

*Building The Opportunity Economy:
An American Dream Agenda for the First 100 Days*

**ECONOMIC OPPORTUNITY
INDEX**

Executive Summary

Overview

How much opportunity do Americans have today compared to 25 years ago? How does opportunity compare across gender and racial groups? What will matter most in ensuring opportunity in America in the future?

The Economic Opportunity Index (EOI) is a tool for measuring the extent to which Americans have the opportunities available to them to achieve the American Dream, and identifying those factors which could contribute most to improved opportunity in the future.

There are many measures of economic activity, such as unemployment, inflation, GDP¹ growth, productivity, or income distribution. However, there is no credible, authoritative measure of economic opportunity – the potential for people to improve their economic well-being based on their individual efforts. There is a profound and unmet need for a trustworthy set of measures that policy-makers, media, or citizens can rely on to assess the degree to which America is indeed the “land of opportunity” for all its people – and whether the amount of opportunity is growing or shrinking over time. The Index will bring hard facts and solid, non-partisan analysis to what is now a confused and ideological debate that falls into the tired paradigm of “grow the pie” versus “redistribute the pie.” In our view, this misses the point because it is focused on the wrong “pie” altogether – we should aim to increase opportunity, and outcomes will follow.

Hope Street Group defines economic opportunity as “Expected lifetime real income, given effort.”

- *Expected* - luck, individual circumstance, and societal change always play a role in economic outcomes;
- *Lifetime* - a single year might give us a misleading snapshot of one's overall circumstances;
- *Real* - adjusted for price changes, to reflect true purchasing power;
- *Income* - our focus is economic opportunity, rather than non-economic opportunities such as freedom of expression; and
- *Given effort* - individuals ultimately must choose whether to pursue available opportunities.

Hope Street Group uses peer-reviewed economic research to identify factors that contribute to individual income and asset growth over a person's lifetime, adjusting for the level of risk that different households face in their economic circumstances. These factors are measured using high-quality data from government agencies, non-profit organizations, and the private sector – not surveys or subjective assessments by Hope Street Group – and weighted according to their relative importance in driving individual opportunity. The Economic Opportunity Index is calculated for the United States as a whole and for different demographic and income subgroups.

The Index is based on peer-reviewed, non-ideological economic research and high-quality data, which are available for inspection in an "open-source" manner. Hope Street Group has developed an online environment for the economics and policy community to critique, update, and continuously improve the Index over time, with the goal of making it the living standard for “opportunity policy analysis.”

¹ The Gross Domestic Product (GDP) is defined as the total market value of all final goods and services produced within a given country in a given period of time.

The Challenge

Economic opportunity is linked to a broad range of tangible and intangible, quantifiable and unquantifiable, controllable and unforeseen factors that cannot be easily captured in an index. Even if they could be, individual personality characteristics and just plain luck will play some role in specific economic outcomes. The two greatest challenges Hope Street Group has faced in building the Economic Opportunity Index are:

- 1. Identifying the fundamental drivers of economic opportunity, rather than the observed economic outcomes.** For example, a review of the economic literature points to a strong positive correlation between educational achievement and economic opportunity. However, a variety of factors can affect educational achievement, including the achievement of one's parents, one's innate intellectual ability, one's health, and so on. In the EOI, we have tried to include these more fundamental factors wherever possible – for example, math and reading test scores and a variety of health indicators – subject to the constraints mentioned in the text.
- 2. Finding adequate quantitative measurements of these drivers.** Even when research strongly suggests that a particular factor is important for opportunity, the relevant data may not be available. For example, consistent data over time and across the country for teacher quality is not available. As another example, non-cognitive factors such as self-esteem have been shown to be important for achievement and ultimately earnings, but because comparable and reliable data on an historical basis does not exist, Hope Street Group could not capture this important qualitative contribution to economic opportunity.

Research Methodology

In constructing the Index, Hope Street Group applied several objective criteria to determine what indicators would be included:

- 1. Relationship with real lifetime income** – peer-reviewed academic literature must provide a reasonable hypothesis for a causal link between the indicator and either a) life expectancy or b) income, and support for the idea that the link is statistically significant and meaningful in size.
- 2. Representing a root cause** – even in cases where a causal link is evident, if the indicator can be itself largely explained by one or a few more fundamental factors that fit the above criteria and for which data are available, Hope Street Group has generally used those more fundamental factors in the EOI.
- 3. Suitability for a quantitative index** – the variable must be quantifiable, available for a reasonable history (ideally several decades), and updated in a fairly timely manner (ideally annually or more often).
- 4. Available by detailed type** – although not essential, Hope Street Group prefers variables where detailed information is available for sub-groups of the population, so that differences in economic opportunity among those groups can be more readily explained. We refer to variables that are available only for the population as a whole as “aggregate” indicators; these are indicated with a [*] below.
- 5. Low susceptibility to distortions** – Hope Street Group has tried to avoid variables that could be distorted by factors other than those driving economic opportunity. Similarly, Hope Street Group has tried to avoid variables that could be easily “gamed” by policymakers.

Overview of the EOI's Sub-indexes

The Index variables are broken down into six categories, each forming a sub-index. The following is a detailed overview of the information about supporting research and rationales behind the choice of variables in each sub-index:

- 1. Human Capital Development:** Since income is highly correlated with educational attainment, Hope Street Group has identified a number of variables that correlate with education and skills attainment, and therefore the degree to which a worker is valued in the labor force:
 - **Standardized test scores:** *average scale score for long-term trend mathematics and reading, age 9.* These are the best available proxy for analytical abilities that facilitate other learning and that are differentially compensated in the workplace (Bowles et al., 2001). Furthermore, mathematical ability seems to be more predictive of normative decision-making than verbal ability (Benjamin and Shapiro, 2005). After mastering basic decoding skills, performance in reading is primarily an indicator of the general level of the individual's thinking and reasoning processes rather than a set of distinct and specialized skills (Thorndike, 1973). Comparable historical data is available by race and gender.
 - **Graduation rates:** *percent of people 25 years and over who have completed 4 years of high school and/or college.* Credentials matter, and individuals who complete high school or college tend to earn considerably more. Based on a specification in which years of schooling and degrees received are interacted, those with a high school diploma, an associate's degree, or a bachelor's degree made significant earnings gains of approximately 9, 11 and 21%, respectively (Park, 2000). Comparable historical data is available by race and gender; however, high school graduation rates include GED recipients, who have been shown to have inferior economic opportunities because of the premium that is attached to high school diplomas (Cameron and Heckman, 1993). High school graduation rates excluding GED recipients are presently estimated using the Cumulative Promotion Index (CPI).² Various organizations have used this formula to estimate graduation rates for certain years, however the data for our time-period (1980-2007) was not complete enough to use across types. Please see "Areas of Further Investigation" for a discussion on the necessity of more robust data in this field.
 - **Incarceration rate:** *the number of prisoners with a sentence of more than 1 year per 100,000 persons in the resident population.* Human capital increases the opportunity cost of crime from foregone work, learning, experience and expected costs associated with incarceration (Lochner, 2004). Comparable historical data is only available by race and gender for prisoners with sentences that last longer than one year.
 - **Divorce rate:** *percent of people 15 years and over who are divorced.* Divorce means a direct economic loss, usually for the female partner (Peterson, 1996). Divorce also can have negative effects on health. Based upon a combined sample of national data of white respondents only, the analysis shows that parental divorce is associated with lower educational attainment and earlier age at marriage for both sexes (Keith and Finlay, 1988). Comparable historical data is available by race and gender for people 15 years old and over.

Variables not included

- **Preschool/pre-K preparation.** Preschool preparation appears to be important for school readiness and later academic performance (Campbell and Ramey, 1994). However, an important issue is that the quality of pre-K matters, and there are no national figures that distinguish clearly between attendance at quality pre-K programs and standard daycare.

² Percent of 9th grade students who will receive a high school diploma four school years later. Source: <http://www.edweek.org/media/ew/dc/2007/40gradprofiles.pdf>.

- ***Years of education.*** In cross-country studies, educational attainment of the population is correlated with better economic outcomes, and education is also rewarded at the individual level with higher incomes (Psacharopoulos, 1985). However, at the individual level, diploma (or “sheepskin”) effects mean that the final year of each phase of education is worth considerably more in income terms than other years (Jaeger and Page, 1996; Park, 1994 & 2000; Belman and Heywood, 1991; Hungerford and Solon, 1987). Therefore, we have opted to use graduation rates from high school and college for specific types, rather than number of years of education.
- ***Share of science/other majors.*** Although some specializations are better compensated than others (see for example McKinsey Global Institute), we do not have detailed data on the breakdown of these specializations by type, and at the aggregate level, changing the composition of specializations may not be feasible.
- ***Teacher quality.*** Even though teacher quality has been shown to have a significant impact on educational attainment (Card, 1990), there is no comparable national data available.
- ***Non-cognitive skills.*** Traits such as self-esteem, patience, lack of aggression, and so on contribute to better success in the educational system and in the workplace (Heckman and Rubinstein, 2001). The impact of positive traits can be on par with years of education. However, reliable and comprehensive data on such traits are unavailable.
- ***Mobility/frequency of relocation.*** The frequency at which families move is negatively correlated with many measures of social capital. For example, it may negatively affect children’s educational outcomes (Glaeser et al., 2002), but comprehensive data on mobility by type are difficult to come by.
- ***Parents’ educational attainment: percent of people 25 years and over who have completed 4 years of high school and/or college, 1940-1980.*** Parent education can affect children in a variety of ways. The evidence suggests that the educational attainment of one’s mother is especially important, as discussed below.
 - *Parents’ attainment:* A two-factor model using panel data indicated that when such factors are taken into account, family income is estimated to have no significant influence on health and cognitive development, although parents’ education has a strong positive influence (Shakotko, 1980; Sewell and Shah, 1968).
 - *Mother’s attainment:* Considerable evidence supports the importance of early childhood nutrition/health care for brain development. This is also true during pregnancy when iodine deficiency is especially detrimental to cognitive development of children (Black, 2003). Spending one’s early years in poverty can permanently limit one’s potential (Colom et al., 2005; Santiago-Fernandez et al., 2004; Glewwe et al., 2001). Results show that maternal knowledge influences children’s diets and that such influence decreases as children grow older. Nutrition knowledge acts as a pathway through which maternal education influences children’s diets (Cochrane et al., 1982; Murnane, 1981). This finding supports the hypothesis that education affects health-related choices by raising the allocative efficiency of health input use. The results suggest that nutrition education may be more effective if targeted both toward mothers with young children and directly toward school-age children (Variyam et al., 1999).

Since we do not have a full set of historical data for this variable as far back as we would like, we are not incorporating it into the EOI at this time, although it is a candidate for inclusion in the future.

2. **Asset ownership:** Possession of assets provides a stream of income (via dividends, interest, or rent), a cushion for unexpected financial needs, and is an efficient savings vehicle. At the

national level, a stronger asset base implies a greater stream of economic “dividends” for citizens. We include two main types of assets in this category: first, personal assets such as homes or financial assets, which give an individual greater security and earning power in the future; and second, societal wealth in the form of the nation’s capital stock or debt. We convert these values to constant dollar terms to remove the effect of inflation. Ideally, we could also include society’s intangible wealth in the form of key environmental assets or “social capital,” but in practice the measurement of such intangible assets is a tricky proposition:

- **Homeownership rate [*]:** *percent of population that owns a home.* Higher homeownership may be associated with lower crime rates, greater savings, asset appreciation, and other positive economic benefits. Several studies have suggested that children of homeowners perform better in school and ultimately earn more, after controlling for other factors (e.g. Boehm and Schlottman, 1999). This could be due to the stronger investment motive of homeowners or the greater geographic stability of families that own rather than rent their homes (Haurin et al, 2002).
- **Share of population with access to a bank account [*].** An account at a mainstream financial institution generally reduces the cost of engaging in financial transactions, provides a ready vehicle for saving and access to funds, and serves as a reference for individuals or families wishing to obtain credit (Seidman and Tescher, 2005).³ We use data from the Fed’s Survey of Consumer Finances to ascertain the share of families with such access. Although this survey is released only once every three years, changes in the “banked population” are fairly gradual.
- **Net financial assets:** *median value of other financial assets [*].* The distribution of other financial assets is significantly more skewed toward a small proportion of the population. Therefore, in order to be more representative of the typical level of assets and opportunity across demographic groups, we use data from the Survey of Consumer Finances at the cost of some timeliness in the data.
- **Homeowner’s equity:** *average value of home equity [*].* While homeownership has positive effects on savings and other economic outcomes, the value of home equity is itself an asset. We use data on total U.S. home equity (from the Federal Reserve’s Flow of Funds tables), adjusted for inflation and divided by the number of households. Theoretically, a median measure might be more preferable; however, the distribution of housing assets is somewhat more egalitarian than the distribution of other financial assets, and the median data available from the Survey of Consumer Finances are available less frequently and with a significant lag.
- **Government debt per capita [*].** While Americans have access to a variety of assets, current and future generations are obligated for the government’s debt. Interest and principal payments on debt claim a share of society’s future resources and thus reduce opportunity. We use “government debt held by the public” per capita, in order to make this measure parallel with the prior asset measures.

Variables not included

- **Infrastructure.** Specific measures of transportation or communications infrastructure might be more relevant than the physical capital stock as a whole. At least since Adam Smith, economists have recognized the importance of linkages to increase competition and reduce prices across geographic regions. However, cross-country studies have had mixed results (Hulten, 1996; Esfahani, 2003). A major difficulty is exactly what measures of infrastructure to include, and how to weight their relative importance. If these problems could be resolved, this could be an item for inclusion in future versions of the index.

³ http://www.dfi.wa.gov/cu/unbanked_files/unbanked_homeowner.pdf.

3. Health Care and Social Safety Net: Better health, which is highly impacted by the following variables, implies more capacity for work and more productive working years (not to mention improved life satisfaction in non-income terms):

- ***Infant mortality rate:*** *infant deaths per 1,000 live births.* This is highly correlated with overall health standards and a variety of health care indicators readily available in detail over time and by type. Comparable historical data is available by race.
- ***Diabetes prevalence:*** *prevalence of diagnosed diabetes.* Diabetes can have a significant impact on overall health, creating a variety of complications and requiring ongoing treatment. It is highly correlated with other health problems, including obesity (Mokdad et al., 2003), and is negatively correlated with earnings (Ng et al., 2001). Comparable historical data is only available by race.
- ***Percentage who smoke.*** Smoking is detrimental to health and life expectancy (Rice et al., 1986). Comparable historical data is only available by race.
- ***Share of children (population under 18) with health insurance [*].*** Preventative care has a very high return on investment, especially early in life, and reducing marginal cost encourages families to get this care for their children (Macinko et al., 2003; Case et al., 2003; Burgess and Propper, 1998; Currie and Gruber, 1996; Newacheck et al., 1996). Comparable historical data is available in the aggregate form and by age.
- ***Worker absenteeism:*** *population 5 years and over with a disability.* Physical and mental disability rate is highly correlated with worker absenteeism, which leads to lower income (Zhang et al., 1999; Conti et al., 2006; Pelkowski et al., 2004; Ettner et al., 1997). Comparable historical data is only available for the population over 5 years of age and by race from the U.S. Census Bureau. It is important to note that this Census dataset has applied different definitions for disability throughout the past few decades; however, it remains the most viable source of historical data by race groups we have found.
- ***Marriage rate:*** *percentage of people 15 years and over who are married.* Controlling for age, married people have lower mortality rates than single, widowed, or divorced people, and the differences between those who are married versus unmarried are much greater for men than for women (Gardner and Oswald, 2004; Ross et al., 1990; Gove, 1973). Comparable historical data is only available for 15 year-olds and over by race and gender. Since the average marriage rate for people between the ages of 15 and 17 is around 1%, including this non-adult population does not significantly skew the dataset.
- ***Average education levels:*** *percentage of people 25 years and over who have completed 4 years of high school and/or college.* Several studies have shown that those who are more educated are healthier and live longer, even after controlling for other factors (Crimmins et al., 2001) (Berger and Leigh, 1989). Educated people may be more aware of healthy behaviors, or better able to maintain them.
- ***Violent crime rate:*** *violent crime, murder and burglaries per 100,000 population [*].* The daily stress associated with living in a neighborhood where danger, trouble, crime and incivility are common apparently damages health (Ross and Mirowsky, 2001; Kawachi et al., 1999; Wilkinson et al., 1998). Violent crimes (homicide, assault, robbery) were consistently associated with relative deprivation (income inequality) and indicators of low social capital. Areas with high crime rates tend also to exhibit higher mortality rates from all causes, suggesting that crime and population health share the same social origins. Crime is thus a mirror of the quality of the social environment. Comparable historical data is only available on an aggregate level.

- **Share of population covered by private health insurance.** Lack of health insurance can lead to large out-of-pocket health care expenses, which can be detrimental to the accumulation of assets, both in the short and long-term. Comparable historical data is available by race and gender.
- **Air quality: micrograms of inhalable particles per cubic meter at 25 degrees Celsius (PM sub(10)) [*].** The effect of high concentrations of PM sub(10) on daily mortality is found to be significant (Dockery et al., 1992; Schwartz and Dockery, 1992). The public-health consequences of air pollution are considerable (Künzli et al., 2000).

Variables not included

- **Life expectancy at birth.** This statistic is based on current lifespan data (calculated by the average likelihood to pass away within certain age groups based on historical data), and therefore does not necessarily have predictive power for the future.
- **Obesity rates/Body Mass Index (BMI) by type.** Though correlated with long-term health outcomes (Thomas and Frankenberg, 2002), detailed information over time and by type was difficult to obtain. Diabetes, which is included in the Index, is a reasonably good proxy (Fontaine et al., 2003).
- **Childhood obesity rates.** Although “many of the cardiovascular consequences that characterize adult-onset obesity are preceded by abnormalities that begin in childhood” (Dietz, 1998), a lack of historical data by type has precluded the inclusion of this variable in the Index. Furthermore, it has been shown that feeding strategies that allow the least amount of choice to children are associated with reduced child BMI (Faith et al., 2003), and compared with children of non-working mothers, children of full-time working mothers have lower overall HEI (Healthy Eating Index) scores, lower intakes of iron and fiber, and higher intakes of soda and fried potatoes, even after taking into account differences in maternal and other family characteristics (Crepinsek and Burstein, 2004). Research also suggests that, especially in low-income households, mothers choose to keep their employment mainly based on the availability of health insurance from the employer and child care (both formal centers and informal avenues through relatives and friends) (Lee, 2007).
- **Health care expenditures.** Health outcomes have only a modest correlation with health care expenditures, either across countries or across regions. “The bulk of the evidence suggests there is a small, positive effect of insurance coverage on health outcomes among the populations most likely to be the targets of public coverage expansions: infants, the elderly, and the poor” (Levy and Meltzer, 2001).
- **Access to clean water.** The cost and availability of clean water is not a major issue in the U.S. as a whole, though it has always been a part of the politics of more arid regions of the U.S. As water usage grows and existing aquifers are tapped out, this could become more significant. It is likely to be quite important in cross-country comparisons of opportunity.

4. Labor Market Dynamism: Wages are the primary source of income for most households. Therefore, the following variables, which reflect the health of the labor market and the experience individual households have in the labor force, are critical to economic opportunity:

- **Unemployment rate.** The state of the labor market affects overall wage pressures as well as the ability of younger workers to enter the labor force and gain relevant experience. Thus, the state of the business cycle matters significantly to workers just entering the labor force. High unemployment rates also tend to suggest significant barriers to employment, which may not be captured in other measures.

- **Percent unemployed 27 weeks and over [*].** Experience on the job correlates with increased skills and responsibility, and therefore typically greater income. Spells of unemployment decrease the amount of time that can be used to gain experience.
- **Job opportunities in manufacturing sector [*].** A dynamic labor market generates plenty of new job opportunities (we use hiring data for manufacturing because we have a longer history for this sector).
- **Non-wage benefits as share of compensation [**].** Income protection programs or social insurance measures introduce undesired rigidities in the functioning of labor markets, which in turn raise the cost of employing workers and/or the cost of adjusting levels of employment (Nickell, 1997). Impacts on employment/unemployment depend on the extent to which the extra costs are shifted onto employees by adjustments in wages. As a proxy for general labor market rigidities, we used the NIPA “Supplements to Wages and Salaries” series, which measures non-wage benefits, including employer contributions for legally required benefits – such as Social Security and unemployment insurance – and voluntary benefits – such as health and life insurance, private pension plans, and profit-sharing plans.
- **Labor force participation rate.** Experience on the job correlates with increased skills and responsibility, and therefore typically greater income (Cahuc and Zylberberg, 2004). Workers who face long spells of unemployment (voluntary or not) will tend to have fewer or lower-paying job opportunities available to them.

Variables not included

- **Workplace safety regulations.** Although these may increase business costs in some cases, they also have been shown to reduce injuries and increase time on the job (McConnell and Brue, 2005); however, regularly updated quantitative data on regulations are not available to the best of our knowledge.
- **Labor taxes.** Higher payroll taxes may reduce labor force participation/hours worked (especially by women, who tend to exhibit more variation in hours worked) and labor attractiveness to employers. Potential sources of data for the “tax wedge” between wages paid and received include BLS/ILO data (production workers) on social insurance expenditures and other labor taxes as a percentage of hourly compensation costs (for 36 countries). As most of this tax gets passed on to workers (Nickell, 1997), it makes sense to treat payroll taxes along with other taxes in the Policy and Regulatory Framework section.
- **Firing costs.** If it is expensive (from a regulatory, procedural, or legal standpoint) to hire or fire workers, this may discourage employment (Lazear, 1990). However, we do not have quantitative data on firing costs, as is the case with many other non-wage costs of hiring workers.
- **(Women’s) Labor force participation rate.** Cross-country studies suggest that women’s labor force participation is a factor in pushing up aggregate growth (due to higher labor input). We include a broader variable incorporating labor force participation by both men and women. A related issue is gender inequality in labor force participation, and an Institute for Women’s Policy Research study⁴ suggests that women’s continued participation in the labor force is driven by two main factors 1) availability of health insurance offered by the employer and 2) access to formal (centers) and informal (grandparents and relatives) means of child-care. We have captured availability of private health insurance in the health care category and do not have adequate data to reflect formal and informal child-care facilities.

⁴ Source: www.iwpr.org/pdf/C360KeepingMoms.pdf.

- ***Discouraged workers.*** This term refers to individuals who would like to work but are not currently employed and are not looking for a job, perhaps because they view prospects as so dim. We favor the unemployment rate in the index because ultimately, whether to search for a job is up to the individual. Whether suitable jobs are available for them is a better measure of opportunity.
- ***The minimum wage.*** The classical argument says a higher minimum wage will increase unemployment (especially among low-productivity workers, e.g. youths and others with limited skills). Recent research (Card, 1992; Katz and Krueger, 1992) has provided several theoretical arguments for why this may not turn out to be true in all cases. In practice, the minimum wage appears to be “binding” (i.e. affecting actual wages) for a relatively small subset of workers, mainly those in the retail and restaurant industries. The bulk of academic work still suggests that high minimum wages reduce employment opportunities, especially for entry-level workers/young people, but the effect does not seem to be particularly large. Also, the minimum wage appears to have very little effect on distribution of family incomes (Brown, 1988; Brown et al., 1982).
- ***Unionization rate.*** Unions generally increase wages and improve working conditions for their members (positive for groups with high union membership), but they slow down business innovation and adjustment to change, thereby slowing down aggregate economic growth (Olson, 1982). In a survey article, Flanagan (1999) describes how empirically fragile the relationship between measures of unionization and macroeconomic performance are, and notes that relationships that appear to have existed in the 1970’s and 1980’s all but vanish by the 1990’s. The conclusion drawn from our reading of the literature is that more research is needed before a unionization measure should be included in the EOI.
- ***Size of the informal sector.*** This is related to taxes and differences in earnings potential between formal and “informal” (untaxed or “black market”) employment, potentially causing non-level playing fields and difficulty developing the formal sector. However, data is limited to a subset of developing countries and years.⁵ Furthermore, this is much less important for the United States than for poorer countries.
- ***On-the-job training.*** Employer-funded studies suggest that this is as important, if not more important, than formal education. Becker (1964) pointed out the market failure that exists when it comes to employer-provided training – much of the benefits (that are not job-specific) accrue to employees, leading employers to invest too little in training. Unfortunately, the collection of reliable and nationally comparable data that captures this phenomenon has been discontinued (the Bureau of Labor Statistics’ Survey on Employer-Provided Training, 1993 & 1995).
- ***Flex-time benefits.*** More flexible arrangements for family leave, part-time work, or other benefits may help labor force participation, particularly for women.⁶ Measures of flex-time benefits are excluded from the EOI because a historical time series is not readily available; in addition, some of the effect is captured via the labor force participation rate.
- ***Other measures of labor market rigidity.*** Income protection programs or social insurance measures introduce undesired rigidities in the functioning of labor markets. Impacts on employment/unemployment depend on the extent to which the extra costs are shifted onto employees by adjustments in wages. For unemployment insurance, effects on employment depend on whether benefits are allowed to run on indefinitely and/or whether there is pressure on the unemployed to find jobs (see Nickell). Meyer (1995) looks at various states’ job search experiments in the early 1990’s and finds strong evidence that enforcement of job search requirements reduces unemployment.

⁵ Source: www.ilo.org/public/english/employment/strat/kilm/index.htm.

⁶ A history of maternity leave benefits is available at <http://www.census.gov/prod/2001pubs/p70-79.pdf>.

5. Policy and regulatory framework: As opposed to the previous sub-index, which focused mostly on the current health of the macro-economy and the degree of resources allocated to future production, this set of indicators reflects how government policy and regulation might affect future growth and opportunity. What unites the three major components of this sub-index, namely taxation, regulation, and antitrust enforcement, is that they all produce distortions, which economists measure in terms of “excess burden” or “deadweight loss” (DWL) to the economy.

- **Effective individual income tax rate [*].** The effective tax rate is the amount of tax actually paid by an individual (after deductions) divided by gross income earned, and serves as a measure of the total tax burden faced by individuals. If certain groups have high deductions compared to other groups, their effective tax rate will be lower, even where their statutory tax rates are equal.
- **Marginal individual income tax rate [*].** The marginal tax rate is the individual’s tax bracket: how much tax s/he would have to pay out of another dollar of income. Higher marginal tax rates can be a disincentive to additional work, since less of the additional earnings are kept by the worker. Unfortunately, marginal tax rates are unobservable. However, over the past 20 years the NBER has developed a micro-simulation model called TAXSIM, which attempts to calculate marginal tax rates (Feenberg and Coutts, 1993) based on confidential taxpayer data from the IRS’ Statistics of Income sample, with aggregates data going back to 1960. We have opted to use both the average and the marginal effective tax rates from this source.
- **Corporate tax rate [*].** Higher corporate tax rates lead to greater investment in unproductive tax avoidance (or outright evasion) behavior. Measurement of effective corporate tax rates depends on a number of factors, including the industry, the specific asset being taxed (i.e., equipment, structures, etc.) the type of financing (debt vs. equity), and the profitability of the firm. A plethora of methodologies and effective tax rates estimates exist – each suitable for the purposes for which they were designed – but none suitable as an overall “effective tax rate” for all U.S. corporations (Fullerton, 1984). As an expedient, we use the top statutory corporate tax rate, which has varied quite a bit over the past forty to fifty years.
- **Employment in regulatory agencies [*].** This measure serves as a proxy for the cost of regulatory compliance to the corporate sector. Some of the possible benefits of regulation (e.g., better air quality) are captured in other areas of the Index. This measure has been used in studies by Winston and Crandall (1994). While an imperfect measure, it is argued that regulatory employment is highly correlated with regulatory burdens.
- **All industries price-cost margin [*].** The size of operating margins is an (imperfect) proxy for “market power” in an industry; higher margins tend to be associated with less competitive market conditions and therefore higher prices for consumers. The Lerner Index is the ratio $(P-MC)/P$ which can be shown to equal the reciprocal of the elasticity of demand. Theoretically, the Lerner Index is a proxy for “market power,” although there are some qualifications that need to be made (Landes and Posner, 1981). In practice because the marginal cost (MC) variable is an unknown, we substitute average cost. Price-cost margins are calculated using the production data found in the EUKLEMS database maintained by the Conference Board/University of Groningen. We have taken an average of all of the industries in the U.S. to derive a measure of aggregate market power.

Variables not included

- **Statutory tax rates.** Use of the statutory rates may overstate the size of economic distortions because of tax evasion (which would be a bigger problem in less-developed

countries, but is still a significant problem in the U.S.). However, statutory rates can be weighted by incomes to create a weighted-average marginal tax rate, as was done by Easterly and Rebelo (1993b).

- **Total tax revenue as a share of GDP.** This variable is used in several cross-country growth regressions with mixed results. In particular, it may not be as “robust” a measure (Levine and Renelt, 1992; Sala-i-Martin et al., 2004) as the government deficit, included in the Macroeconomics section above.
- **Tax structure variables.** Conventional wisdom says that consumption taxes (because they only distort the consumption-saving decision of individuals) are less distorting than income taxes (which also distort the labor-leisure decision). A possible measure of the distortions created by the tax system could be the percentage of revenue raised by income taxes versus a value-added tax or other consumption-related tax. Krusell et al. (1996) observe that high-income tax countries (U.S., Japan, and Switzerland) tend to have higher output per capita and relatively low levels of income transfers. High-consumption tax countries (Iceland, Ireland, Greece, and Portugal) have lower output per capita and higher transfers. Another possible variable used by Fullerton et al. (1984), in their study of tax systems in the United Kingdom, Sweden, West Germany, and the United States, is inter-sectoral variability in tax rates. They found a strong negative correlation between economic growth and such variability in investment tax rates. As the foregoing discussion suggests, tax structure comparisons tend to focus on cross-country comparisons; the US has little fundamental change in tax structure over the period of our study, so we have excluded this variable for now.
- **Time and cost to start a business.** Various studies have suggested that barriers to entrepreneurial activity can be a significant impediment to economic growth (Djankov et al., 2002), and researchers have begun to collect systematic information on such costs.⁷ However, because the focus on these barriers is relatively recent, we lack a useful historical series that could be included in the Index. More historical data, and ideally a state-by-state comparison of business regulations, would be an excellent addition to future versions of the EOI.
- **Product market regulations.** Regulatory barriers can dampen productivity growth significantly, as documented in extensive work by the McKinsey Global Institute.⁸ However, the specific regulations and key issues can vary significantly from industry to industry, which makes it extremely challenging to develop an overall quantitative measure of regulatory conditions that could be included in the EOI. Most measures that exist come from think tanks focused on regulatory issues and tend to be overall qualitative assessments (e.g. 1-5 rankings) that change very little over time.
- **Crain-Hopkins studies of Regulator Compliance Costs.** Hopkins (1998), Crain and Hopkins (2001) and Crain (2005) provided estimates of regulatory compliance costs to the U.S. Small Business Administration’s Office of Advocacy. Their estimates run from 1977 to 2004, but methodological questions along with lack of academic support led us to reject the use of this measure.
- **Other proxies for the regulatory burden.** Some observers have suggested the use of page counts in the Federal Register or the Code of Federal Regulations as a proxy for the absolute volume of regulation. However, this is not really a variable that has received any serious academic attention.

⁷ An excellent source for such data is the World Bank’s Doing Business project (www.doingbusiness.org).

⁸ www.mckinsey.com/mgi/publications/us/index.asp.

- **Industry concentration/competition.** The classic “Structure-Conduct-Performance” approach has been to use Herfindahl-Hirschman index (HHI) as a measure of industry concentration, with the implication that higher concentration leads to less competition and therefore higher prices. However, industry capital requirements and other factors make this measure a very imperfect proxy for the level of industry competition (Sutton, 2001). And as a practical matter, the Census of Manufactures data for the HHI do not go back before 1982; hence we opted to use the four-firm concentration measure instead.
- **Four-firm Concentration Ratio (“C-4”).** A related measure, the total market share of the top four firms in an industry, is available for manufacturing industries for the period of 1947 to 2002 (from the Census of Manufacturing) (Kwoka, 1979). Unfortunately, the data we rely on to make these concentration calculations were significantly restructured in 1997, causing great discontinuity that resulted in higher concentration ratios. As a result, we decided not to use this measure.
- **Institutional quality/efficiency.** All things being equal, a more efficient government bureaucracy should deliver better services at a reduced taxpayer cost and reduce frictional costs in the economy. In the developing world context, the literature on institutional quality often refers to contract enforcement, property rights, and shareholder protection. In the developed world, the literature often refers to the degree of government intervention in the economy.⁹ In both cases, measures tend to be qualitative rather than quantitative, limiting their appeal in our view.
- **Political competition.** If political competition is limited, policies may favor “insiders” rather than be responsive to broader political and economic needs. Measures of the political advantage accruing to incumbents are theoretically attractive here. However, most such measures change only once every four years at elections, and thus show relatively little variation. Adding “political competition” variables may be more viable if the EOI is extended to provide results for multiple countries.
- **Financial intermediation.** Although some might question its value in light of recent U.S. market news, “financial deepening” can facilitate growth by matching providers and users of capital more efficiently, reducing the cost of capital for borrowers and increasing the rate of return for savers. A sample metric of financial depth could be bank deposits relative to GDP. But most measures of “financial market sophistication,” used in other indexes and the economic literature, appear to be qualitative assessments that are not especially suitable for our purposes.
- **Rule of Law.** This has been suggested/shown to be important in cross-country studies (de Soto, 2001) (Rigobon and Rodrik, 2004), (Kaufmann et al., 2002). The latter authors have created the World Bank’s “Regulatory Quality Index” and “Rule of Law Index.” The American Bar Association is also working on a “Rule of Law Index” across countries. The main problem with these types of measures is that the more carefully constructed series have relatively little history (the World Bank’s is available for about a decade) and most are based largely on qualitative indicators and perceptions rather than hard data.
- **Corruption.** Related to rule of law, other authors have explored the relationship between corruption and economic growth. Again, the issue tends to be that corruption measures are highly subjective. The best known are probably from Transparency International, which has considerable data over time and by country. Both rule of law and corruption data are probably more useful in cross-country comparisons of opportunity; sub-national data within the United States are not available and national measures tend to change very slowly if at all.

⁹ For example, the Cato Institute’s Economic Freedom Index (<http://www.freetheworld.com/download.html>).

- 6. Macroeconomic growth and stability:** These variables reflect the prospects of future stability and economic growth, an environment in which individual incomes can grow and opportunity can be realized. Early models of economic growth (Solow, 1957) featured technological change as an exogenous variable, one that all participants in the economy shared in equally, irrespective of their investment decisions. Reacting to the failed predictions of the Solow model, new models were developed that made technological change an endogenous variable. In this *endogenous growth* literature (Romer, 1990), technical change results from conscious decisions by economic agents to invest in physical capital and – especially important – human capital. In models of endogenous growth, policy change can impact the long-term growth rate of an economy – for better and for worse.

Within the endogenous growth tradition, Barro (1991) and others began to compare the growth experiences of different countries to look for patterns. Early on, researchers in this empirical growth field became concerned over the “robustness” of their results (Levine and Renelt, 1992), however a more recent effort to define robust relationships can be found in Sala-i-Martin et al. (2004). For the most part, our rationale for including or not including macroeconomic variables in the EOI follows the consensus of this literature.

- ***Investment as a percentage of GDP [*].*** Greater investment in the present increases future productive capacity and incomes. Investment is a key variable in both theoretical models of economic growth and in empirical growth models (Barro, 1991). Greater investment in the present increases future productive capacity and incomes. We use a five-year average of the share of fixed non-residential (business) investment as a percentage of GDP, with a multi-year average (since annual data can show wide variation due to the business cycles and the long payback periods of most investments). Five-year averages of cyclical variables are typical in cross-country studies of economic growth (Temple, 1999). We focus on business investment, as this is the portion of investment most relevant for the economy’s productive potential.
- ***R&D as a percentage of GDP [*].*** Many studies have shown both private and social benefits of R&D investment. Indeed, it is the spillover benefits – causing social benefits to exceed private benefits – that form one of the challenges in measuring the contribution of R&D to economic growth (Griliches, 1992). We follow Temple (1999) and consider R&D expenditures to be a proximate cause of growth. Within the endogenous growth literature (e.g. Romer, 1990), policies to promote R&D (such as research tax credits) increase the incentive for firms to innovate and thereby increase future productive capacity and incomes. We use a five-year average share, given the very long time horizon over which R&D is likely to affect productive capacity.
- ***Inflation rate [*].*** High inflation makes price comparisons more difficult and complicates the productive allocation of resources with a cost to growth over the longer term. The economic evidence in this area is strong (Grier and Tullock, 1989; Bruno and Easterly, 1998). High inflation also typically means more volatile inflation, which also slows growth (Fischer, 1993).
- ***Trade share as a percentage of GDP [*].*** Numerous cross-country studies suggest that openness to international trade is an important driver of economic growth. Sala-i-Martin et al. (2004) find this variable to be fairly robust (the second best trade measure, by their ranking). Many other economists have used this measure of openness, including Sachs and Warner (1995) and Harrison (1996). Lower barriers to trade allow a more efficient allocation of resources across countries and increase competitive pressures in the domestic economy, encouraging more rapid productivity growth. A measure of trade barriers (both tariff and non-tariff barriers) might be preferable from a theoretical perspective, but such measures tend to be qualitative in nature or too narrowly focused.

- ***Federal Surplus/Deficit as a percentage of GDP [*].*** Government borrowing intended to finance budget deficits reduces the supply of lendable funds for private investment. Just how much “crowding out” occurs is a matter of debate, as is the effect of short-run macroeconomic policy, generally, on long-term economic growth (Temple, 1999). Still, several cross-country studies show that deficits harm the potential for economic growth (Easterly and Rebelo, 1993a).

Variables not included

- ***Economic volatility.*** The traditional approach in both economic policy and economic theory has been to treat economic growth and economic stability as separate topics of analysis. Ramey and Ramey (1995) find that countries with higher volatility of economic fluctuations have lower growth. Older papers by Kormendi and Meguire (1985) and by Grier and Tullock (1989) find the opposite result. Kormendi and Meguire argue that more variable income streams lead to higher saving (and therefore investment), which results in a positive relationship between volatility and growth. More recent research by Imbs (2007) indicates that this issue is not settled either theoretically or empirically. We concluded that this variable needed more investigation before it could be included in the EOI.
- ***Past GDP growth.*** As the EOI focuses on economic opportunity, it is inherently forward-looking. While there is some correlation between GDP growth rates from one year to the next, the variables we have included in the macroeconomic sub-index and in other areas of the EOI capture most of the important variation.
- ***Trade openness.*** Sachs and Warner (1995) make the case for free trade, showing that open countries have converged upward in per capita income terms, whereas closed economies have not. Sachs and Warner define a country as “closed” based on at least one of the following: 1) tariff rates of 40 percent or more; 2) nontariff barriers covering 40 percent or more of trade; 3) a “black market” exchange rate that is 20 percent below the official rate; 4) a socialist economic system (as defined by Kornai); or 5) a state monopoly on major exports. They find that the number of years an economy has been “open” is a critical indicator of the growth rates of developing countries. Sala-i-Martin et al. (2004) agree that “years open” is important – in fact, it is the most robust trade variable in cross-country regressions. The trouble with using this variable for our purposes, is that the most important break point in the data is going from “closed” to “open,” and it is not clear that 10 years open vs. 20 years open would make all that much difference when looking at U.S. data. For this reason, we opted to use the trade share variable, which varies over time for the U.S. in a more meaningful way.
- ***Terms of trade.*** Another trade measure used by Barro (1997) but not found to be extremely robust by Sala-i-Martin et al. (2004).
- ***Foreign direct investment.*** Some theoreticians have argued that foreign direct investment (FDI) provides an important channel for more efficient technology and business processes to filter into the domestic economy. However, this is not a variable that has gotten as much attention in empirical growth regressions (e.g., it is not included in Levine and Renelt, 1992 or Sala-i-Martin, et al., 2004) and would require more research in order for a relationship to be established (Blonigen and Wang, 2004).
- ***Government consumption.*** Many studies include a “size of government” variable. The government consumption share (of GDP) appears to be the most robust fiscal policy variable (Sala-i-Martin, et al., 2004). A larger share of government consumption reduces resources available for private investment and thereby reduces economic growth. A larger government consumption share requires larger tax revenues that will lead to more distortions of private decisions regarding investment and labor supply. Levine and Renelt (1992) find the

government consumption share (and other measures of government size) not to be robust by their test, which may be a bit too stringent according to Sala-i-Martin, et al. (2004.)

- ***Social capital measures.*** A significant strand of literature relates social norms and behavior with economic growth. Some of the variables mentioned in this literature include satisfaction with government, civic participation (various measures including newspaper readership, volunteerism, membership in organizations, voter participation, church attendance, etc.), subversion of the rule of law (tax evasion, crime, and corruption), and trust in one's fellow citizens. Although we have included elements of "social capital" in other sub-indexes (i.e., in the health sub-index, we have included crime rates as well as measures of interpersonal support like the marriage rate), there may be a macro/aggregate role for social capital as well. The fundamental problem for our purposes is that we generally do not have regular, objective, and quantitative measures of social capital that can be incorporated into the EOI by type.

EOI Weighting Methodology

Each variable in the EOI was chosen because of its predictive power for economic opportunity (i.e., future real income). Therefore, by construction, all of the indicators in the EOI are somehow correlated with economic opportunity (either positively or negatively). However, the strength of the effect may vary considerably from one indicator to the next. For example, a one-percentage point increase in the labor force participation rate is probably more important for economic opportunity than a one-percentage point increase in the share of college graduates – it would be much more of a hindrance to economic opportunity to have absolutely no labor force than to have absolutely no college graduates.

Ideally, we could calculate the relative importance of each variable using purely statistical methods. Specifically, we could use the economist's traditional tool of regression analysis on historical data to isolate the impact of each indicator in the EOI on real income in later years. The larger the impact revealed via the regression analysis, the larger the weight of a particular indicator in the EOI.

Unfortunately, several statistical problems make this difficult. Two are particularly important. First, many of the variables in the Index are correlated with one another (a simple example of this is that many increase over time). This makes it harder from a statistical standpoint to tease apart the individual impact of each. Second, and more subtly, many of the variables in the Index actually have effects on each other. For example, education is a major driver of economic opportunity, but education also impacts health outcomes, which in turn affect economic opportunity as well. In this case it is very challenging to try to determine what portion of economic opportunity is impacted by education and what fraction is affected by health care. Third, given data limitations for many indicators in the EOI, we have only a limited span of historical data (back to 1980 in most cases) and a limited cross-section of different demographic groups. We also have only one country, at least in the current version of the EOI. More years, demographic groups, or countries would increase the usefulness of the regression approach.

As a result of these problems, we are unable to find statistical models that consistently predict the past behavior of real income growth. We therefore turned to an alternative approach – instead of applying regression analysis, we examined the impact of each variable individually on income and/or life expectancy through literature reviews. As a simplified example of our approach, consider the weighting of the college graduation rate. We found journal articles that measured the impact of college degrees on future income; e.g. Ashenfelter (1991) finds a 40-50% increase in earnings between 12 and 16 years of education. As the literature generally has shown an increasing premium to education in recent years, we took the top end of this range (50%). Therefore, for every 1 percentage point increase in the number of college graduates, expected lifetime earnings rises roughly $1\% \times 50\% = 0.5\%$. Every variable is benchmarked to the Index in this same manner and

ultimately all of the variables are adjusted in accordance to their relative weights with one another to arrive at the final weights.¹⁰

Other Indexes

Human Development Index

In 1990 the United Nations Development Programme's Human Development Report presented a "new way of measuring development by combining indicators of life expectancy, educational attainment, and income into a composite Human Development Index, the HDI".¹¹ The novelty of the HDI was inherent in the way that it allowed one distinct statistic to serve as a benchmark for both social and economic development factors. By setting a minimum and a maximum for each development category (referred to as "goalposts"), the HDI is able to rank countries in relation to these goalposts. The HDI facilitates constructive comparisons of development experiences, both within and between different countries, and its disaggregated version allows deeper analysis of disparities by sub-groups as defined relative to income, geographical or administrative regions, urban/rural residence, gender, and ethnicity.

In many ways, the HDI set a precedent for the creation of a range of other indexes. The objective of Hope Street Group's Index as a tool that allows for the investigation of economic opportunity by sub-groups, including race and gender, is strongly influenced by HDI's disaggregated approach to intra-country analysis. However, whereas the HDI focuses on comparing countries across broader development measures, Hope Street Group's EOI addresses economic opportunity for individuals. In addition, while the HDI provides a framework in which historical data can be meaningfully compared to analyze development progress, the EOI serves as a tool to compare and predict future economic opportunity.

Index of Economic Freedom

Over the past 13 years, the Heritage Foundation and the *Wall Street Journal* have been documenting the link between economic opportunity and prosperity around 162 countries worldwide across 10 specific freedoms such as trade freedom, business freedom, investment freedom, and property rights.¹² The Index of Economic Freedom catalogues/ranks countries according to the efficiency of their economic institutions, measured and benchmarked in a quantitatively rigorous manner. Furthermore, since this Index analyzes the interaction between freedom and wealth, it has investigated variables that comprise economic freedom, thereby offering systematic analysis of "freedoms" that can be traced throughout time. While the Index of Economic Freedom focuses on the basic institutions that protect the right of individuals to work toward their own economic interests on a global scale, Hope Street Group's Index examines a broad range of factors, including economic institutions, which affect economic opportunity on an individual level.

The Assets and Opportunity Scorecard

The Corporation for Enterprise Development (CFED) created this Scorecard to "measure how easy or hard it is for families across the United States to achieve the American Dream."¹³ Recognizing the depth and breadth of the debate surrounding the role of assets in ensuring economic security, CFED

¹⁰ Note that the "normalization" of our EOI indicators (conversion to a 0-100 scale for easy comparison from one to the next) complicates this process slightly. An indicator needs to change to have an impact on economic opportunity, so indicators with a large "raw" weight from the process above but relatively little variation over time will end up having a smaller weight than indicators with a similar "raw" weight but that show much more variation over time. This is an important reason why the macroeconomic and regulatory variables in our index have smaller weights (we have them only for the US as a whole, and we are not including other countries in our analysis—at least not yet—so we see less variation than we do in indicators that vary a lot from one race or gender to the other.

¹¹ <http://hdr.undp.org/en/statistics/indices/hdi/>.

¹² <http://www.heritage.org/Index/>.

¹³ <http://www.cfed.org/focus.m?parentid=31&siteid=2471&id=2471>.

developed a six-index framework, including financial security, business development, homeownership, health care, education, and tax policy and accountability. The Scorecard can be customized and sorted by any combination of states, measures, and indexes, facilitating planning, coalition-building, advocacy, and policy change in the area of assets on the state level. Hope Street Group also recognizes the importance of assets in driving economic opportunity and has included asset ownership as a sub-index in the Economic Opportunity Index, emphasizing the impact of this element on the individual rather than on the state-level. Furthermore, while the Scorecard relies on historical data to present an extensive view of wealth, poverty, and the financial security of American families in the present, Hope Street Group's EOI is designed as a tool to predict the economic opportunity of Americans in the future.

Economic Mobility Project

The Pew Charitable Trusts launched its Economic Mobility Project with the release of analytic pieces on opportunity in the United States by examining gender, race, immigration, and families. It recently finalized its volume of work with additional chapters on education, wealth, international comparisons, and mobility over time. The emphasis of this analysis is on economic mobility, adopting the perspective that economic inequality is inevitable and, in fact, not disconcerting if there is constant movement out of the bottom and a reasonable chance to make it to the top. Overall, the project concluded that "the American Dream is alive if somewhat frayed."¹⁴ The findings showed that family background as a child¹⁵ has a relatively modest effect on subsequent success in adulthood, especially in the middle class. However, individuals at the bottom and the top of the ladder experience somewhat less mobility. Furthermore, the project concludes that "there is no evidence that opportunity has increased in a way that might offset the slower and less broadly shared growth of income and wealth that families have experienced."¹⁶

Hope Street Group's EOI attempts to 'drill down' to the underlying drivers of economic opportunity in the United States, which ultimately helps determine the degree of economic mobility. By quantifying these drivers and their relative importance, Hope Street Group intends to create a gauge of the extent and equality of opportunity in order to be able to pinpoint relevant, specific and quantifiable policy implications that can improve opportunity.

Index of Social and Economic Conditions in Every County

Gopal K. Singh, a demographer at the Department of Health and Human Services, and Mohammad Siahpush, a professor at the University of Nebraska Medical Center in Omaha, recently developed an index that measures social and economic conditions in every county of the United States using census data on education, income, poverty, housing, and other factors. This index shows that by 1998-2000 people in the most affluent groups could expect to live 4.5 years longer than the people in the poorest group, and this gap in life expectancy continues to grow.¹⁷ A number of drivers have been identified to explain this gap, including the detection and treatment of cancer, smoking habits, and access to health insurance. Since health and life expectancy are a key driver in determining lifetime economic opportunity, Hope Street Group has essentially devoted its "health care and the social safety net" sub-index to determine the underlying reasons for Drs. Singh and Siahpush's timely findings.

Areas for Further Investigation

Hope Street Group's literature review suggested that the following indicators could have been valuable additions to the Index, but they are not currently supported by adequate or reliable data:

¹⁴ Source: http://www.pewtrusts.org/our_work_ektid35528.aspx.

¹⁵ Measured in terms of income or wealth.

¹⁶ Source: http://www.pewtrusts.org/our_work_ektid35528.aspx.

¹⁷ <http://www.nytimes.com/2008/03/23/us/23health.html?pagewanted=print>.

- **High school graduation rates excluding GED recipients.** There is strong evidence that the GED is not a substitute for a high school diploma because the diploma signals additional worthwhile attributes to the employer that the GED does not (Arkes, 1999). However, the Census Bureau's Current Population Survey, which is the main source of high school graduation rates by gender and race, does not exclude GED recipients from its data set. This phenomenon has not only probably masked declining high school graduation rates over time (Chaplin, 2002), but it is also a misrepresentation of the earning capacity of 'high school graduates' across the country.

Secretary of Education Margaret Spellings recently acknowledged the fact that this data inaccuracy is indeed obscuring the gravity of the nation's high school dropout predicament. In an attempt to rectify the situation, the U.S. Department of Education will require all states to "use one federal formula to calculate graduation and dropout rates."¹⁸ This move will no doubt facilitate Hope Street Group's efforts in integrating more accurate high school graduation rate data into the EOI.

- **Non-cognitive skills.** The literature has continuously shown that performance on standardized tests is by no means the only or the most significant indicator of achievement throughout one's lifetime. In fact, "soft" skills, such as attitude, self-esteem, and creativity have been shown to play just as important a role in broadening economic opportunity as academic success.

Even though selected surveys have been conducted among various populations and within different regions across the country, there is no reliable and comparable national dataset that measures such soft skills by gender, race, and geography. This issue is especially important in the context of the global knowledge-based economy, where such skills will play an increasingly important role in determining economic opportunity.

- **Preschool/Pre-K preparation.** The economic literature points to quality preschool preparation as a driving factor in K-12 student achievement; however, there is no available data that clearly distinguishes between attendance at quality pre-K programs and standard daycare centers.
- **Teacher quality.** Teacher quality is the most important variable affecting student achievement, particularly in schools with a high proportion of low-income children.¹⁹ However, there is no nationally comparable data that measures quality of teaching or lays out the elements that comprise an excellent teacher.
- **Business regulation.** A greater source of historical and regional business regulation data would shed some needed light on how government policies and regulations might affect future growth and opportunity. However, this issue will most likely be resolved with the passage of time as we gradually build up historical data in this area.

Overall, we would have liked to have found more datasets broken down by state and region. Given the United States' immense geographic and demographic diversity, it is important to compare how different areas of the country are doing against the metrics we have identified in the Index. Some of the most important drivers of economic opportunity, including quality of education and access to

¹⁸ <http://www.nytimes.com/2008/04/01/education/01child.html>.

¹⁹ For example, a recent research study found that 90% of low achieving 4th graders who had an effective math teacher three years in a row were able to pass a 7th grade math proficiency test, while only 42% of those with ineffective teachers three years in a row were able to achieve proficiency by 7th grade. The Education Trust, 2004. "The Real Value of Teachers: If good teachers matter, why don't we act like it." <http://www2.edtrust.org/NR/rdonlyres/5704CBA6-CE12-46D0-A852-D2E2B4638885/0/Spring04.pdf>.

health care, for example, can vary significantly from state to state and region to region. If these geographic disparities are not captured and substantively included in policy debates, many of the nation's opportunity gaps will continue to be left unchecked.

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APPENDIX 1 – Regression Analysis Results

Following the approach adopted by the World Economic Forum’s Global Competitiveness Report (Sala-i-Martin, et al., 2007), we attempted to assign the weights each sub-index was given in the overall EOI based on maximum likelihood regressions. The dependent variable in our regression model was the level of real GDP per capita. We ran a regression of real GDP per capita on the six sub-indexes as well as a time trend variable.²⁰ The results of the regression analysis are given in the table below:

Table 1. Maximum Likelihood Regression Weights

<u>SubIndex</u>	<u>Weight</u>
Macroeconomic Growth and Stability	21.3%
Policy and Regulatory Framework	10.4%
Labor Market Dynamism	10.2%
Asset Ownership	35.0%
Human Capital Development	5.0%
Health Care And Social Safety Net	18.1%
Number of observations	27
R-square	0.923

Unfortunately, the regressions were fraught with issues of endogeneity, autocorrelation, and multicollinearity. Table 2 gives the correlation matrix among the sub-indexes and time.

Table 2. Correlation Matrix

	Macro	Regulatory	Labor	Asset	Human Cap	Health Care	Time
Macro	1						
Regulatory	0.29	1.00					
Labor	-0.48	-0.21	1.00				
Asset	0.51	0.65	-0.30	1.00			
Human Cap	0.56	0.70	-0.45	0.96	1.00		
Health Care	0.55	0.68	-0.49	0.88	0.93	1.00	
Time	0.53	0.75	0.13	0.97	0.97	0.61	1.00

Because of our concern over the high correlations with time, we de-trended several of the component variables.²¹ We also experimented by eliminating several of the components of the sub-indexes to try to improve the fit. The “optimal” regressions resulting from this analysis appear in Table 1 above. Comparisons of the results in Table 1 with results from a similar regression using equal weights for each sub-index were stark: the equal-weighted regressions yielded R-squares of 0.984. The net difference between the model with optimal weights and the model with equal weights was just 0.8

²⁰ Restrictions were placed on the model to ensure that the weights would be greater than 0.05, less than 0.35 and that they should sum to one.

²¹ Variables with correlations greater than 0.85 were first regressed against time. The residuals from these preliminary regressions constitute de-trended (i.e. orthogonalized) variables. De-trended variables were: Trade Share, Population with Bank Accounts, High School graduation rates, College graduation rates, Math scores, Incarceration rates, Divorce rates, Smoking rates, Diabetes rates, Infant Mortality rates, Crime rates, Health Insurance rates, and Marriage rates.

percent. Our conclusion from the regression analysis is that the weights do not matter in terms of the ability of the regression model to explain performance of real per capita GDP.

A major concern we have with these results is that the effects of time are extremely strong in the model and that even the de-trended sub-indexes are still fairly highly correlated with time. A comparison of the “time-trend only” model and the “no time-trend” model shows the problem: the model with the time trend as the only regressor yields an R-square of 0.976; the model with sub-indexes (after de-trending), but without a time-trend variable, yields an R-square of 0.953. Time effects are still commingled with the regressors even after de-trending. As a result, the test of the explanatory power of the sub-indexes is not a very discerning one.

It should be noted that our results are consistent with those of the World Economic Forum. In a similar sensitivity test of the weights used in their index, they also found that the weights do not matter in terms of their models’ ability to explain variation in GDP across countries. Of course, it would be incorrect to conclude on the basis of the regression analysis that weights do not matter in the construction of the EOI itself. The weights are critically important. It is simply that in terms of the test we used to assign the weights (and with the model as specified here) we were not able to reject one set of weights against another with a very high degree of confidence.