

## The Next Economy

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As the United States recovers from the worst economic crisis in generations, states face challenging policy decisions as they look beyond recovery efforts to the policy choices that will improve the quality of life for the next generation. This working paper, which is summarized in Appendix F of the report of the State and Local Tax Policy Commission, examines the academic literature surrounding what the next economy might be for the country, as well as the broader issues Indiana must consider to be prepared for it.

### **Workers in the next economy**

There are three main implications for the future workforce: 1) a change in required skills, 2) the very nature of the workplace, and 3) worker compensation. Skilled workers who can develop new technologies and bring them to market will be in high demand. The Energy and Environment Commission of the Policy Choices project highlights this in its report, citing a need for Indiana research to develop new technologies for producing advanced biofuels and storing battery technology. Karoly and Panis (2004) highlight three major trends shaping the U.S. workforce: shifting demographic patterns, the pace of technological change, and the path of economic globalization. Workers will need cognitive skills, such as abstract reasoning, problem-solving, communication, and collaboration. There will also be a greater emphasis on retraining and lifelong learning. The authors highlight growing job fields such as biotechnology, IT, and nanotechnology.

Carnevale, Smith, and Strohl (2010) present an occupational forecast of nine clusters from 2008 through 2018, and demonstrate the educational demand within each occupation. The analysis reveals three tiers of occupational clusters: 1) those in which 80 percent or more of employees have postsecondary education; 2) those in which more than one-half have training; and 3) those in which less than one-half of employees have postsecondary education.

The *Top Tier* includes STEM positions: education, healthcare professional and technical (computer, architects, engineers, social sciences), community services and the arts, as well as managerial and professional office occupations (management, business operations, financial specialists, legal). These clusters represent 30 percent of total employment and 44 percent of jobs for postsecondary workers. In 2008, this tier represented 44.5 million (30 percent) of total jobs; this number will climb to 50.5 million (31 percent) of jobs in 2018.

The *Second Tier* includes sales and office support (cashiers, insurance agents, real estate brokers, bookkeepers, customer service) and healthcare support occupations (nurse's aides, attendants). The *Third Tier* represents food and personal services (cooks, waiters) and blue collar operations. The Second and Third tiers represent 70 percent of all workers and 56 percent of all postsecondary workers. These clusters will grow slowly and have lower concentrations of postsecondary workers. For example, blue collar jobs (manufacturing, construction, natural resources) are 23 percent of the current workforce but will decline to 21

percent by 2018. Only 35 percent of the workers in this field will have jobs requiring postsecondary education.

The next economy, in contrast, will look much different as the fastest growing occupations require workers with postsecondary education. These clusters include: managerial and professional office support, education, healthcare professional, STEM, and community services and the arts. These clusters are all growing currently and, by 2018, 87 to 95 percent of these workers will have postsecondary degrees.

The authors also present an industrial forecast for 13 industries from 2008 through 2018 accompanied by the educational demand within each of the 13 industries. Overall, service industries will dominate the economy and provide most U.S. Jobs. Six service industries will dominate the workforce with 75 to 90 percent of workers who have at least some postsecondary education. These include: information, professional and business, financial, private education, health care, and government and public education services. They will provide over 40 percent of all jobs in 2018. Manufacturing and natural resources rank 8<sup>th</sup> and 13<sup>th</sup>, respectively, in requirements for hiring postsecondary workers. Top industries forecasted for 2018 based on 161.5 million employed: wholesale and retail trade services (14.9 percent), professional and business services (14.3 percent), government and public education services (13.5 percent), health services (12.7 percent), leisure and hospitality (10 percent), and manufacturing (8.1 percent).

Technology improvements will cause growth in output at a higher rate than jobs in goods production. Declining industries such as old-line manufacturing and natural resources will still add jobs because replacement workers are needed. Manufacturing is expected to produce 2.6 million replacement jobs and natural resources industries are expected to produce 406,000 replacement jobs. The service industry, however, will produce 14.4 million new jobs and most of these will demand postsecondary education.

### **Education in the next economy**

The growth rate of those completing high school and college has slowed dramatically, barely increasing since the 1970s. When considering that the next economy's growth industries will require postsecondary degrees of its employees, this downward trend has enormous implications. For example, workers with professional degrees earn the most over a lifetime (\$4.6 million); followed by workers with PhD's (\$4.0 million), then those with a master's degree (\$3.8 million). In contrast, high school dropouts earn the least, \$1.2 million (Carnevale et al., 2010). The top three highest earning occupations are managerial and professional office (\$82 thousand), healthcare professional and technical (\$77 thousand), and STEM (\$74 thousand). Healthcare support and food and personal services jobs, which require less education, provide insufficient annual earnings to support a family of four at 150 percent of the poverty line.

This information has enormous implications for Indiana's employees and their earning potential in the next economy. Indiana ranks near the bottom (44<sup>th</sup>) for jobs that will require postsecondary education, but ranks 7<sup>th</sup> in jobs for high school graduates. According to the

Carnevale report, there will be around 3.2 million jobs in Indiana by 2018; of these jobs, 55 percent will require at least some college.

The occupation and industry forecast mentioned above also projects educational demand by 2018. The report forecasts that there will be 46.8 million jobs opening in the United States; 13.8 million will be brand-new jobs and 33 million will be “replacement jobs.” Two-thirds of these 46.8 million jobs will require workers with at least some college education; however, we are likely to experience a serious education deficit. In fact, the labor market will need 22 million workers with post-secondary degrees, associate’s or better, but will fall short by 3 million. In addition, the market will need at least 4.7 million new workers with postsecondary certifications. This translates to a shortfall of 300,000 college degrees every year between 2008 and 2018.

### **Skills in the next economy**

In 2007, the Commission on the Skills of the American Workforce identified our education and training system as a core problem in the United States. The Commission provides several recommendations for a new system that will better train Americans for the workforce of the future. According to this report (2007), the ideal future workforce candidates will have strong skills in English, mathematics, technology, and science, and will possess a familiarity with literature, history, and the arts. Beyond this, ideal candidates will be comfortable with ideas and abstractions, and proficient at both analysis and synthesis. They will also be creative, innovative, self-disciplined, and well organized. Ideal candidates will also be able to learn quickly, work as a member of a team and adapt to frequent changes in the labor market as the shifts in the economy become ever faster and more dramatic. Successful U.S. firms in the future will be in the technology and creative areas—research, development, design, marketing and sales, and global supply chain management.

Casner-Lotto and Barrington (2006) surveyed over 400 employers on the skill set that new entrants to the U.S. workforce will need to succeed in the work place. They defined “new entrants” as recently hired graduates from high schools, two-year colleges, technical schools, and four-year colleges. Employers were also asked to assess the new workforce entrants they currently employ as “adequate,” “deficient,” or “excellent.”

According to employers, the three most important applied skills needed by entrants into the workforce are: 1) professionalism/work ethic; 2) teamwork/collaboration; and 3) oral communications. In addition, 63.3 percent of employer respondents believe that knowledge of foreign languages is the skill most likely to increase in importance in the next five years. Three-quarters of employer respondents (76.1 percent) felt that the number one emerging content area for future graduates entering the workforce is *making appropriate choices concerning health and wellness*, and 73.6 percent felt that *creativity/innovation* would also increase in importance.

However, more than one-half of employer respondents (54.2 percent) reported workforce entrants with a high school diploma to be “deficient” in this skill set, and relatively few

employers considered two-year and four-year college-educated entrants to be “excellent” (only 4.1 percent and 21.5 percent, respectively). The findings indicate a disconnect between what employers need and how we train our workers, and that the generation currently entering the workforce may be sorely lacking in both basic academic and more advanced applied skills. Only 23.9 percent of employers reported that new entrants with four-year college degrees have “excellent” basic knowledge and applied skills. They noted significant deficiencies in written communication (27.8 percent), leadership (23.8 percent), and professionalism (18.6 percent). The deficiencies are greatest at the high school level, with 42.4 percent of employers reporting the overall high school preparation as deficient. The percentages increased in specific skill areas. For example, 80.9 percent reported deficiency in written communications; 70.3 percent in professionalism; and 69.6 percent in critical thinking.

In its 2010 Critical Skills Survey, the American Management Association (AMA) surveyed 2,115 of its member and customer companies about the skills of critical importance in the 21<sup>st</sup> Century. Traditionally, proficiency in reading, writing, and arithmetic has been sufficient to meet the entry-level threshold of the job market. Today, potential employees are expected to not only meet this minimum threshold, but also possess the skills of critical thinking, problem solving, effective communication, collaboration, team building, and creativity and innovation—also known as *the four Cs*.

According to the survey, employees are evaluated on these skills during annual evaluations as well as during the interview process. Three out of four (75.7 percent) respondents said they believe these skills and competencies will become more important to their organizations in the next three to five years. Respondents cited a variety of reasons for believing this skill set is becoming more critical in the market place, including: the pace of change in business today (91 percent), global competitiveness (86.5 percent), the nature of how work is accomplished today (77.5 percent), and the way organizations are structured (66.3 percent). Eighty percent believe that fusing the traditional skill set (proficiency in reading, writing, and arithmetic) with the four Cs would better prepare students to enter the workforce. Overall, the survey revealed that individuals proficient in the traditional skills would not be competitive unless they also had the ability to think critically, communicate, collaborate, and solve problems effectively. The evidence indicates that our current education and training system may not be effectively fusing the two models.

### **Infrastructure in the next economy**

The United States faces a serious infrastructure deficit. According to the American Society of Civil Engineers, “we are currently spending \$110 billion per year less than the amount needed to maintain the system at current performance levels” (Kahn & Levinson, 2011, p. 35). This infrastructure deficit will continue to increase without new revenue sources.

Today, about one-third of federal highway spending goes to expand our existing system despite decreasing economic returns on these investments. The authors argue that new projects that do not return on their investment continue to be funded because the projects are not subjected to a strict cost-benefit assessment. This has caused the needs of our current roads

infrastructure to be neglected. For example, congestion on roads and bridges in poor condition costs drivers approximately \$120 billion annually in monetized costs of delays, and additional costs on drivers through wear and tear on their vehicles. Additionally, poorly maintained roads and bridges pose a public safety risk by increasing accident rates, causing injuries and fatalities.

The authors propose that we fix our existing infrastructure first, expand where necessary, and only fund new projects in which efficient and effective management of infrastructure projects has been demonstrated. Under this proposal, states would finance the expansion of existing roads and new construction through loans. This new finance system would replace today's system of matching federal grants. A newly created and independent Federal Highway bank would provide loans to state and local governments. Only projects that demonstrated positive net benefits and an ability to repay the loan with user fees would receive funding. More detailed discussion of transportation infrastructure financing mechanisms can be found in the *Transportation Infrastructure* report (Braun & Schounce, 2011) summarized in Appendix G of the State and Local Tax Commission report. (The report and transportation infrastructure working paper can be found on the policy choices website, [www.policyinstitute.iu.edu/PolicyChoices](http://www.policyinstitute.iu.edu/PolicyChoices).)

The authors also recommend reserving the federal Highway Trust Fund for maintenance, preservation, and enhancement of our existing infrastructure, and state this would increase federal highway investment by close to \$12 billion per year. Additional revenues could also be obtained by congestion pricing, HOT lanes, or increasing user fees, or through states matching rates on federally funded projects. A Highway Performance Fund financed by revenues from the Federal Highway Bank could award interest rate subsidies to new and expanded infrastructure projects that meet or exceed performance targets. Performance targets include: on time completion, improvements in safety, respect for environmental conditions, access to transportation for groups and locations that are transport disadvantaged, and outperformance of initial expectations.

The Urban Land Institute's *Infrastructure 2010: Investment Imperative* (Miller, 2010) focuses on the need in the United States for infrastructure improvement and innovation in an effort to remain a competitive leader in the global economy. The authors argue that despite its vast infrastructure needs, the United States is falling behind countries in Asia and Europe because we do not treat infrastructure spending as an investment and opportunity for job creation and long-term prosperity. The report recommends government officials and policy experts take effective action in a variety of ways, including raising revenue through user fees and emphasizing the development of infrastructure banks and public/private partnerships (PPPs). Miller (2010) projects future funding mechanisms will raise revenues from more and higher user fees that are tied directly to providing necessary investment capital for infrastructure systems, rather than relying on general taxes, which can distort and hide costs from the public.

Much of the literature suggests that PPPs are a potential vehicle by which governments can raise the needed revenue to invest in infrastructure. According to Engel, Fischer, and Galetovic (2011), PPPs not only have the potential to provide infrastructure investment but also could

possibly result in more efficiency from bundling. In addition, life-cycle costs are internalized and incentives to maintain infrastructure increase when a single firm is responsible for both project construction and maintenance.

The authors caution that PPPs should not be used to address state budget deficits because short-term gains can result in long-term revenue loss. They propose that PPPs should be structured using Present-Value-Revenue (PVR) contracts and should be financed by user fees. PVR contracts reduce risk by tying user demand to the length of the concession, which minimizes the likelihood of opportunistic renegotiation. Utilizing PVR contracts could also potentially reduce the required return on PPP projects and reduce the amount of revenue that must be collected from users. As a matter of practice, PPPs should be included on government balance sheets and treated as public investments. This practice reduces the likelihood of overspending and ensures that PPP projects will be chosen based on their ability to produce efficiency gains. Furthermore, governmental agencies overseeing PPP project selection and implementation should separate the responsibility to award contracts and the responsibility to enforce contracts. Having these two crucial roles conducted by different agencies will minimize conflicts of interest and potential corruption.

Despite an immediate and well-documented need for investing in transportation, infrastructure extends far beyond just the needs of our roads and bridges. Broadband infrastructure is an ever-growing need in a globalized and connected world, and most of the literature exploring the connection between broadband access and economic growth shows a positive relationship. Falck, Kretschmer, and Woessman (2009) note that high-speed internet via broadband infrastructure distributes large amounts of information, which creates an environment in which new business models can develop. Specifically, they project that with every one percent increase in broadband penetration in a state, employment will increase by 0.2 to 0.3 percent per year. According to the authors, this suggests an increase of about 300,000 jobs nationally, dependent on the widespread deployment of broadband services.

“The finding of the strong link between broadband use and state-level employment has important policy implications, both on the demand-side and the supply-side. In particular, these results suggest that all levels of government should follow policies that encourage broadband competition, which will lead to lower prices and hence greater use” (Crandall, Lehr, & Litan, 2007, p. 3). However, with increased demand comes a need for increased supply, particularly by those who supply broadband infrastructure. Currently, many companies in this field are approaching capacity due to worldwide demand for video streaming. New policies will have to be carefully examined to avoid any unintended consequences on broadband infrastructure service providers.

### **Indiana and the Midwest in the next economy**

Vey, Austin, and Bradley (2010) provide strategies to bolster the Great Lakes Region in their report, *The Next Economy: Economic Recovery and Transformation in the Great Lakes Region*. According to the report, our region has resources in place for the next economy, which will be export-oriented (versus consumption based), focused on low-carbon and clean energy,

innovation-fueled, and opportunity-rich. The cluster of service industries associated with auto manufacturing, such as research and development, engineering, computer and information sciences, and chemical and transportation equipment are export areas of growth. For example, our region has the potential to be the largest clean energy research and new technology development engine. With 32 major research universities supporting innovation, and several of those in Indiana, the Great Lakes Region's innovation infrastructure performs 29 percent of research and development in clean energy, new materials, and transportation and produces 36 percent of the nation's engineering graduates.

However, to fully realize the benefits of the next economy, federal, state, and metropolitan leaders must collaborate with the private and philanthropic sectors to invest in the right assets: innovation, infrastructure, and human capital. Proposed policies include developing regional innovation clusters, such as the Ohio Department of Development's 2008 strategic plan recommended, funding workforce development at community colleges and universities, and investing in infrastructure to move goods efficiently (which Indiana is particularly well-suited to provide). Community college initiatives, such as Michigan's *Breaking Through*, will be essential in helping low-literacy adults prepare for and succeed in occupational and technical degree programs.

Regional leaders must also create new public-private institutions, such as infrastructure banks to coordinate investment in transportation, advanced manufacturing laboratories, regional energy innovation centers, and a venture capital fund of resources to encourage private investment (examples include JumpStart Cleveland and Techtown Detroit). Finally, leaders must shape new metropolitan areas and governance structures to better fund the infrastructure needs of regions that do not necessarily stop at the county lines. They could follow the lead of Flint, Michigan, and establish land banks to inventory foreclosed or abandon properties. As Reimaging Cleveland has shown, these land banks can lead urban development and encourage more metropolitan collaboration. In short, policies need to be forward thinking and collaborative beyond city and state borders.

The Organisation for Economic Co-operation and Development (OECD) recommends targeted investment in public goods such as transportation and telecommunications, active efforts to spur innovation, and a focus on regional competitive advantages (Reynolds, 2009). There are some regional initiatives occurring: Purdue's Center for Regional Development; Minnesota's True North Initiative, which turned seven county-level community colleges into one regional college; and the Southern Minnesota Regional Competitiveness Project, which unites farmers from 38 counties with the Mayo Clinic and The Hormel Institute in a joint bioscience initiative.

Issue 2 of the Heartland Papers, a series devoted to the Midwest's future in a globalized world (Drabenstott, 2010), proposes the building blocks for establishing regional centers. First, counties (the author suggests groups of 15 to 30 counties) must form regional partnerships that will have a common economic goal. Second, focus action and investment on regional strengths. These strengths can be determined in two parts: (1) conduct a dialogue between public, private, nonprofit, and educational leaders; and (2) analyze the region's economic trends and

structural makeup. Third, build a regional innovation system by infusing innovation in businesses, schools, universities, and government. These groups need to be connected in revitalized research centers. The fourth principle is sustaining these partnerships through roundtables, persistence, diversity, inclusiveness, and financial incentives.

While necessary for thriving in the next economy, this will be a striking departure from how the Midwest traditionally operates. The rural Midwest has overwhelmingly followed one model: work within the local jurisdiction and provide generous incentives to attract businesses into the community. In the 12 Midwestern states, nearly 80 percent of development budgets goes to recruitment incentives. Due to profound changes agriculture and manufacturing industries are undergoing as a result of globalization, this model will no longer support the Midwest. A new model that focuses on the potential of the region should be explored.

### **The engines of the next economy**

A report by the Brookings Institution (Katz, Bradley, & Liu, 2010) found that our country's 366 metropolitan areas have a disproportionate share of assets that will drive the next wave of economic growth. These assets are critical to building the next economy. Together, these 366 metropolitan areas produce 85 percent of US exports, are home to 86 percent of lower carbon commuters, 89 percent of working age people with post secondary degrees, and 93 percent of people working in science and engineering. The report argues that the economic future for states hinges largely on the performance of these metropolitan economies. In Nebraska, the Omaha and Lincoln metro areas contain 57 percent of the state's population, but 82 percent of its workers in science and engineering. Indiana contains or is part of four of the nation's 100 largest metropolitan areas and these areas account for 43 percent of our population, 45 percent of our jobs, and 47 percent of our economic output. Taken together, Indiana's 16 metropolitan areas account for 78 percent of its population, 81 percent of its jobs, and 83 percent of its economic outputs.

The Brookings analysis focused on 1) exports: the value of internationally exported goods and services; 2) innovation: civilian workers employed in science and engineering occupations; 3) low carbon: commuting via modes other than driving alone; and 4) opportunity: working-age adults (25 to 64) with an associate's, bachelor's, or graduate degree. Due to the tendency of innovative and educated workers to cluster around metro areas, metropolitan areas' role in driving the next economy cannot be overstated.

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