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Measuring Prosperity: Maryland's Genuine Progress Indicator

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In Brief:

Though never designed to do so, the world's main economic indicator, Gross Domestic Product (GDP), has become our way of measuring well-being, even though it ignores many negative impacts from economic activities. Further, elected officials feel pressure from consumer-voters to enact policies based on traditional economic objectives. The Genuine Progress Indicator (GPI) is an alternative, more comprehensive gauge that values critical elements of our social and environmental conditions. While most GPI studies are on a national scale, Maryland calculated and updates its own GPI. The Maryland GPI and its many online resources counter the perceived link between economic growth and social well-being by educating the public on Maryland's conditions and spurring debate on what true prosperity means for the state. The GPI also empowers state analysts and officials with various policy and budget evaluation tools and supports parallel efforts in ecosystem services and valuation. The process of how Maryland developed its GPI may provide guidance and support for other subnational governments in utilizing similar efforts in pursuit of a more restorative economy.

Key Concepts:

- The chief economic indicator, Gross Domestic Product, is our de facto measure of well-being, but it is out of step with economic reality because it does not adequately measure environmental and social impacts.
- The Genuine Progress Indicator (GPI) is a more comprehensive alternative that recognizes and calculates values for societal and environmental conditions that the market ignores.
- Maryland designed its own annually reported GPI along with Web resources that educate the public, including background and data for each indicator, interactive calculators, biweekly blogs, and a dynamic model for the future.
- Maryland's GPI values natural and social capital contributions to the state, provides policy and budget analysts with a new evaluation lens, and spurs dialogue about what constitutes true prosperity.

The Chesapeake Bay is one of the largest and most productive estuarine systems in the world.¹ A 2001 study estimated the value of the Bay at between \$360 million and \$1.8 billion.² In 2005, Maryland's fisheries alone contributed about \$1 billion to the state's economy, sustained around 4,000 jobs, and generated more than \$22 million for government coffers.

But the Chesapeake is under constant threat from population growth, land conversion, and short-term economic pursuits. In its 2010 *State of the Bay Report*, the Chesapeake Bay Foundation estimated that the Bay was functioning at 31 percent of its historical potential.³ Similarly, the University of Maryland gave the Bay a grade of C- in its 2010 report card.⁴ We are not only risking the loss of economic resources, but also the social benefits the Bay provides to the surrounding region. From family crab feasts to sailing regattas, the Chesapeake is not just a body of water but a way of life.

Maryland's government is taking action to restore and protect the Chesapeake's waters: nutrient levels are down, aquatic resources are improving, wastewater treatment plants are being upgraded, and farmers are employing best management practices. Yet these steps are expensive and politically difficult to engage. In 2004, the Chesapeake Bay Program estimated the Bay's cleanup cost at \$28 billion.⁵ Put in perspective, the combined 2011 budgets for Maryland's Departments of Natural Resources and the Environment are around \$575 million, or about one-fiftieth the estimated cleanup cost.⁶ Further, elected officials must continuously support costly programmatic restoration efforts in the face of decreased revenues and a current political landscape vehemently against taxation and fees.

The issue, therefore, is not so much a commitment to environmental restoration, but instead to help consumer-voters appreciate the current damaging aspects of our activities and shift our actions toward a systemically restorative economy. The first step is to examine the root of the problem. Economic measures, like Gross Domestic Product, are clear and compelling numbers to the electorate. In contrast, there are no comparable monetary values for the costs of environmental degradation or human health impacts that result from economic growth. The lack of a true accounting ledger leads consumer-voters to associate economic activity with social well-being, and subsequently demand that elected officials and policymakers make imprudent choices predicated largely on economic gauges.

To make the shift to a restorative economy a reality, major hurdles must be overcome. For one, invisible or disregarded economic impacts must be brought to light, since the market and electorate only act on what can be "seen." The economy accounts for costs that are quantifiable but ignores the value of the priceless: wetlands, childhood asthma, clean water, and so on. For true transformation to occur, and for policymakers to act, the priceless needs to be valued and that value must be clearly conveyed to the public and incorporated into the market.

Once empowered, who will make such a change happen? We authors believe that government should take the lead. Elected and public officials are on the front lines combating multifaceted, often contradictory, demands to promote robust economies, protect the environment, and ensure human health—all with diminishing budgets. It is therefore unfair to expect elected leaders to risk their political futures on policies that are unfamiliar to their electorate. Yet, while elected leaders are beholden to votes, civil servants are not and therefore have the opportunity to persuade consumer-voters that there are other acceptable and desirable options. Once apprehension is eased and expectations are shifted, room may be created for elected officials to endorse more sustainable policies.

Where should the change occur? The movement should start at subnational levels of government because of the immediacy of local conditions. Maryland benefits from the Chesapeake Bay, which can galvanize momentum to improve conditions. Change in Maryland is also supported by the data-driven tracking efforts promoted by the current governor, Martin O'Malley. Based on regional circumstances, state and local governments can push a true green agenda that envisions a prosperous economy and explains the steps to get there, including a comprehensive system for tracking progress and a politically palatable and feasible budgetary position for elected officials.

A Solution: The Genuine Progress Indicator

The approach Maryland is pursuing involves the Genuine Progress Indicator (GPI). The GPI is an alternative to traditional economic gauges that calculates values for societal and environmental conditions unrecognized by the market. To support implementation of the GPI, Maryland also developed an online resource that educates the public and provides policymakers with valuable information for making long-term decisions.

Governments and organizations around the world have begun reporting on more comprehensive indicators of environmental, social, and economic conditions that could replace or complement Gross Domestic Product (GDP). The Genuine Progress Indicator is one measure that has evolved to incorporate changes in environmental conditions, the distribution of income, and other social and economic aspects that affect a community's well-being. In a number of studies at multiple scales,⁷ the GPI has proven useful as (1) a measure of economic activity that also reflects natural and social capital; (2) a policy lens that can evaluate contributions to human well-being; and (3) a catalyst for sparking debate about social progress and greener economic development.

Academics have applied the GPI (or a variant called the Index of Sustainable Economic Welfare, or ISEW) to more than 20 countries. The studies differ in terms of data availability and the use of particular accounting methods, yet the results consistently show the same trend: the world's chief economic indicator, GDP, is out of step with more comprehensive measures of genuine environmental, social, and economic progress.

In many cases, GDP continues to grow despite stagnant or declining social and environmental welfare (Figure 1).⁸ This supports "the threshold hypothesis," first proposed by Chilean economist Manfred Max-Neef⁹ to describe how additional

economic growth in GDP does not necessarily lead to improved welfare. Instead, Max-Neef proposed that environmental, social, and human costs of economic growth may eventually begin to outweigh the benefits of growth from a welfare perspective. When increasing environmental and social costs outweigh the benefits of additional economic growth, a nation can enter a period of so-called *uneconomic* growth. This would explain why GDP could continue to grow while GPI, which reflects environmental and social costs, remains flat.

The GPI is a composite index that includes multiple indicators. It starts with the part of Gross Domestic Product that directly measures benefits to people—Personal Consumption Expenditures—and corrects this number with additions and subtractions that take social and environmental factors into account (see Figure 2). These additions and subtractions within economic, environmental, and social categories are counted in monetary terms. Thus, economic valuation is required to convert social and environmental costs or benefits into dollar values.

Selecting the GPI for Maryland

In spring 2009, the Maryland government convened a working group of state agencies to explore alternative tracking measures to the Gross State Product (GSP). Adopting the GPI was not a foregone conclusion. In fact, similar measures, like the New Economics Foundation's Happy Planet Index, were investigated and analyzed. During initial deliberations, guiding principles were established that ultimately led Maryland to adopt and adapt the GPI framework.

First, numbers matter, and monetary numbers matter even more. Government agents cannot spend time explaining an ethereal, academic concept. They need to provide defensible numbers to the public that are relatable and compelling. In deciding which framework to use, Maryland officials considered metrics that include surveys, such as Gross National Happiness. While respected, such measures are expensive to track and difficult to clarify. The tool chosen must also be a gateway to the entire topic of valuation of nonmarket environmental, human, and societal goods and services. Until the true monetary costs from economic pursuits are included in the price of goods and services, environmental restoration and social improvement cannot be fully achieved because government cannot programmatically fix wounds resulting from systemic market actions.

Second, new concepts make politicians and bureaucrats uneasy. Elected officials fear that if they do not understand a topic, neither will the electorate. Bureaucrats fear deviation because of culture, mandates, and/or budget constraints. The metric chosen, therefore, must include familiar terms and issues. Fortunately for Maryland, data on environmental indicators have been kept since the early 1980s, when the Chesapeake Bay Program—a multijurisdictional effort to restore and protect the Bay—was first established, and the state began collecting growth-related data in the 1990s when Governor Parris Glendening initiated Smart Growth policies. This meant much of the information that went into calculating the GPI in Maryland was already available, recognized, and accepted.

Third, the metric must easily convey the core elements of sustainability: environment, economy, and equity. Individuals may know on some level that wealth does not guarantee happiness, but some positive association is assumed, and this perception may as well be reality when it comes to politics, especially in election years. The selected tool must be able to meld these three fundamental tenets into a comprehensive framework to show our true social well-being and to provide guidance toward a better, tenable future.

Lastly, the approach should simultaneously provide insight into past policies and model future outcomes of proposed initiatives. It must also be an interactive outreach tool so that the public can understand trade-offs and how government evaluates the degree to which its policies lead to greater welfare. This point is especially important from government's perspective, as it involves public expenditures. It is one thing to expound on what is needed in a perfect world; it is quite another to actually allocate scarce funds.

In the end, the one tool that satisfies all these needs for Maryland is the GPI, as it easily and credibly showcases how our livelihoods are deeply intertwined, erodes the perceived link between economic growth and social well-being, dispels the myth that environmental or social improvement squelches the economy, and begins to show a clear picture of how we can achieve social improvement. Further, it has been applied to other states in academic studies and provides decision makers a guide to evaluate policy performance for a wide array of indicators.

Calculating the Maryland GPI and Model

Even though senior government officials accepted the concept of developing a Maryland GPI (MD-GPI), bringing that measurement to fruition was far from inevitable. So the state entered into partnership with the Center for Integrated Environmental Research (CIER) at the University of Maryland, College Park, to assist with staffing, data collection, and data organization. Also, the working group consisted of state agencies that do not normally interact, such as business

and economic development, natural resources, and crime prevention. Most critical, though, was who was in the room. The project required those rare professionals who combine a deep understanding of data with the ability to see the bigger picture, assemble information to provide perspective, and ultimately tell a story.

The MD-GPI follows previous work, specifically the national Genuine Progress Indicator developed by John Talberth, formerly at the organization Redefining Progress. In order to apply the national GPI approach to Maryland, certain adjustments were made. For one, some of the national indicators were not applicable to subnational governments. For example, the Damage of Logging Roads indicator does not apply in Maryland. Also, most national environmental indicators assume losses in forests, wetlands, and farms. In contrast, Maryland has actually increased wetland acreage and is pursuing a formal “no net loss of forests” policy. Accordingly, the state working group altered the indicators to illustrate the cost of net land changes.

Since Maryland was blessed with an abundance of data, methodological questions had to be answered. Decisions became a balancing act between maintaining comparability with other states and using the wealth of specific information at Maryland's fingertips. The working group agreed to adopt the national framework, but include as much state data as possible. As such, creating Maryland's GPI did not require much extrapolation. When there was a lack of available data, it was sometimes necessary to scale down national numbers. Depending on the nature of the data limitation, this was done using land area, overall population, or certain population segments. Other standard techniques such as interpolation or calibration were also used to fill in data gaps.

Detailed descriptions of the methods for each indicator within the MD-GPI are beyond the scope of this article. Interested readers can find further information about methods and data sources at the MD-GPI website (www.green.maryland.gov/mdgpi). It is worth noting that certain methods are still debated within research communities; for example, there is no single agreed-upon way to measure the cost of climate change. However, as the philosopher Carveth Read advocated, the GPI helps us to be vaguely right rather than exactly wrong.

The MD-GPI project also models the future impacts that different policies and investments could be expected to have on the state's economy, environment, and society. An MD-GPI systems dynamics model was developed with CIER. To our knowledge, no other government has attempted to develop a model that allows online users to see the future effects of policy and investment decisions for a set of key indicators. The working group decided to calculate the MD-GPI from 1960 to 2010 and to use the same 50-year time frame to model from 2010 to 2060. Due to time and budgetary constraints, a fully integrated model was not feasible. Instead, CIER constructed a model that incorporated relevant indicators in three areas: green jobs, smart growth, and clean energy. These indicators increase or decrease depending on the level of investment the user identifies. Surprising to many in the working group, the model shows that, were the state to invest in these areas, the GPI could actually surpass the Gross State Product. This seems to suggest—even to consumer-voters—that, by shifting away from conventional development policies and market pursuits and toward more sustainable opportunities, improvements in Maryland's overall quality of life could outpace growth in mere monetary exchange.

An Explanation of Select GPI Indicators

Each of the 26 Maryland GPI indicators relies on a number of complex calculations and assumptions. This section showcases three indicators to illustrate how the numbers are derived. While there are difficulties in methodologies and data availability for each indicator, the approach still provides valid and conservative estimates that will be enhanced as research improves.

To arrive at a single number aggregating all indicators, dollar values are calculated from the growing academic field of economic valuation of natural assets and social activities. The value that individuals place on goods and services that are not traded in markets is estimated using a variety of well-established techniques. Arbitrary assumptions about the relative importance of different indicators are disregarded, as all indicators are given equal weight.

Adjusted Personal Consumption Expenditures

The base indicator within the MD-GPI is Personal Consumption Expenditures, as material affluence is an important contributor to well-being. The data were extracted from national or state accounts. However, both empirical studies¹⁰ and economic theory¹¹ confirm that increased consumption or income contributes less to satisfaction for the wealthy than for the poor. Moreover, more equal societies tend to be happier than those with large class divisions.¹² Increases in GDP do not necessarily benefit those most in need.

Inequality in the United States has been rising over the past few decades. To take inequality into account, the Gini coefficient—a standard measure of inequality—was drawn from official data sources and converted into an index of

inequality, with a value of 1 for the year 1970, the year with the most equality in incomes in the recent history of the United States. Then, the Personal Consumption Expenditures indicator was divided by Income Inequality to become Adjusted Personal Consumption, which is the starting point for the GPI. In 2010, the Personal Consumption Expenditures for Maryland was \$185.1 billion, while Adjusted Personal Consumption was only \$144.7 billion (in year 2000 dollars).

Cost of Water Pollution

Clean bodies of water are of enormous value to people, even when people do not directly pay for the benefits, and several academic studies have generated estimates of the economic value of clean water.¹³ To highlight two methodologies, first, it is possible to analyze both the money and time spent on traveling to a clean lake, with longer and more expensive trips taken to higher-quality water. Second, surveys can ask about a hypothetical willingness-to-pay for protecting or improving water quality. People are often willing to pay for such conservation, even if they do not directly benefit. Based on the results of various studies,¹³ the working group arrived at the conservative estimate of \$130 per person per year for maintaining clean rivers and lakes. On the biophysical side, data on the percentage of streams and rivers that are degraded were gathered from official records. The percentage of degraded waters (28.9 percent in 2010) was then multiplied by the value lost due to degradation per person, which could then be multiplied by the population of Maryland. For 2010, that cost to Marylanders was \$196 million (in year 2000 dollars).

Value of Volunteer Work

Volunteers provide valuable services in their communities, from caring for the disadvantaged to preserving cultural and natural heritage to engaging in environmental restoration. Since they are not paid for these services, volunteers do not show up in any system of national or state accounting. Employees working longer hours might contribute to GDP, but they are less likely to volunteer in their communities. The Volunteering in America website of the Corporation for National & Community Service¹⁴ provides the hours of volunteer work in Maryland per year (based on a supplement to the Census Bureau Current Population Survey¹⁵), which in 2010 was 194 million hours. Total volunteer hours were then multiplied by a wage rate of \$17.04 (in year 2000 dollars). The resulting number, \$3.3 billion for 2010, was added to the GPI.

Results and Applications

Figures 3 and 4 show the trends in Maryland's GPI compared to Gross State Product (GSP) as well as the impact of growth on environmental, economic, and social indicators. As the figures illustrate, the gap between the GPI and GSP has been widening since the mid-1980s, as is the case with most GPI analyses for national and subnational studies. This growing divergence between GPI and conventional GSP in Maryland shows a need for increased attention to the social and environmental components of well-being.

Of note, while the state was engaged in the process of calculating its GPI, researchers at the University of Vermont conducted an independent study for Baltimore City, Baltimore County, and the state of Maryland that produced very similar results.¹⁶ A complex and evolving methodology like the GPI will invariably produce some discrepancies between independent applications. The close fit between these two applications, however, provides evidence of the validity of Maryland's GPI results.

In February 2010, the MD-GPI was publicly unveiled and received respectable press coverage. Since then, Governor Martin O'Malley has referenced and demonstrated the MD-GPI during conferences, meetings, and events. Further, the MD-GPI process induced parallel policy efforts in pursuing a more restorative, healthy economy. Examples include the convening of economic, social, and environmental leaders to explore sustainable policies for Maryland's future, and a public-private working group to examine, assess, and provide recommendations for regional ecosystem services, markets, and valuation.

Throughout this process of developing the MD-GPI, some principles emerged as necessary if Maryland is to enjoy fundamental, systemic change:

- Policies must aim to maintain and improve natural-capital stocks rather than systemically depleting them.
- Policies must carefully account for and encourage reduced consumption of nonrenewable resources.
- Policies must achieve more just distribution of resources, as growing income inequality will be explicitly measured as a cost to society.
- Government must assure the public that changing the market is not a sacrifice but rather a way of providing benefits in areas not accounted for in our current economic measures of progress.

Related to the last point, the first and foremost use of the MD-GPI is to educate, conveying that (1) conventional economic gauges misrepresent broader environmental and social welfare; and (2) we thus need a more holistic barometer of prosperity than the Gross State Product. Income inequality, volunteerism, and community involvement, for example, are major contributors to our sense of place, and with models like the MD-GPI we now possess a lens through which to better view our economic pursuits. The MD-GPI process and end result are raising awareness that growth does not automatically guarantee long-term economic improvement, that there are economic and budgetary consequences to growth, and that growth is certainly not equal to social well-being or to sustainable prosperity.

The Genuine Progress Indicator can also be a useful benefit-cost analysis construct for planning and zoning decisions made by local governments (counties and municipalities alike). All planning and land-use decisions occur at the local level, but their impacts are felt regionally. The GPI allows local governments to quantify the true costs of planning decisions and provides a more politically defensible number with which to counter naysayers. In Maryland, state staff is assisting at least one county in designing and calculating its own GPI in conjunction with the development of its comprehensive plan.

Traditional ledgers simply look at expenditures and potential economic growth, and rarely, if ever, include nonmarket costs such as environmental degradation. Or, cynically, budgets might even tally post-development restoration activities as economic stimulus in themselves. Instead, environmental damage and societal impacts—both positive and negative—must be included on the balance sheet. For example, if we invest in promoting private ventures in environmental restoration, we will enjoy job creation, economic recovery, and a reduction in government expenditures.

In an effort to address this need, the Maryland Department of Natural Resources (DNR) is exploring the use of the MD-GPI framework to assess and rank proposed funding projects. The DNR aspires to recognize, quantify, and track the added benefits and values of restoration and enhancement projects. In the long term, this approach could assist in future budget development and additional project funding by quantifying the agency's total activities and impacts. Budgets are indeed moral documents, and government should treat them as such.

The DNR is also implementing a parallel framework in how the state purchases lands. In the past, the DNR, as the manager of state lands, purchased property using largely environmental criteria. Recently, the agency developed additional criteria to more fully incorporate the needs of people and society, including identifying other important land-conservation opportunities: resource-based industries, ecosystem markets, local-economy goods and services, recreation, equity of access, and human health. These principles mirror the indicators and general objectives of the MD-GPI and can now be more easily tracked when combined with agency budgets and expenditures.

In conclusion, we recommend that the federal government support and ensure that consistent frameworks and data are readily accessible so that other subnational jurisdictions can develop their own Genuine Progress Indicator. In addition to the obvious value of such a resource, a current impediment for government adoption of the GPI is the inability to assess regional conditions on a level playing field because so few governments have actually calculated their GPI. Elected officials and policymakers are always reluctant to be the first in their region to adopt any metric that suggests that their jurisdiction is worse off or at a competitive disadvantage to their neighbors. This is even more the case since the GPI demonstrates the need for a more balanced approach to well-being, including a possible decrease in economic activity. If there were a federally supported collection point for GPI standards and data, which could then be used to equitably compare subnational jurisdictions, the narrow focus on economic growth could be lessened and even supplanted by a vision that appreciates and emphasizes aggregate prosperity.

Author Note

The Maryland Genuine Progress Indicator can be found online at www.green.maryland.gov/mdgpi.

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