CHAPTER 4

Measuring inclusive wealth at the state level in the United States

Kevin J. Mumford

KEY MESSAGES

This chapter is the first attempt to construct an accounting of the capital assets of each of the 48 contiguous U.S. states.

The study looks at four types of capital: exhaustible natural capital (mainly coal, oil, and natural gas); land; physical capital (like buildings, homes, and equipment); and human capital (based on education, wages, and number of working years remaining).

The results show a very low level of wealth inequality across states. The Gini coefficient is 0.09, which represents a fairly equal distribution of wealth.

The study demonstrates that the rate of economic growth as measured by inclusive wealth can be quite different than the rate of economic growth suggested by GDP figures. Data show that those states with high GDP growth rates tend to have much lower rates of inclusive wealth growth.

It is essential that governments collect capital stock data so that inclusive wealth accounting can become increasingly accurate, comprehensive, and useful. More complete data would enable states to measure their rate of inclusive investment. Such data would also make it clear to policy-makers whether current GDP growth rates are sustainable in the long-run.

The study's use of housing and stock market data to value physical capital is an important contribution to the literature on sustainability.

An important conclusion drawn here is that if states with an inclusive wealth per capita annual growth rate that is less than their GDP per capita annual growth rate want to sustain higher GDP growth rates for the long term, increased inclusive investment will be required. This means that state governments would have to encourage education, reduce the extraction of natural resources, and increase construction of public infrastructure.

1. Introduction

Economic growth is usually defined as the increasing capacity to produce goods and services and is often measured by the growth in gross domestic product (GDP) per capita. While GDP measures the value of the goods and services produced, it is not a direct measure of the *capacity* to produce these goods and services. To directly measure a change in the capacity to produce goods and services would require a measure of the growth in a comprehensive accounting of all forms of capital (including human capital). GDP may still be useful as a measure of economic growth to the extent that it is similar to the growth in the capital stock. However, it turns out that these two measures are the same only if the economy is following an optimal growth path.[1] If the economy is not on an optimal growth path, then an income-based measure like GDP could lead to qualitatively different conclusions about economic growth than a direct measure of the growth of the capital stock.

Consider an economy that slows the rate of investment in capital and allows the capital stock to depreciate over time. This diminishes the economy's capacity to produce goods and services. However, the reduction in investment allows for higher levels of consumption and thus GDP growth is not immediately influenced. A direct measure of the change in the capital stock would reflect this reduction in the capacity to produce goods and services straight away. As a second example in which income-based measures and capital-based measures give different results, consider an economy in which an exhaustible resource is an input to production.[2] If the economy increased the amount of this exhaustible resource used in production each period, this would increase GDP but decrease the capacity to produce goods and services in the future, all other variables remaining the same.

How different the GDP growth rate is from the capital stock growth rate is an empirical question. The purpose of this chapter is to construct an accounting of the capital assets of each of the 48 contiguous U.S. states. This capital-based measure is called "inclusive wealth" or "comprehensive wealth" and represents a complete accounting of all capital assets. The growth rate of the measure of inclusive wealth is computed for each U.S. state from 1990 to 2000 and compared to the GDP growth rate. This comparison is useful as an indicator of whether a given state is over- or under-consuming. If the rate of GDP growth exceeds the rate of capital stock growth, the state is consuming at a rate where it will not be able to sustain the rate of GDP growth in the long term.

Though appealing as a measure of economic growth, directly measuring the capital stock is more difficult than measuring GDP because there is no government collection of comprehensive capital stock data.[3] Even when capital stock data are available, many forms of capital are not traded in markets and thus there is no market price at which to value these assets. Some of these empirical difficulties have been addressed in work by Hamilton and Clemens (1999), Dasgupta (2001), Arrow et al. (2004), World Bank (2004), Arrow et al. (2010), World Bank (2011), and Arrow et al. (2012). This chapter is the first effort to apply the methodology developed in this literature to U.S. states.

As this is an initial effort to use state-level data to calculate inclusive wealth growth rates, the empirical work is not comprehensive. This chapter focuses only on a few of the most

1 For the capital stock growth rate to be the same as the GDP growth rate in a simple model with an optimal growth path, the production function must also exhibit constant returns to scale.

2 An exhaustible resource is a commodity whose available stock cannot be increased. See Dasgupta and Heal (1974) for the derivation of the optimal consumption path in a production economy with an exhaustible resource.

3 Wealth accounting initiatives at the OECD, the World Bank, and the United Nations University are working to make inclusive wealth data available to researchers. However, none of these efforts are focused on measuring inclusive wealth at the state-level within the United States.

important forms of capital: human capital, physical capital, land, and exhaustible resources. The U.S. state-level data allow the incorporation of housing valuation and stock market measures that the prior literature has been unable to use in comparisons across countries due to a lack of data.

The results from this empirical exercise indicate that there are large and meaningful differences between measuring economic growth through an income-based approach, like GDP, and measuring economic growth through an inclusive- or comprehensive- wealth-based approach. The wealth-based growth rates are similar in magnitude to the income-based rates, though the correlation between them is negative.

2. Measuring inclusive wealth

While this paper does not expand on wealth accounting theory, it offers a new application. A short description of the theory is helpful before explaining the methods employed. Following Arrow et al. (2012), inclusive wealth at time t is defined as the value of all capital assets:

EQUATION 1

$$W(t) = \sum_i p_i(t)\, K_i(t)$$

where $p_i(t)$ is the shadow price or marginal value of asset i at time t and $K_i(t)$ is the amount of asset i at time t. Non-decreasing wealth means that the economy has the capacity to produce at least as much as in the past and is consistent with the definition of sustainability that has been adopted in the wealth accounting literature (e.g. ARROW ET AL. 2012). Inclusive investment is defined as the change in the value of all capital assets holding prices constant:

EQUATION 2

$$I(t) = \sum_i p_i\,(t)\,\big(K_i\,(t+1) - K_i(t)\big)$$

Inclusive investment can be defined over any time period (month, quarter, year, or decade) as the data allow. A positive value for inclusive investment in period t implies that the productive capacity of the economy is greater in period $t+1$ than it was in period t. However, this does not mean that the economy will enjoy higher consumption indefinitely as future declines in inclusive wealth are possible if inclusive investment is negative in the future.

Technological change can be regarded as yet another form of capital asset. As shown in Arrow et al. (2012), if the rate of saving is small, the shadow price for the usual measure of technological change, total factor productivity (TFP), will be approximately one. Thus, the TFP growth rate, $R(t)$, can be added directly to inclusive investment:

EQUATION 3

$$I(t) = R(t) + \sum_i p_i\,(t)\,\big(K_i\,(t+1) - K_i(t)\big)$$

To calculate inclusive wealth and inclusive investment, one would need estimates of the stock of each capital asset at the beginning and the end of the time period being considered as well as the shadow prices for each asset. For a non-renewable resource such as oil, the change in the stock is simply the negative of the amount extracted during the period. Ignoring externalities associated with the use, the shadow price corresponds to the rental value, which is the price less the marginal cost of extraction.[4] Data on physical capital (buildings, machines, equipment) and land are generally reported in dollars making the task of finding a shadow price unnecessary.

Human capital is more difficult to measure directly. Following Klenow and Rodríguez-Clare (1997), the amount of human capital per worker is defined as $exp(rT)$, where r is the appropriate rate of interest, assumed to be 8.5 percent per annum as in Arrow et al. (2012), and T is the average number of years of educational attainment. The stock of human capital is the human capital per worker multiplied by the number of workers. The shadow price of a unit of human capital is calculated as the total wage bill divided by the total stock of human capital.

Population growth is assumed to be exogenous, has no effect on prices, and enters the

4 The average cost of extraction is generally used due to data availability.

production function multiplicatively. Under these assumptions one can account for population growth simply by measuring all capital assets in per capita terms.[5] In this chapter, all forms of capital are ultimately valued in per capita terms by dividing by the state population for the appropriate year. The assumption of exogenous population growth implies an assumption that all migration is also exogenous.

3. Data and empirical results

In this chapter, data are used from the period 1990–2000 to analyze economic growth in the U.S. 48 contiguous states. Table 1 presents real GDP per capita by state in 1990 and 2000 and then calculates the annual growth rate. The state-level real GDP data were obtained from the Bureau of Economic Analysis, and the state-level population data were obtained from the U.S. Census Bureau. Both data series are publicly available. Over this 10-year period, the annual growth rates range from 4.5 percent in New Mexico to under 1 percent in Louisiana. Though not reported in Table 1, note that each state experienced some population growth over this 10-year period. North Dakota had the smallest population annual growth rate at less than 0.1 percent and Nevada had the largest at 5.2 percent.

The remainder of this section focuses on the calculation of inclusive wealth. The methods and data used for each general type of capital asset are presented separately.

3.1 Exhaustible natural capital

Exhaustible forms of natural capital include non-renewable energy and mineral resources. This chapter focuses on three energy resources – oil, coal, and natural gas – as these are by far the most valuable forms of natural capital.[6] The state-level data for these resources are publicly available from the U.S. Energy Information Administration. For each resource, proven reserves and quantity extracted are reported for every year. Proven reserves are the known quantity that is economically recoverable given current technology. While the estimated proven reserve is available in every year, only the most recent year's data are needed. Proven reserves tend to increase over time as new resources are discovered and new methods of extraction are developed. This is true even after subtracting the amount extracted. However, the stock of energy resources is a non-renewable resource which means that it is non-increasing by definition.

Thus, the stock of the exhaustible resource, $K(t)$, in year t is defined according to:

EQUATION 4

$$K(t)=K(T)+\sum_{j=t}^{T-1} X(j)$$

where $X(j)$ is the total extraction for the state in year j and the most recent measure of proven reserves is given by $K(T)$. The most recent proven reserves data is for 2009, so extraction data for each state for years 1990–2008 are needed for the calculation. The extraction data for oil, coal, and natural gas is also obtained from the U.S. Energy Information Administration. The results are presented in Table 2.

The shadow price for each of these goods should be state-specific as the extraction cost for the resource differs by state. However, state-specific estimates of the extraction cost were unavailable and so a U.S. average extraction cost estimate from the World Bank (2006)

5 See Arrow, Dasgupta, and Mäler (2003) for a complete discussion of how population growth enters the theory and the conditions under which per capita values can be used.

6 Future work could investigate the availability of state-level reserves and extraction data for a large number of mineral types. Recent work by the World Bank (2011) and Arrow et al. (2012) has shown that minerals are not nearly as valuable as energy resources, so it is unlikely that the result would be very different, though this is just speculation that would need to be confirmed by a more comprehensive accounting of all forms of exhaustible natural capital.

data appendix is used. This is an important limitation as the cost of extracting oil, coal, and natural gas in some states is far greater than in others. The World Bank (2006) extraction cost estimates are an average over various types of U.S. extraction methods, not marginal costs. As a simplification, each resource is assumed to be homogeneous and an average price is used for the 1990–2000 period. This yielded shadow prices (average resource price less the average extraction cost) of US$2.48[7] per barrel for oil; $1.90 per short ton for coal; and $0.19 per thousand cubic feet for natural gas.

Another important limitation in this study is the disregard for capital gains. As explained in Arrow et al. (2012), as non-renewable resources are extracted the shadow price should increase for the stocks that are still underground. Thus, future consumers of non-renewable resources should expect to pay higher prices and future exporters of non-renewable resources should expect to make higher profits. However, data on the consumption and extraction behavior of not only every state, but also of the rest of the world would need to be obtained in order to calculate the capital gains. This pursuit is left for future research.

3.2 Land

Land is clearly an important capital asset and, fortunately, high-quality data are available for land use by state. The U.S. Department of Agriculture's Natural Resources Conservation Service conducts a survey of land use by state every five years. Developed urban land is ignored in this section as it should be captured in the value of housing and the value of physical business capital considered in Section 3.3. All federal land is excluded from the present analysis as it is not clear that this land should be counted as part of the wealth of the state.[8] This leaves non-federal rural land. Table 3 reports the amount of non-federal rural land by state in thousands of acres for 1990 and 2000.[9]

Across the 48 states considered in this study, non-federal rural land declined by about 21 million acres from 1990 to 2000. Nearly 95 percent of this reduction in non-federal rural land was due to urbanization. The remaining 5 percent was due to expansion of federal land and the creation of new water areas. New water areas include ponds, lakes, reservoirs, and estuaries. These new water areas are excluded from the analysis because of the difficulty in valuation.

The average quality of rural land differs widely across states. The U.S. Department of Agriculture's National Agricultural Statistics Service provides estimates of the average price of an acre of rural land in each state. Not all years are available, so rather than take an average price over the 1990–2000 period, this chapter uses the 1995 values. Using the average price of an acre of rural land as the shadow price implies assuming that the land market is thick and that distortions from taxes and government subsidies are small.

The average value of an acre of rural land in each state, as well as the value of the change in the amount of rural land (primarily reductions due to development), are also reported in Table 3. The loss in rural land wealth for states that experienced a great deal of development would likely be offset by gains in housing wealth and physical capital, though this depends on the

7 All monetary values in this chapter are expressed in US$.

8 The inclusive wealth of a state is the wealth owned by all inhabitants of that state. Land owned by the state government should obviously be included, but it is not clear how land owned by the federal government should be treated in the accounting. One option is that the value of federal land could be divided equally among all inhabitants of the country and thus assigned to the states in proportion to the population. However, this is an enormous task that would likely have little influence on the overall results.

9 The Natural Resources Conservation Service reports land use in 1987, 1992, 1997, and 2002. The 1990 and 2000 land use reported here are linear approximations using the two adjacent land use values.

value of the rural land and housing market prices.

It would be interesting to disaggregate the rural land measure into its various component types such as pastureland, cultivated cropland, non-cultivated cropland, and forest. Over time, there is a great deal of conversion of one land type to another within the rural land category. However, average land values by sub-type and state were unavailable. Conducting the analysis with this finer level of detail would likely lead to smaller total land value losses as states convert less valuable rural land types into more valuable types. This gain is likely small compared to the loss from urbanization. Another limitation in this study is that the value of various renewable resources, such as groundwater and fisheries, is not included. Though these renewable resources are also likely small in value compared to the forms of capital that are included, these limitations point to the need for additional empirical work.

3.3 Physical capital

Physical capital is the stock of all buildings, homes, equipment, etc. Some of the stock of physical capital in a state is owned by investors outside of that state. This notion of inclusive wealth is the productive capital stock owned by a given state's residents.[10] So, where possible, this chapter allocates wealth based on ownership rather than location of the physical asset. This implies that migration from one state to another could have an important impact on wealth calculations.[11]

The Bureau of Economic Analysis (BEA) publishes an annual estimate of the stock of fixed reproducible tangible wealth. This includes estimates of the value of housing, consumer durable goods, and financial assets owned by households and non-profit organizations less home mortgages and other household debt. Assets owned by the government are included in the estimates. The value of assets owned by firms is not estimated directly as this should be captured by the value of corporate equities, equity in non-corporate business, and corporate bonds. The BEA constructs these estimates using the Federal Reserve Flow of Funds Accounts. Unfortunately, the BEA only publishes physical capital estimates for the nation as a whole; no data are available at the state level.

There is a great deal of state-level data on housing wealth. This chapter uses the state-level housing wealth series employed in Case, Quigley, and Shiller (2005). These estimates of housing wealth were constructed from repeat sales price indexes, state-level home ownership rates, and the number of households in each state. To simplify the analysis, all homes are assumed to be owner-occupied. This is an important limitation as about 30 percent of homes and apartments are rented rather than owned by the resident. The home value data also includes the value of the land.

To value the physical capital contained in businesses, this chapter uses the stock market holdings of all residents of the state. This allows for businesses in one state to be owned by residents of another state. The state-level stock market wealth series again comes from Case, Quigley, and Shiller (2005). These stock market estimates were constructed from the Federal Reserve Flow of Funds Accounts. For equities held by pension and mutual funds, the Survey of Consumer Finances is used to distribute the wealth to households geographically. Checking the state-level estimates against other data would have been preferred, but no alternative sources were known to the author.

Table 4 reports the housing and stock market wealth value by state in 1990 and 2000. Note that the stock market boom in the last half of the 1990s is likely responsible for an overvaluation of

10 This is similar to Arrow et al. (2012) where the physical capital wealth estimates depended on the ownership of physical capital, not the location of that capital.

11 Migration of people with higher than average wealth increases the wealth *per capita* of the destination state.

the true value of the physical capital owned by businesses. Using the book value rather than the market value of companies may be a better measure, though this would neglect real increases in the value of a business that are not captured by the purchase price of physical capital.

Housing and stock market wealth account for about 70 percent of the BEA estimate of the stock of physical capital. The remaining wealth is due to durable consumer goods, savings deposits, equity in non-corporate businesses, and government assets. Because there is no state-level source for these data, these types of physical capital in the analysis are ignored. This is similar to the treatment of non-energy forms of natural capital in Section 3.1 and the treatment of water areas in Section 3.2 and implies that the results here are underestimates.

The value of urban land used by businesses is included in the value of the business and thus it would be double counting to have included urban land data in the land calculations of Section 3.2. A potentially important limitation is the double counting of the value of some energy companies. To the extent that the state has transferred ownership of non-renewable resources to firms, there should be a reduction in the valuation of the non-renewable resource discussed in Section 3.1.

Despite the limitations, using housing and stock market data to value physical capital is an important contribution to the literature on sustainability. In particular, the stock market data allow for wealth accounting by ownership rather than by location. This is not a feature of the most widely-used OECD international capital stock data.

3.4 Human capital

The measure of human capital used here follows methods developed by Klenow and Rodríguez-Clare (1997) and Arrow et al. (2010). Using this method requires state-level data on the level of educational attainment and an assumed rate of return on human capital. The state-level of educational attainment data are obtained for 1990 and 2000 from the U.S. Census Bureau. Following Klenow and Rodríguez-Clare (1997) and Arrow et al. (2010), the rate of return of 0.085 is used for all states, though this could be made state-specific if there was empirical evidence suggesting that the rate of return differed by state.

The stock of human capital per capita in a state is defined as $exp(.085 \times T)$, where T is the average number of years of educational attainment in the state. The stock of human capital per capita is reported by state in Table 5 for years 1990 and 2000. The change in the stock of human capital over time comes only from the increase in the average level of education. Note that all states experienced an increase in the average level of education.

The shadow price of a unit of human capital is equal to the discounted sum of the wages it would receive (the rental price) over the expected number of working years remaining. To arrive at this shadow price, the first required step is to calculate the state-specific average annual wage as the total wage bill for the state divided by the number of workers. The total wage bill by state is obtained from the Bureau of Economic Analysis and the number of employees comes from the Bureau of Labor Statistics. The average annual wage reported in Table 5 is the average annual wage per worker (not per unit of human capital) in 1990. By dividing the average annual wage per worker by the average stock of human capital per worker, we arrive at the rental price for a unit of human capital.

This rental price for a unit of human capital is received each year over the number of working years remaining with the rental price for future years discounted at the same rate assumed to be the rate of return on education. The resulting shadow price of a unit of human capital ranges over states from about $120,000 to $200,000. The value of the change in the stock of human capital per capita is obtained by multiplying this shadow price of a unit of human capital by the difference in the stock of human capital per capita between 1990 and 2000. This value of the change in the stock of human capital is then

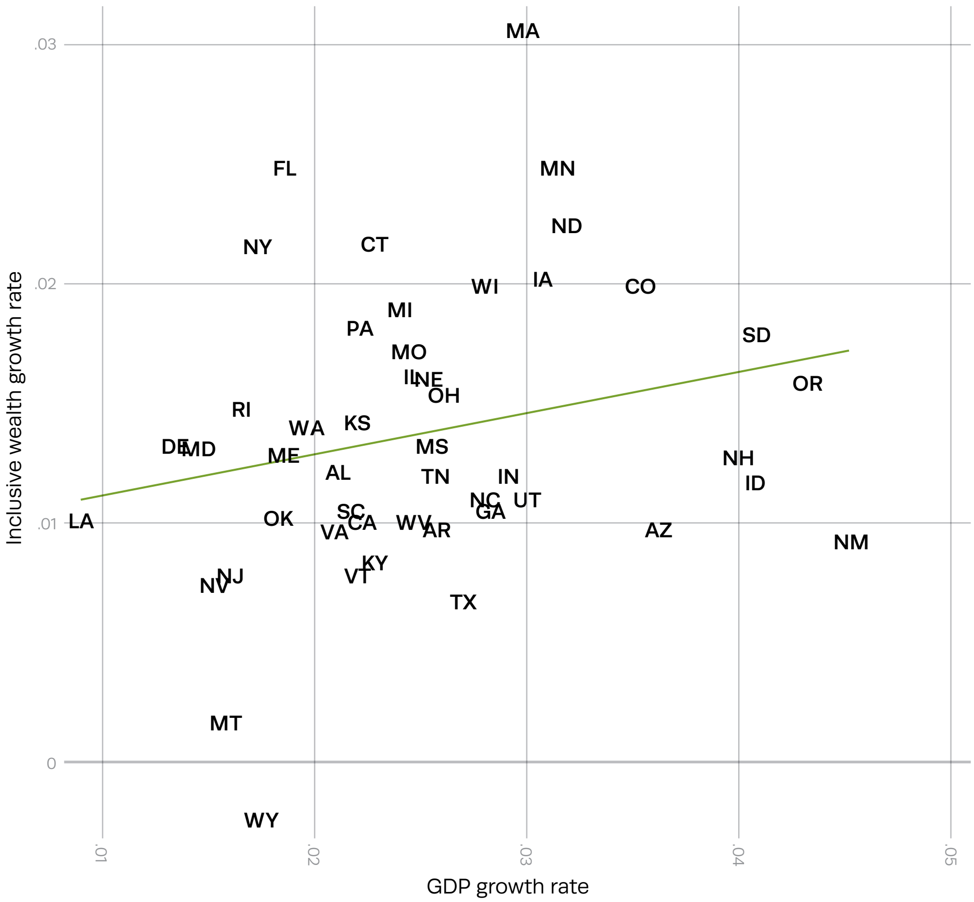


FIGURE 1

Per capita inclusive wealth and GDP annual growth rates

Notes: The per capita inclusive wealth growth rate reported in Column (2) of Table 8 is plotted against the per capita GDP growth rate for each state along with the linear regression line.

multiplied by the state population to arrive at the total change in the value of human capital for the state as a whole and is reported in the last column of Table 5.

3.5 Overall changes in capital: inclusive investment

Table 6 reports the value of aggregate changes in each of the forms of capital considered. Exhaustible natural capital is depleted in most states, but there is a great deal of heterogeneity with some states extracting trillions of dollars worth of energy resources over the 10-year period and other states extracting nothing. There is less heterogeneity in the decline in land capital as nearly all states experienced some loss of rural land due to development with the largest decline occurring in Florida. While there are large gains in human capital, the gains in physical capital are nearly an order of magnitude larger.

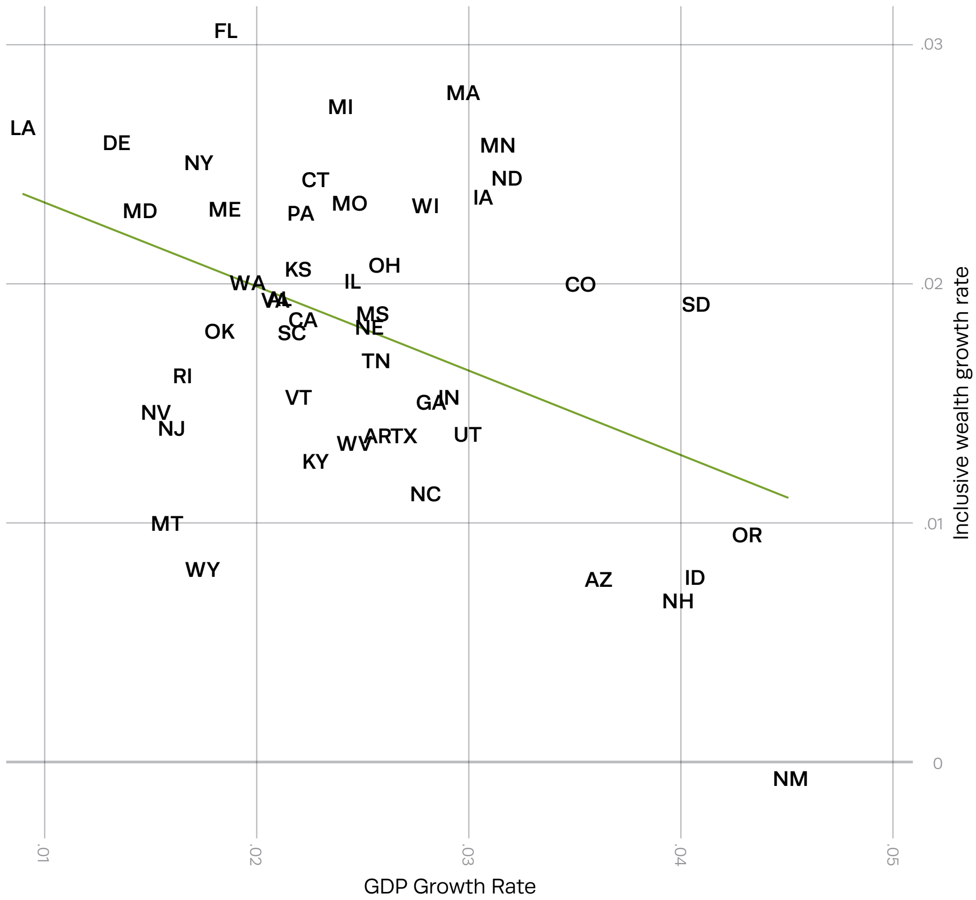
Table 7 reports the value changes in each form of capital per capita. This not only makes it easier to compare states of very different sizes, but also removes the effect of population growth. Again, physical capital gains dominate the other forms of capital. Somewhat surprisingly, the change in inclusive wealth per capita is found to be negative for Wyoming. This is because the gains in physical and human capital were not enough to overcome the US$54,000 per capita decline in natural resources over the 10-year period.

The final column of Table 7 reports that annual total factor productivity (TFP) growth rate over 1990-2000 from Sharma et al. (2007). As explained in Section 2, TFP can be thought of as another form of capital and because it has a shadow price of one, the TFP growth rate can be directly added to the growth rate of all other forms of capital in dollars.

The annual growth rate for inclusive wealth is reported in Table 8. The first column reports the inclusive wealth annual growth rate without accounting for population growth. The second column reports the inclusive wealth per capita annual growth rate. The third column adds the TFP growth rate to the inclusive wealth per capita annual growth rate reported in column (2). Finally, the fourth column reports the GDP per capita annual growth rate to serve as

FIGURE 2
Inclusive wealth + TFP growth rate

Notes: The sum of the per capita inclusive wealth growth rate and the TFP growth rate reported in Column (3) of Table 8 is plotted against the per capita GDP growth rate for each state along with the linear regression line.



a comparison to the wealth growth rates reported in columns (2) and (3).

The relationship between the inclusive wealth per capita annual growth rate and the GDP per capita annual growth rate is illustrated in Figure 1. This figure shows that there is a slightly positive relationship but a great deal of heterogeneity. In general, GDP growth exceeds inclusive wealth growth for all but a handful of states. In New Mexico, for example, the annual growth rate for GDP per capita is 4.5 percent, the fastest growth rate in the U.S., while the annual growth rate for inclusive wealth per capita is less than 1 percent, one of the slowest growth rates. However, this does not necessarily imply that states are under-investing because Figure 1 does not include productivity growth.

Figure 2 illustrates the relationship of the sum of the TFP annual growth rate and the inclusive wealth per capita annual growth rate with the GDP per capita annual growth rate. The relationship is quite negative, implying that those states with the highest GDP growth rates tend to have lower inclusive wealth growth rates.

3.6 State-level inclusive wealth inequality

The results can also be used to investigate state-level wealth inequality. By ranking each state by its inclusive wealth per capita in 2000, a state-level inclusive wealth Lorenz Curve is created (see Figure 3). In this figure, all inhabitants of a state are assumed to have the average level of inclusive wealth of that state. The 45-degree line represents the percentage of total inclusive wealth in the 48 contiguous states owned by that percentage of the total population if all states had the same inclusive wealth per capita. The darker curved line represents the actual distribution of inclusive wealth over the population.

Figure 3 shows a very low level of wealth inequality across states. In fact, the Gini coefficient is 0.09 which represents a quite equal distribution of wealth. Financial wealth in the U.S. over households is estimated to have a Gini coefficient of 0.81, a very unequal distribution of wealth (BOVER 2010). It seems likely that the distribution of inclusive wealth would have a lower Gini coefficient than 0.81, though this is just speculation. Regardless, it seems that only a small amount of inclusive wealth inequality is due to state-level differences. It is likely that

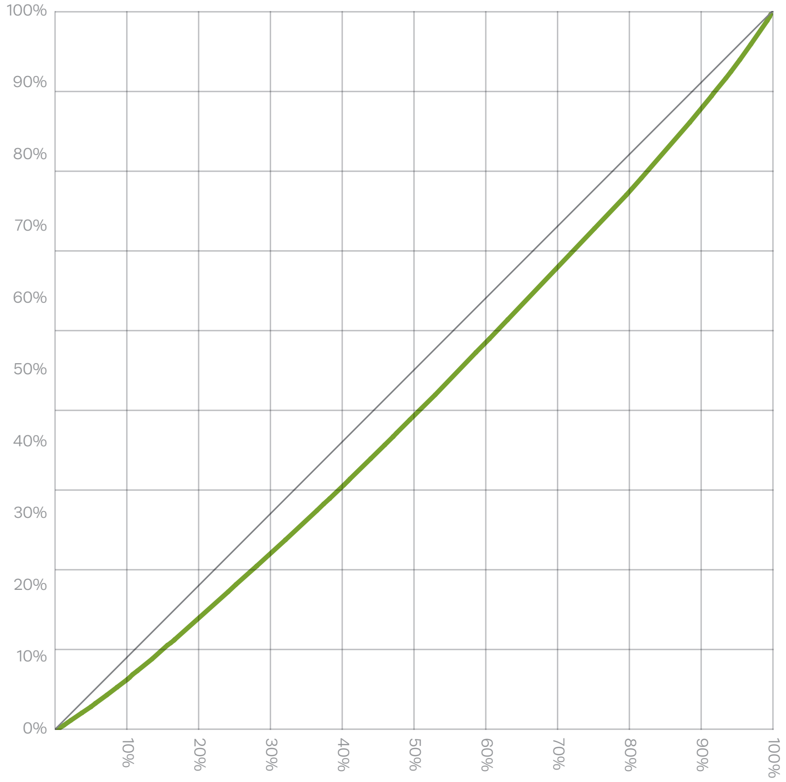


FIGURE 3

State-level inclusive wealth Lorenz curve

Notes: This Lorenz curve shows the distribution of inclusive wealth across states but not within states. In this figure all individuals within a state are assumed to have the average level of inclusive wealth in that state. Calculations by the author.

inclusive wealth inequality across individuals within a state is much larger.

4. Conclusion

This chapter has applied the inclusive wealth framework to U.S. states from 1990 to 2000. The purpose is to apply this new approach of growth accounting to an environment with good data availability and reliability. One important lesson is that the rate of economic growth as measured by inclusive wealth can be quite different than the rate of economic growth implied by GDP figures. The negative slope in Figure 2 is especially meaningful as it implies that those states with high GDP growth rates tend to have much lower rates of inclusive wealth growth. This does not imply that any state is currently on an unsustainable path as all have positive inclusive investment per capita. However, the negative slope in Figure 2 does imply that high GDP growth states are investing at much lower rates than low GDP growth states on average.

There are significant data challenges which limit applying the inclusive wealth theory empirically, even in the U.S. where data reliability and available are quite good. Data limitations, particularly in the number of capital types considered in the analysis and in the aggregation of capital assets into broad categories, are described in the paper. One important policy recommendation is for state governments to collect capital stock data in order to perform this type of inclusive wealth accounting. This would enable states to measure their rate of inclusive investment. Easy access to this type of data would make it clear to policy-makers if current GDP growth rates are sustainable in the long-run.

Despite the data challenges, this exercise produced empirical estimates of inclusive wealth growth rates that provide meaningful insights. The most important implication is that states with an inclusive wealth per capita annual growth rate that is less than their GDP per capita annual growth rate should increase inclusive investment in order to sustain higher GDP growth rates in the long-run. State governments could increase inclusive investment by encouraging education, reducing the extraction of natural resources, and increasing the construction of public infrastructure.

It is hoped that other researchers will make improvements to the methods used here by including additional forms of capital, disaggregating the forms of capital considered here, and by using more micro-data with the potential to reduce the need for broad aggregation over individuals. That the annual growth rates using these inclusive wealth figures are so different from those using the GDP figures is an indication that there is great potential for important contributions in the area of growth accounting.

TABLE 1

Real GDP per capita growth rate by state

Notes: GDP is in chained 2005 dollars. Data from the BEA and the U.S. Census Bureau. Calculations by the author.

State	Real GDP Per Capita 1990	Real GDP Per Capita 2000	Real GDP Per Capita Change	Real GDP Per Capita Growth Rate
Alabama	$24,142	$29,794	$5,652	2.13%
Arizona	$24,315	$34,695	$10,380	3.62%
Arkansas	$22,330	$28,849	$6,518	2.59%
California	$34,654	$43,254	$8,600	2.24%
Colorado	$31,833	$45,089	$13,256	3.54%
Connecticut	$43,245	$54,302	$11,057	2.30%
Delaware	$52,008	$59,595	$7,587	1.37%
Florida	$28,377	$34,198	$5,821	1.88%
Georgia	$30,272	$40,062	$9,790	2.84%
Idaho	$20,349	$30,329	$9,980	4.07%
Illinois	$33,835	$43,186	$9,351	2.47%
Indiana	$27,309	$36,429	$9,119	2.92%
Iowa	$26,559	$35,957	$9,398	3.08%
Kansas	$29,203	$36,359	$7,156	2.22%
Kentucky	$25,253	$31,691	$6,438	2.30%
Louisiana	$34,264	$37,597	$3,333	0.93%
Maine	$27,092	$32,603	$5,511	1.87%
Maryland	$34,122	$39,486	$5,364	1.47%
Massachusetts	$35,288	$47,355	$12,067	2.98%
Michigan	$29,386	$37,282	$7,896	2.41%
Minnesota	$31,403	$42,801	$11,397	3.14%
Mississippi	$20,722	$26,679	$5,957	2.56%
Missouri	$28,675	$36,530	$7,855	2.45%
Montana	$24,353	$28,547	$4,193	1.60%
Nebraska	$29,558	$38,028	$8,469	2.55%
Nevada	$37,398	$43,630	$6,232	1.55%
New Hampshire	$26,578	$39,292	$12,713	3.99%
New Jersey	$39,714	$46,647	$6,934	1.62%
New Mexico	$20,669	$32,144	$11,475	4.51%
New York	$38,207	$45,438	$7,231	1.75%
North Carolina	$29,683	$39,155	$9,472	2.81%
North Dakota	$24,201	$33,130	$8,930	3.19%
Ohio	$29,153	$37,761	$8,608	2.62%
Oklahoma	$26,597	$31,937	$5,340	1.85%
Oregon	$23,155	$35,338	$12,183	4.32%
Pennsylvania	$29,543	$36,828	$7,285	2.23%
Rhode Island	$30,905	$36,504	$5,599	1.68%
South Carolina	$26,173	$32,512	$6,339	2.19%
South Dakota	$23,817	$35,533	$11,716	4.08%
Tennessee	$26,931	$34,735	$7,803	2.58%
Texas	$31,887	$41,659	$9,772	2.71%
Utah	$26,386	$35,488	$9,102	3.01%
Vermont	$26,273	$32,738	$6,465	2.22%
Virginia	$34,069	$41,977	$7,908	2.11%
Washington	$36,029	$43,839	$7,810	1.98%
West Virginia	$21,455	$27,422	$5,966	2.48%
Wisconsin	$28,088	$37,061	$8,973	2.81%
Wyoming	$39,314	$46,844	$7,530	1.77%

TABLE 2

Exhaustible natural capital

Notes: Data from the U.S. Energy Information Administration. Oil is measured in millions of barrels; natural gas is measured in billions of cubic feet; and coal is measured in millions of short tons. Calculations by the author.

State	Oil 1990	Oil Extracted 1990–2000	Coal 1990	Coal Extracted 1990–2000	Natural Gas 1990	Natural Gas Extracted 1990–2000
Alabama	180	90	4,546	247	9,046	3,057
Arizona	0	0	327	119	0	0
Arkansas	169	79	102	1	15,280	1,819
California	8,116	2,899	50	1	7,985	2,539
Colorado	716	251	16,585	240	39,100	4,676
Florida	95	56	0	0	97	58
Georgia	0	0	50	0	0	0
Idaho	0	0	50	0	0	0
Illinois	288	134	9,967	491	0	0
Indiana	44	18	9,967	320	0	0
Iowa	0	0	2,200	0	0	0
Kansas	1,029	429	406	4	13,322	6,059
Kentucky	69	30	32,062	1,563	4,251	657
Louisiana	1,973	1,007	471	33	48,956	14,771
Maryland	0	0	480	37	0	0
Michigan	206	115	50	0	6,683	1,777
Mississippi	632	202	128	1	2,869	1,016
Missouri	0	0	6,016	12	0	0
Montana	755	160	119,796	394	2,427	497
Nebraska	73	41	0	0	0	0
New Mexico	1,913	636	12,532	262	43,172	13,097
North Carolina	0	0	50	0	0	0
New York	0	0	0	0	771	189
North Dakota	0	0	9,507	304	2,089	468
Ohio	156	74	23,628	290	2,838	1,145
Oklahoma	1,935	780	1,533	17	55,746	16,976
Oregon	0	0	50	0	0	0
Pennsylvania	40	13	28,329	660	10,046	1,353
South Dakota	0	0	50	0	0	0
Tennessee	0	0	471	42	0	0
Texas	13,977	5,330	13,179	538	184,707	47,230
Utah	719	170	5,688	244	12,073	1,570
Virginia	0	0	2,167	380	4,487	433
Washington	0	0	1,383	48	0	0
West Virginia	52	19	35,140	1,627	9,679	1,709
Wyoming	1,750	724	68,148	2,491	59,387	7,959

State	Rural Land Area 1990	Rural Land Area 2000	Average Value per Acre	Total Value of Change
Alabama	29,389.5	28,705.4	$1,613	–$1,103.2
Arizona	40,937.2	40,778.3	$1,075	–$170.9
Arkansas	28,799.3	28,434.4	$1,258	–$459.2
California	48,720.5	47,415.6	$282	–$367.5
Colorado	41,123.1	40,820.9	$666	–$201.1
Connecticut	2,157.6	2,064.5	$7,616	–$709.0
Delaware	1,030.2	980.8	$3,123	–$154.4
Florida	27,371.5	26,008.8	$2,701	–$3,680.5
Georgia	31,960.9	30,619.5	$1,613	–$2,163.5
Idaho	18,847.4	18,567.0	$1,075	–$301.5
Illinois	32,049.2	31,690.2	$2,330	–$836.3
Indiana	20,380.9	20,066.1	$2,074	–$652.8
Iowa	33,731.9	33,567.1	$1,728	–$284.9
Kansas	49,832.3	49,626.0	$685	–$141.3
Kentucky	22,706.8	22,175.0	$1,600	–$850.9
Louisiana	24,935.1	24,600.0	$1,382	–$463.2
Maine	18,940.7	18,751.8	$1,446	–$273.2
Maryland	4,967.6	4,685.1	$3,968	–$1,120.8
Massachusetts	3,607.4	3,273.3	$6,477	–$2,164.2
Michigan	29,812.5	29,102.7	$1,702	–$1,208.4
Minnesota	45,641.0	45,291.4	$1,216	–$425.1
Mississippi	26,768.1	26,304.2	$1,134	–$526.1
Missouri	39,596.8	39,166.0	$1,126	–$485.2
Montana	65,077.1	65,036.9	$355	–$14.3
Nebraska	47,377.0	47,270.2	$742	–$79.3
Nevada	10,214.1	10,049.9	$370	–$60.8
New Hampshire	4,451.8	4,316.9	$2,880	–$388.5
New Jersey	3,135.1	2,825.2	$8,960	–$2,777.2
New Mexico	50,556.9	50,129.7	$268	–$114.3
New York	26,897.9	26,349.9	$1,638	–$897.8
North Carolina	25,582.0	24,398.2	$2,240	–$2,651.7
North Dakota	41,601.0	41,444.4	$477	–$74.8
Ohio	22,486.1	21,847.6	$2,240	–$1,430.2
Oklahoma	41,004.2	40,701.6	$700	–$211.9
Oregon	29,079.4	28,796.3	$1,080	–$305.9
Pennsylvania	24,642.7	23,753.4	$2,816	–$2,504.3
Rhode Island	465.6	445.1	$8,320	–$170.6
South Carolina	16,483.8	15,823.5	$1,715	–$1,132.5
South Dakota	44,553.6	44,438.1	$387	–$44.6
Tennessee	22,959.3	22,218.2	$1,715	–$1,271.1
Texas	158,454.2	156,840.3	$672	–$1,084.5
Utah	17,549.4	17,618.0	$909	$62.4
Vermont	5,211.8	5,125.5	$1,856	–$160.2
Virginia	20,342.8	19,744.5	$2,202	–$1,317.2
Washington	28,791.7	28,318.7	$1,370	–$647.9
West Virginia	13,459.4	13,102.7	$1,178	–$420.0
Wisconsin	30,644.3	30,311.3	$1,331	–$443.3
Wyoming	32,855.9	32,784.5	$246	–$17.5

TABLE 3

Non–federal rural land value

Notes: Land is reported in thousands of acres. The value of the change in rural land is reported in millions of 2005 dollars.

TABLE 4

Physical capital

Notes: The value is measured in millions of 2005 dollars.

State	Housing Wealth 1990	Housing Wealth 2000	Stock Market Wealth 1990	Stock Market Wealth 2000
Alabama	$59,507.7	$84,224.8	$50,004.4	$133,836.4
Arizona	$77,664.9	$130,482.6	$90,729.0	$262,553.1
Arkansas	$28,330.7	$37,328.6	$31,520.7	$71,681.1
California	$1,327,167.8	$1,344,377.8	$742,211.8	$2,010,736.0
Colorado	$74,425.9	$159,984.6	$152,113.5	$522,204.7
Connecticut	$156,864.0	$141,777.2	$116,999.0	$423,787.2
Delaware	$20,286.8	$23,382.2	$27,625.1	$68,840.9
Florida	$285,305.0	$373,479.7	$351,464.3	$1,613,398.7
Georgia	$121,092.1	$194,106.5	$101,459.6	$276,799.1
Idaho	$14,933.9	$27,518.8	$22,017.6	$59,188.9
Illinois	$262,500.6	$345,320.9	$314,871.4	$836,122.2
Indiana	$88,394.7	$130,318.2	$103,464.3	$240,530.4
Iowa	$35,738.1	$49,749.5	$83,855.9	$229,912.3
Kansas	$37,551.2	$45,737.1	$90,522.1	$193,811.9
Kentucky	$48,844.9	$74,839.6	$53,536.9	$96,028.2
Louisiana	$60,281.6	$80,441.7	$59,790.1	$128,326.9
Maine	$25,562.8	$25,689.5	$25,411.6	$60,588.7
Maryland	$166,633.4	$186,286.0	$140,308.9	$326,424.2
Massachusetts	$219,328.2	$237,960.5	$226,781.6	$1,023,827.5
Michigan	$171,723.2	$252,387.7	$265,080.2	$721,585.0
Minnesota	$90,747.9	$138,077.0	$185,931.4	$620,933.4
Mississippi	$29,210.8	$41,121.3	$24,998.3	$81,407.9
Missouri	$86,748.6	$116,565.6	$176,251.2	$426,377.5
Montana	$10,185.0	$17,180.7	$22,388.0	$61,556.2
Nebraska	$21,758.5	$31,234.9	$55,940.1	$129,394.9
Nevada	$26,556.9	$51,321.9	$22,683.8	$88,132.4
New Hampshire	$32,676.0	$34,157.9	$30,355.3	$77,861.0
New Jersey	$318,604.7	$308,545.8	$577,153.3	$812,277.8
New Mexico	$26,209.0	$42,290.3	$28,859.4	$77,076.2
New York	$444,422.7	$442,301.0	$609,043.2	$1,996,242.9
North Carolina	$117,904.9	$172,848.3	$111,551.8	$282,736.7
North Dakota	$6,606.6	$8,403.9	$13,259.8	$53,275.0
Ohio	$205,327.7	$277,324.5	$287,050.9	$653,173.7
Oklahoma	$42,246.3	$53,825.9	$48,006.5	$118,799.3
Oregon	$51,798.4	$98,752.5	$74,811.3	$208,450.4
Pennsylvania	$273,139.5	$286,023.3	$314,506.8	$866,540.5
Rhode Island	$32,431.2	$29,258.3	$22,153.5	$61,670.1
South Carolina	$56,203.9	$80,698.6	$42,308.9	$104,826.6
South Dakota	$6,911.8	$10,245.6	$19,402.9	$49,856.8
Tennessee	$79,389.4	$118,926.5	$75,021.2	$198,577.0
Texas	$266,619.0	$365,907.7	$301,788.2	$694,792.7
Utah	$29,735.5	$69,962.9	$30,065.7	$83,887.6
Vermont	$11,600.7	$11,702.0	$26,638.2	$37,763.1
Virginia	$174,970.3	$194,299.9	$150,218.4	$324,737.7
Washington	$136,665.6	$214,529.6	$138,605.6	$368,360.6
West Virginia	$23,754.0	$30,513.2	$19,235.4	$47,028.6
Wisconsin	$81,210.5	$121,490.9	$140,439.7	$418,154.2
Wyoming	$6,315.1	$10,079.6	$16,364.8	$29,134.4

State	Housing Wealth 1990	Housing Wealth 2000	Stock Market Wealth 1990	Stock Market Wealth 2000
Alabama	2.79	2.87	$39,969	$22,925.8
Arizona	2.90	2.95	$43,551	$17,833.9
Arkansas	2.76	2.84	$36,382	$12,778.4
California	2.92	2.97	$56,101	$124,622.2
Colorado	3.01	3.09	$48,326	$30,984.5
Connecticut	2.99	3.07	$57,889	$27,353.3
Delaware	2.91	2.98	$48,695	$5,211.0
Florida	2.86	2.93	$42,837	$83,482.6
Georgia	2.85	2.95	$45,166	$62,943.0
Idaho	2.87	2.94	$39,480	$5,776.8
Illinois	2.90	2.98	$49,681	$93,822.0
Indiana	2.84	2.91	$41,514	$33,641.1
Iowa	2.86	2.94	$37,268	$15,957.5
Kansas	2.92	3.00	$40,806	$15,750.7
Kentucky	2.76	2.85	$39,475	$23,303.6
Louisiana	2.80	2.86	$39,758	$17,258.2
Maine	2.88	2.96	$39,600	$7,143.7
Maryland	2.98	3.07	$50,254	$39,998.9
Massachusetts	2.99	3.10	$54,686	$65,028.8
Michigan	2.86	2.94	$48,688	$70,336.0
Minnesota	2.93	3.02	$45,264	$41,342.2
Mississippi	2.77	2.83	$35,841	$10,145.8
Missouri	2.85	2.93	$42,288	$34,547.2
Montana	2.90	2.98	$35,529	$4,213.8
Nebraska	2.90	2.98	$38,743	$10,004.7
Nevada	2.84	2.88	$45,029	$7,072.3
New Hampshire	2.96	3.04	$43,828	$7,822.3
New Jersey	2.94	3.03	$54,963	$69,080.9
New Mexico	2.89	2.95	$39,850	$6,081.8
New York	2.92	3.00	$56,937	$129,579.0
North Carolina	2.82	2.92	$41,916	$59,764.1
North Dakota	2.86	2.93	$34,950	$3,297.5
Ohio	2.85	2.93	$43,822	$75,764.4
Oklahoma	2.85	2.91	$39,944	$12,523.7
Oregon	2.92	2.99	$43,573	$18,134.9
Pennsylvania	2.86	2.94	$45,092	$82,707.0
Rhode Island	2.88	2.96	$44,629	$6,346.2
South Carolina	2.81	2.89	$39,706	$22,745.3
South Dakota	2.85	2.94	$33,436	$3,942.4
Tennessee	2.79	2.88	$40,321	$34,681.3
Texas	2.87	2.92	$45,492	$80,703.3
Utah	2.95	3.01	$40,274	$9,166.4
Vermont	2.96	3.05	$39,112	$3,821.2
Virginia	2.93	3.03	$49,184	$58,633.1
Washington	2.95	3.03	$50,814	$37,676.8
West Virginia	2.75	2.82	$38,317	$7,804.1
Wisconsin	2.87	2.95	$40,726	$36,256.4
Wyoming	2.90	2.96	$39,080	$2,078.0

TABLE 5

Human capital

Notes: The value of the change in human capital is measured in millions of 2005 dollars.

TABLE 6

Change in comprehensive wealth (millions of 2005 dollars)

Notes: The value of the change in human capital is measured in millions of 2005 dollars.

State	Natural Capital 2000–1990	Land Capital 2000–1990	Physical Capital 2000–1990	Human Capital 2000–1990	Total Change 2000–1990	Annual Growth Rate
Alabama	–$1,629.8	–$1,103.2	$108,549.2	$22,925.8	$128,742.0	1.24%
Arizona	–$289.4	–$170.9	$224,641.9	$17,833.9	$242,015.5	1.81%
Arkansas	–$695.6	–$459.2	$49,158.2	$12,778.4	$60,781.8	1.07%
California	–$9,821.3	–$367.5	$1,285,734.3	$124,622.2	$1,400,167.7	1.25%
Colorado	–$2,517.6	–$201.1	$455,649.8	$30,984.5	$483,915.6	2.97%
Connecticut		–$709.0	$291,701.4	$27,353.3	$318,345.7	2.19%
Delaware		–$154.4	$44,311.2	$5,211.0	$49,367.8	1.72%
Florida	–$191.8	–$3,680.5	$1,350,109.0	$83,482.6	$1,429,719.3	3.19%
Georgia		–$2,163.5	$248,353.8	$62,943.0	$309,133.3	1.36%
Idaho		–$301.5	$49,756.2	$5,776.8	$55,231.5	1.77%
Illinois	–$1,619.4	–$836.3	$604,071.0	$93,822.0	$695,437.3	1.69%
Indiana	–$835.4	–$652.8	$178,989.6	$33,641.1	$211,142.5	1.28%
Iowa		–$284.9	$160,067.8	$15,957.5	$175,740.4	2.10%
Kansas	–$2,844.9	–$141.3	$111,475.7	$15,750.7	$124,240.2	1.56%
Kentucky	–$4,056.2	–$850.9	$68,486.1	$23,303.6	$86,882.6	0.86%
Louisiana	–$6,868.8	–$463.2	$88,696.9	$17,258.2	$98,623.1	0.97%
Maine		–$273.2	$35,303.9	$7,143.7	$42,174.4	1.22%
Maryland	–$90.0	–$1,120.8	$205,768.0	$39,998.9	$244,556.1	1.42%
Massachusetts		–$2,164.2	$815,678.2	$65,028.8	$878,542.8	3.20%
Michigan	–797.2	–$1,208.4	$537,169.3	$70,336.0	$605,499.7	1.93%
Minnesota		–$425.1	$482,331.0	$41,342.2	$523,248.1	2.86%
Mississippi	–$890.7	–$526.1	$68,320.1	$10,145.8	$77,049.1	1.39%
Missouri	–$29.2	–$485.2	$279,943.3	$34,547.2	$313,976.1	1.87%
Montana	–$1,586.9	–$14.3	$46,163.9	$4,213.8	$48,776.5	0.94%
Nebraska	–$130.1	–$79.3	$82,931.1	$10,004.7	$92,726.4	1.77%
Nevada		–$60.8	$90,213.6	$7,072.3	$97,225.1	1.68%
New Hampshire		–$388.5	$48,987.6	$7,822.3	$56,421.4	1.46%
New Jersey		–$2,777.2	$225,065.7	$69,080.9	$291,369.4	0.87%
New Mexico	–$5,841.0	–$114.3	$64,298.2	$6,081.8	$64,424.7	1.42%
New York	–$46.0	–$897.8	$1,385,078.0	$129,579.0	$1,513,713.2	2.19%
North Carolina		–$2,651.7	$226,128.3	$59,764.1	$283,240.7	1.33%
North Dakota	–$853.1	–$74.8	$41,812.3	$3,297.5	$44,181.9	2.18%
Ohio	–$1,218.6	–$1,430.2	$438,119.5	$75,764.4	$511,235.1	1.50%
Oklahoma	–$6,645.6	–$211.9	$82,372.3	$12,523.7	$88,038.5	1.10%
Oregon		–$305.9	$180,593.1	$18,134.9	$198,422.1	2.02%
Pennsylvania	–$1,975.4	–$2,504.3	$564,917.4	$82,707.0	$643,144.7	1.74%
Rhode Island		–$170.6	$36,343.7	$6,346.2	$42,519.3	1.42%
South Carolina		–$1,132.5	$87,012.4	$22,745.3	$108,625.2	1.15%
South Dakota		–$44.6	$33,787.7	$3,942.4	$37,685.5	1.96%
Tennessee	–$102.1	–$1,271.1	$163,093.0	$34,681.3	$196,401.1	1.37%
Texas	–$29,712.2	–$1,084.5	$492,293.3	$80,703.3	$542,199.9	0.98%
Utah	–$1,514.8	$62.4	$94,049.3	$9,166.4	$101,763.3	1.72%
Vermont		–$160.2	$11,226.2	$3,821.2	$14,887.2	0.84%
Virginia	–$1,029.5	–$1,317.2	$193,848.9	$58,633.1	$250,135.3	1.09%
Washington	–116.7	–$647.9	$307,619.0	$37,676.8	$344,531.2	1.80%
West Virginia	–4,432.8	–$420.0	$34,552.5	$7,804.1	$37,503.8	0.82%
Wisconsin		–$443.3	$317,995.0	$36,256.4	$353,808.1	2.18%
Wyoming	–$10,291.7	–$17.5	$16,534.2	$2,078.0	$8,303.0	0.26%

TABLE 7

Change in comprehensive wealth per capita (2005 dollars)

State	Natural Capital 2000–1990	Land Capital 2000–1990	Physical Capital 2000–1990	Human Capital 2000–1990	Total Change 2000–1990	Annual Growth Rate	TFP Growth Rate
Alabama	–$676	–$1,309	$21,932	$11,871	$31,819	1.24%	1.45%
Arizona	–$118	–$3,478	$30,300	$7,952	$34,656	0.99%	0.25%
Arkansas	–$491	–$2,033	$15,280	$11,029	$23,785	0.99%	0.99%
California	–$399	–$65	$29,601	$8,602	$37,738	1.02%	1.56%
Colorado	–$4,315	–$2,007	$89,052	$13,996	$96,726	2.04%	0.72%
Connecticut		–$387	$82,506	$16,155	$98,273	2.22%	1.08%
Delaware		–$914	$45,660	$12,392	$57,139	1.35%	2.14%
Florida	–$17	–$1,301	$74,902	$11,809	$85,393	2.55%	1.52%
Georgia	–$4	–$1,922	$23,013	$15,938	$37,025	1.07%	1.08%
Idaho	–$27	–$4,665	$30,204	$10,323	$35,835	1.19%	0.06%
Illinois	–$305	–$587	$44,550	$15,521	$59,180	1.65%	1.13%
Indiana	–$524	–$777	$26,341	$11,214	$36,254	1.22%	0.96%
Iowa	–$98	–$1,160	$52,484	$10,794	$62,020	2.07%	1.14%
Kansas	–$1,294	–$1,136	$37,330	$11,701	$46,601	1.45%	1.39%
Kentucky	–$2,890	–$1,076	$14,475	$12,754	$23,263	0.85%	1.00%
Louisiana	–$1,793	–$560	$18,257	$8,999	$24,903	1.03%	2.54%
Maine		–$1,014	$26,153	$11,837	$36,976	1.31%	1.84%
Maryland	–$40	–$608	$32,565	$16,292	$48,208	1.34%	1.80%
Massachusetts		–$550	$124,179	$19,532	$143,161	3.14%	0.61%
Michigan	–$97	–$474	$50,919	$15,041	$65,389	1.94%	1.74%
Minnesota		–$1,488	$90,770	$15,398	$104,680	2.55%	0.93%
Mississippi	–$424	–$1,305	$21,986	$8,796	$29,053	1.35%	1.26%
Missouri	–$249	–$831	$45,546	$12,569	$57,034	1.76%	1.42%
Montana	–$43,909	–$3,320	$46,441	$10,769	$9,981	0.16%	1.37%
Nebraska	–$87	–$1,769	$44,596	$10,986	$53,725	1.64%	0.90%
Nevada		–$1,258	$28,691	$6,887	$34,320	0.75%	1.35%
New Hampshire		–$1,509	$33,614	$12,576	$44,681	1.30%	–0.17%
New Jersey		–$619	$17,467	$17,294	$34,142	0.79%	1.23%
New Mexico	–$8,323	–$1,533	$29,326	$8,166	$27,635	0.94%	–0.73%
New York	–$3	–$175	$69,841	$15,001	$84,664	2.21%	1.18%
North Carolina	–$3	–$1,844	$21,920	$15,265	$35,338	1.12%	0.56%
North Dakota	–$1,552	–$303	$65,023	$10,063	$73,230	2.30%	1.01%
Ohio	–$346	–$331	$36,551	$13,470	$49,345	1.57%	1.29%
Oklahoma	–$2,585	–$872	$21,301	$8,460	$26,304	1.04%	1.48%
Oregon	–$7	–$1,922	$45,249	$11,210	$54,529	1.62%	–0.15%
Pennsylvania	–$351	–$389	$44,415	$14,532	$58,206	1.86%	1.27%
Rhode Island		–$331	$32,206	$13,313	$45,187	1.51%	0.78%
South Carolina		–$1,335	$17,956	$12,228	$28,849	1.07%	1.44%
South Dakota	–$14	–$1,990	$41,760	$10,432	$50,189	1.83%	0.83%
Tennessee	–$51	–$1,370	$24,098	$12,709	$35,385	1.22%	1.15%
Texas	–$2,744	–$1,215	$17,292	$8,557	$21,889	0.68%	1.30%
Utah	–$3,200	–$2,086	$33,979	$8,524	$37,215	1.12%	0.87%
Vermont		–$1,537	$13,367	$12,793	$24,622	0.79%	1.39%
Virginia	–$273	–$1,089	$20,722	$16,674	$36,033	0.98%	1.70%
Washington	–$137	–$1,485	$42,440	$13,896	$54,714	1.43%	1.34%
West Virginia	–$2,847	–$303	$18,930	$10,606	$26,386	1.02%	0.92%
Wisconsin		–$813	$55,199	$12,794	$67,180	2.04%	1.13%
Wyoming	–$54,470	–$1,498	$29,366	$8,684	–$17,918	–0.26%	1.55%

TABLE 8

Annual growth rates

State	Inclusive Wealth Total (1)	Per Capita (2)	+TFP (3)	GDP Per Capita (4)
Alabama	1.24%	1.24%	2.69%	2.13%
Arizona	1.81%	0.99%	1.24%	3.62%
Arkansas	1.07%	0.99%	1.98%	2.59%
California	1.25%	1.02%	2.58%	2.24%
Colorado	2.97%	2.04%	2.76%	3.54%
Connecticut	2.19%	2.22%	3.30%	2.30%
Delaware	1.72%	1.35%	3.49%	1.37%
Florida	3.19%	2.55%	4.07%	1.88%
Georgia	1.36%	1.07%	2.15%	2.84%
Idaho	1.77%	1.19%	1.25%	4.07%
Illinois	1.69%	1.65%	2.78%	2.47%
Indiana	1.28%	1.22%	2.18%	2.92%
Iowa	2.10%	2.07%	3.21%	3.08%
Kansas	1.56%	1.45%	2.84%	2.22%
Kentucky	0.86%	0.85%	1.85%	2.30%
Louisiana	0.97%	1.03%	3.57%	0.93%
Maine	1.22%	1.31%	3.15%	1.87%
Maryland	1.42%	1.34%	3.14%	1.47%
Massachusetts	3.20%	3.14%	3.75%	2.98%
Michigan	1.93%	1.94%	3.68%	2.41%
Minnesota	2.86%	2.55%	3.48%	3.14%
Mississippi	1.39%	1.35%	2.61%	2.56%
Missouri	1.87%	1.76%	3.18%	2.45%
Montana	0.94%	0.16%	1.53%	1.60%
Nebraska	1.77%	1.64%	2.54%	2.55%
Nevada	1.68%	0.75%	2.10%	1.55%
New Hampshire	1.46%	1.30%	1.13%	3.99%
New Jersey	0.87%	0.79%	2.02%	1.62%
New Mexico	1.42%	0.94%	0.21%	4.51%
New York	2.19%	2.21%	3.39%	1.75%
North Carolina	1.33%	1.12%	1.68%	2.81%
North Dakota	2.18%	2.30%	3.31%	3.19%
Ohio	1.50%	1.57%	2.86%	2.62%
Oklahoma	1.10%	1.04%	2.52%	1.85%
Oregon	2.02%	1.62%	1.47%	4.32%
Pennsylvania	1.74%	1.86%	3.13%	2.23%
Rhode Island	1.42%	1.51%	2.29%	1.68%
South Carolina	1.15%	1.07%	2.51%	2.19%
South Dakota	1.96%	1.83%	2.66%	4.08%
Tennessee	1.37%	1.22%	2.37%	2.58%
Texas	0.98%	0.68%	1.98%	2.71%
Utah	1.72%	1.12%	1.99%	3.01%
Vermont	0.84%	0.79%	2.18%	2.22%
Virginia	1.09%	0.98%	2.68%	2.11%
Washington	1.80%	1.43%	2.77%	1.98%
West Virginia	0.82%	1.02%	1.94%	2.48%
Wisconsin	2.18%	2.04%	3.17%	2.81%
Wyoming	0.26%	−0.26%	1.29%	1.77%

REFERENCES

ARROW, K.J., DASGUPTA, P. & MÄLER, K.G. (2003). The genuine savings criterion and the value of population. *Economic Theory, 21*(2), 217-225.

ARROW, K., DASGUPTA, P., GOULDER, L., DAILY, G., EHRLICH, P., HEAL, G.,...WALKER, B. (2004). Are we consuming too much? *The Journal of Economic Perspectives, 18* (3), 147-172.

ARROW, K.J., DASGUPTA, P., GOULDER, L.H., MUMFORD, K. & OLESON, K. (2010). China, the U.S., and sustainability: Perspectives based on comprehensive wealth. In G. Heal (Ed.) *Is economic growth sustainable?* London: Palgrave Macmillan.

ARROW, K.J., DASGUPTA, P., GOULDER, L.H., MUMFORD, K.J. & OLESON, K. (2010). Sustainability and the measurement of wealth. *NBER Working Paper No 16599*.

BOVER, O. (2010). Wealth inequality and household structure: U.S. vs. Spain. *Review of Income and Wealth, 56*(2), 259-290.

CASE, K.E., QUIGLEY, J.M. & SHILLER, R.J. (2005). Comparing wealth effects: The stock market versus the housing market. *Advances in Macroeconomics, 5*(1), 1.

DASGUPTA, P. (2001). *Human well-being and the natural environment.* Oxford: Oxford University Press.

DASGUPTA, P. & HEAL, G. (1974). The optimal depletion of exhaustible resources. *Review of Economic Studies, 41*(1), 3-28.

HAMILTON, K. & CLEMENS, M. (1999). Genuine savings in developing countries. *The World Bank Economic Review, 13* (2), 333-56.

KLENOW, P.J. & RODRÍGUEZ-CLARE, A. (1997). The neoclassical revival in growth economics: Has it gone too far? In B. Bernanke & J. Rotemberg (Eds.) *NBER macroeconomics annual 1997*. Cambridge, MA: MIT Press.

SHARMA, S.C., SYLWESTER, K. & MARGONO, H. (2007). Decomposition of total factor productivity growth in U.S. states. *Quarterly Review of Economics and Finance, 47*(2), 215-241.

WORLD BANK. (2006). *Where is the wealth of nations?* Washington, DC: World Bank.

WORLD BANK. (2011). *The changing wealth of nations: Measuring sustainable development in the new millennium*. Washington, DC: World Bank.