| Investment per worker (US$), 1980–2000 | 99 | 3,813 | 1,727 | 4,942 | 48 | 21,142 |
| FDI per worker (US$), 1980–2000 | 97 | 702 | 96 | 1,318 | 0 | 6,067 |
| Coastal | 99 | 0.54 | 0.57 | 0.38 | 0 | 1.00 |
| Tropical | 99 | 0.53 | 0.70 | 0.48 | 0 | 1.00 |
| Air distance (km) | 99 | 4,082 | 3,575 | 2,599 | 140 | 9,590 |
| Kpw, 1999 (US$) | 91 | 30,968 | 18,932 | 30,361 | 597 | 107,905 |
| Hpw, 1999 | 91 | 6.43 | 6.21 | 2.16 | 2.60 | 11.34 |
| Growth of Kpw, 1980–1999 | 91 | 1.97 | 1.66 | 2.56 | −6.17 | 7.85 |
| Growth of Hpw, 1980–1999 | 91 | 1.60 | 1.59 | 0.67 | 0.06 | 3.39 |