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The Future of Jobs

By Jon M. Roberts

At the 2012 IEDC leadership conference in San Antonio, TIP presented an Ignite PowerPoint on the "future of jobs." The format for this presentation creates its own intensity (five minutes total, with slides advancing automatically every 30 seconds) and allows for a kind of "shock value" that longer or more academic approaches would not. Yet, the future of jobs is a profound question, one that has enormous social and economic consequences. And one that is at the core of the practice of economic development. Existing data do not provide an adequate analytic framework for understanding how the nature of work is changing. This article is not an effort to provide that analytic framework. It is, however, a framework for a discussion of the issues we think the profession must come to grips with. If the very idea of a "job" were to go away, what would that mean to our economy, our profession, and – perhaps even more fundamentally – to our view of ourselves and the world?

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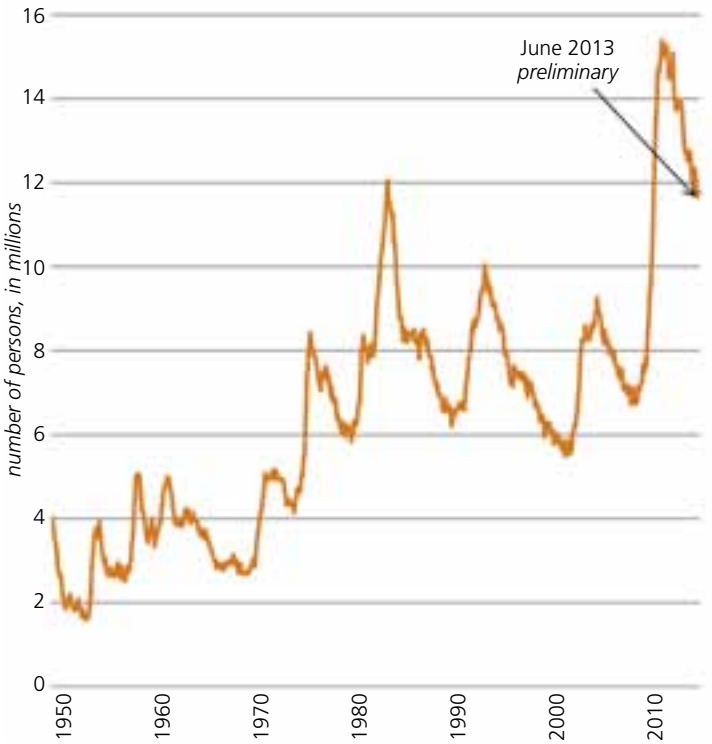
"Creating jobs" has become a political mantra. No politician at any level of government can be taken seriously unless they have a plan for creating new jobs. We saw ample evidence of this during the 2012 presidential election and we see it on a regular basis from our mayors and governors. On the one hand, our focus on jobs is perfectly understandable. The recession into which we fell in 2008 left millions of Americans out of work [see Figure 1]. On the other hand, the U.S. economy continues to show signs of recovery. The unemployment rate is below 8 percent – a modest figure by some measures – corporate profits are at record high levels, and the stock market has rebounded above pre-recession levels. Yet, the sense that we *need* jobs is ubiquitous.

No one can afford to be sanguine about the economy (especially not politicians or economic developers). For those who have been out of work for an extended period of time, the current employment situation is no mere statistical aberration. Furthermore, a discussion of national unemployment hides significant regional disparities. For many reasons, the political and social implications of "job creation" have never been more pronounced. Yet, this apparent crisis requires a wider lens. In order to understand our current employment situation, we need to look more closely at the changing nature of jobs: what they represent historically and what the labor market may look like in the future.

The following article provides what we hope is a fresh perspective. By looking both at history ("the past of jobs") and the current dynamics of individuals and corporations ("the now of jobs") we can build a platform for which to look to the future. We want to see how we have arrived where we are, what the current landscape looks like, and where we are likely to end up. The premise is designed to stretch our sense of what employment has been and what it may become.

The future perspective presented here is rooted in the premise that we are only at the earliest stages of an IT revolution. This revolution is so profound that the question of whether *any* jobs will

FIGURE 1. TOTAL UNEMPLOYED, 16 YEARS AND OVER IN MILLIONS, NOT SEASONALLY ADJUSTED



Source: U.S. Bureau of Labor Statistics (Current Population Survey)

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be necessary in the future is neither silly nor premature. This is the perspective presented by MIT professors Erik Brynjolfsson and Andrew McAfee, in their recent book, *Race Against The Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity, and Irreversibly Transforming Employment and the Economy*. Brynjolfsson and McAfee argue that, unlike prior technological revolutions, improvements in the economy will not be accompanied by job gains. Instead those very improvements will act to *reduce* employment.[1] Trends in manufacturing employment – where an ever-increasing number of goods are now produced with a fraction of the workforce once required – would seem to bear this idea out. Whatever your view, these ideas mark the beginning of a debate that we feel will remain current.

If the very idea of a "job" were to go away, what would that mean to our economy, our profession, and – perhaps even more fundamentally – to our view of ourselves and the world?

THE PAST OF JOBS

"Jobs" have a history. This says that the notion of what jobs are is not something fixed and certain. Pre-industrial societies had a much higher share of the population engaged in "work" than we have in our culture, but that work – arduous and often dangerous – was nothing like what we think of as a job. People, including children, worked because they had no choice but to work. Peasants (not "agricultural workers") tilled fields, soldiers were conscripted, and craftsmen worked individually or with an apprentice to produce products for which they were not paid in any traditional sense. These observations – hardly new or unfamiliar – serve to underscore the sociology of work. They also underscore the fact that how we define "jobs" has a strict historical context. If, as we now think, a job defines a relationship based on payment for services, then it is correct to say that for most of human history there was no such thing as a job.

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Many writers cite the turning point for jobs as we know them occurring with the dawn of the Industrial Revolution (roughly at the end of the 18th century). This is not strictly accurate. Trade guilds flourished before the machine-based manufacturing that transformed world economies. These guilds were well-organized in the 17th century (and much earlier in some cases) and played a major role in central European societies. While they accounted for an important part of the economy, actual participation in these guilds was restrictive and did not change the essential nature of work before the Industrial Revolution.

So what changed at the end of the 18th century? The economic explanation adequately captures the very point we are making: there was a change in the individual's relationship to work itself. First, agricultural employment began its steady decline. Second, individually hand-crafted goods were supplanted with mass-produced items. These items required dramatically fewer hours to produce, and did not rely on the skills of a trained craftsman. In order for this system to work, however, there needed to be an abundance of workers who could be relied upon to produce these goods. The often notorious factory environments of that period have been much written about and shown most comically in Charlie Chaplin's *Modern Times*.[2] But they also brought about a period of astonishing and unprecedented prosperity. Whatever the consequences – and they are still being debated – the reality was that the Industrial Revolution effectively created the idea of "jobs" as we now know them.

So what are the characteristics of a job? A job is defined by work we do on behalf of an employer. This work – traditionally – is done at a place of employment, i.e., not in one's home. Agricultural labor, of course, is done in a field as it always has, but with a much smaller labor force than at any time in history. Compensation for the work is provided by the employer in the form of a paycheck, typically issued at regular intervals. The work usually involves the manipulation of tools, machines, or similar equipment to create a product for sale in the marketplace. Naturally, the products and equipment have changed over time, but in many respects the factory environment of today would be easily recognized as such by a worker of 150 years ago. These are all things we know, that hardly warrant being listed. But there is a reason to do so. It is to remind us that the worker-employer relationship that defines our notion of what a job is does not have a long history. What we take for granted about jobs is a recent phenomenon. More importantly, it is no predictor for what is to come.

These attributes of a job (working a set number of hours, going to the place of work, manipulating equipment) all have social implications. They impact where we live, how we choose to get to where we work, how we educate ourselves. In fact, they define us.

THE NOW OF JOBS

If we can agree that a "job" is the description of a relationship, and that relationship is in some way fundamental to both ourselves and the society in which we function, we have some sense of how pivotal the discussion of **job creation** really is. First, there is little doubt that when we think of "work," we think of the formal employer-employee relationship. It is what politicians are talking about when they talk about creating jobs. But perhaps more telling, employment (and unemployment) is also the most readily available statistical measure. Creating jobs is, as a consequence, fundamental to what it means to have a functioning economy. In other words, the "now" of jobs is a world in which most of us cannot

TOWARDS A TAXONOMY FOR THE "NOW" OF JOBS

Today's economic statistics do not accurately reflect our changing relationship with work. Many of today's workers are difficult to place within traditional data sets. To some degree, all of these employment categories are in a state of flux.

- *The temporary worker.* These are "employees" who do not work full-time with a single employer. They may have a formal contractual relationship with one or more companies and may work many more hours than a typical full-time employee. [Much of this group is likely to be captured when they work through a staffing agency – NAICS 56132.]
- *The sole proprietor.* This is typically a small business owner. The business itself can vary widely, from a garage-based repair service to a web developer. [These are captured in non-employer statistics and in BEA figures.]
- *The family worker.* This is typically a spouse but may include any extended family member associated with very small family-owned businesses. Since they are not claimed as an "employee," they are among those workers not counted by traditional standards.
- *Freelancers.* These workers differ from temporary workers in that they are strictly contractual. They are frequently project-driven, work for several different employers. They may assemble teams of their own but never act as employers in these relationships.
- *Pick-up workers.* Nowhere is this more true than with those who do temporary jobs on an as-needed basis. In fact, these individuals may have considerable skills (landscaping, automotive repair), or may perform tasks for which others have little time or inclination (dog-walking, lawn maintenance, child care).
- *The informal or shadow economy.* Perhaps, no segment of the market is more complicated, and harder to quantify, than what is often called the shadow (or underground) economy. It is complicated by the fact that we are often reluctant to admit its existence. Broadly speaking, it divides into two segments. The "grey market" encompasses activities which, while usually not illegal, operate outside normal business standards. People who work in grey market "businesses" operate in ways not intended by the manufacturer of the goods being traded, or the services being provided. These include sellers who acquire items outside of authorized distribution channels, those who produce a variety of "knock-off" products that mimic name-brand models, and still others who provide services that are illicit but not strictly illegal. By contrast, the black market includes activities that are specifically prohibited by law (including those which are largely unenforced, such as software pirating, and those the government actively seeks to prevent, like the drug trade). This broad category includes "workers" who themselves freelance, as well as those who are part of a formal network that often closely mirrors legal corporations.

imagine not having a job – a visible symbol of our relationship to the economy. This is a deeply held model of how we expect the system to function.

This is no small matter. If we determine the health of an economy by an exclusive set of data (i.e., the unemployment rate), we hardly know how to think about other means by which we can gain a livelihood. Yet, in fact, the model is already changing. Large percentages of our population operate outside the formal employer-employee relationship. There has been only limited analysis done on this subject, and existing data are incomplete and inconclusive. This means, among other things, that we can describe different work models but we have no data sets that allow for meaningful comparisons – or that give us a sense of how the economy may be changing. Building a framework for how to think about the relationships between traditional work and other income-producing activity is, therefore, essential.

In talking about the "now" of jobs, a new framework must help illuminate the general shape of an economy that cannot be understood through traditional statistics. Our existing employment measures shed little, if any, light on informal work arrangements. As a result, our current economic data fail to capture how large components of our workforce generate income. Workers who are not "covered" by unemployment insurance, including the self-employed, are not included in many of the most common and timely data sets. Discouraged workers, those that have stopped looking for work, are not captured in the published unemployment rate. Businesses and workers in the informal economy do not show up in any tally of gross domestic product at any level. If we are to truly understand the current economy and the opportunity for workers in the future, existing data are woefully inadequate.

While it is important to understand how workers operate outside the traditional employment model, we also need to see how the model is changing from within. Nowhere is this change more apparent than in the declining influence of unions. This decline – union membership is already down to just 11.3 percent of the U.S. workforce – is likely to decline further as more states adopt "right-to-work" legislation. Traditional unions can, in fact, be seen as a codification of the traditional employer-employee relationship. Their purpose was always to protect the worker against the potential rapaciousness of the corporation. They accomplished this not by questioning the underlying relationship, but by seeking to shape its terms. In other words, it was argued that safety, wages, and benefits – especially health care, and retirement benefits – would be provided by the company. The union existed to ensure that these benefits were fair and adequate. With the advent of the Affordable Health Care Act, health benefits are being decoupled from traditional

employment models.[3] This decoupling of what was once a standard element of the arrangement may be seen as another aspect of how the current employer-employee relationship is in transition.

Among the many reasons for this transition (in addition to the changing nature of work and the declining influence of unions) are the competitive pressures faced by companies of all sizes. The demands of a constantly shifting marketplace are enormous. We are all familiar with the concept of globalization, which has made U.S. companies more vulnerable to competition, both from foreign producers capable of undercutting them and from other American companies who can source components from abroad at lower cost. The resulting price pressures push everyone to the margins. While there are companies who have established a powerful and compelling brand (Apple, to be sure), even the largest corporations see the threat – from companies both in their industry and outside of it. All the while, major companies are torn between the need for ever more advanced technologies and sensitivity to price points created by both low-end imitators and direct high-end competitors. Yet, even as competition creates price sensitivities that tend to reduce some kinds of employment, the struggle for market share creates demand for others. Nothing illustrates this more clearly than the battle between the iPhone and a host of Android options (as well as tablets and traditional PC manufacturers). The battle is fought simultaneously in the R&D labs, the courts, through phone service providers, by on-line retailers, and in social media. Each of these arenas requires skilled and talented people. These battles cannot (yet) be automated or out-sourced.

Finally, the "now" of jobs recognizes that the skills demanded by employers of all sizes and in all industries are increasingly complex. This complexity extends to all levels within a company. While product design has a huge impact on a company's future, so does its sales and distribution network, its legal team, and its public relations department. At the same time, businesses know that the more skilled the worker, the more transient they are. They are also keenly aware that today's high-demand skill set may be obsolete in a few years' time. The challenge is to appreciate the delicate balance between a transient talent pool and the importance of these workers to the creative output that drives a company's business model. And the more progressive the company (as defined by new product development) the more important it is for that company to view their customers in a new light. In effect, they have to enfranchise them. By doing this, they can create an environment that attracts workers as surely as it attracts buyers of their products.

Today's businesses know that workers are not "permanent" any longer. They cannot be. Both because the worker doesn't want or need that relationship, but also because the company cannot ensure that those skills will be needed in the future.

THE FUTURE OF JOBS

It would be presumptuous to say exactly what employment will look like in 20 years. We can, however, explore certain trends and extrapolate from them. When we look at our current structure in the broadest sense – how work is accomplished and how workers are compensated – what we see is a series of historical precedents that are giving way. This change is slow and things that move slowly are not readily visible. But there is an inevitability about this change which suggests it will continue well into the future. What follows, if we extend this line of thought, is that the traditional notion of a job will disappear. This is not to argue – as Erik Brynjolfsson and Andrew McAfee do – that there is no future for jobs at all. There is, after all, a huge gap between what technology makes possible and how we respond to that change.

Work that is rote, unskilled, and repetitive is rapidly being eliminated – the acceleration of a trend that began a century ago. It is no stretch to imagine that it will soon cease to exist entirely. But a discussion about technology must go beyond automation. It must go beyond the view of machines as a means to replace humans on an assembly line. It is more telling to consider the ways in which technology upends the entire model.

An appropriate illustration of that dynamic can be seen in the collapse and subsequent reemergence of the Swiss watch industry. With the advent of digital watches in the 1970s, cheap and accurate timepieces no longer required traditional factory production. The entire industry seemed destined for oblivion, a kind of latter-day buggy whip saga. And indeed, for several years major Swiss watch brands (such as Omega) stood at the brink of oblivion. In the US, Elgin and Hamilton did virtually cease to exist. Something quite different emerged, however. Led by a combination of Swiss government support and brilliant marketing, the wristwatch industry reinvented itself as an artisanal craft producing high-end, hand-made functional pieces of jewelry. These watches made no claim to being more reliable or more durable than their cheap plastic counterparts. They instead touted their uniqueness, their elegance, and the skill required to produce them. Now the Swiss watch industry is a major luxury exporter. Just three of its better known brands (Rolex, Omega, and Patek Philippe) had sales of $2.17 billion in 2012 – all in the wake of a global recession – and total Swiss watch sales are well over $20 billion.[4]

There are many lessons to be taken from this example. The first is that technology is disruptive. Firms did cease

to exist and jobs were shed. The second lesson, however, is quite different. Because we can have a product that is cheaper and more reliable, and whose adoption is universal, does not eliminate alternative market segments. Our expectation for what a watch should be underwent a profound change. Mechanical watches are now a large and growing "craft industry." It can be argued that the technology that made digital watches possible, while first eliminating jobs, gave rise to a newly invented industry with which it does not compete at all. There are around 60,000 workers in Swiss watch companies, and the number is growing.

Because technology can (and does) introduce better and cheaper products, it does not necessarily reduce the demand for alternative products and technologies. Large-scale digital watch factories in China produce many millions of watches with very little labor input. At the same time, the demand for highly labor-intensive watches is growing. The third lesson to be learned is the most telling. Those jobs made possible by a reinvented industry have a strong common thread: they require highly skilled workers. Without those workers, the industry cannot exist. One case study does not constitute a pattern, but there are many similar examples. Yes, technology disrupts traditional business models and displaces workers. In the wake of that change there is a shrinking and restructured workforce. The common thread, however, is towards higher educational requirements and greater skills. In addition, as in the watch industry, those skilled workers must be adept at using technology. While modern high-end watches are hand-crafted, the technology inputs remain exceptionally high – in design, in testing, and in materials.

The nexus of digital information transmission and storage (both in the cloud and in personal devices) is another example of technology's surprising encroachment on traditional economic models. Unlike the watchmaking example, which radically altered consumers' perceptions about similar products within an industry, the application of technology to print media and the recording and film industry changed our very understanding of the product itself. What we once thought of as physical goods are now more appropriately viewed as information. It is worth remembering how recently we thought of our record or CD collection as *physically* important. We didn't think of the recorded tracks as information. The physical vinyl recordings and CDs mattered. They were the music. Without them we had no collection. They were "goods" in the economic and personal sense – to be stored, insured, and traded in just the same way that other physical goods might be.

Obviously, not all goods lend themselves to this model the way that print media, music, or video do. Yet each new technological innovation presents the potential to shift our thinking about what matters with regard to a product's physical versus its information content. If we say, well, that might apply to books but how could it apply to furniture, it's appropriate to respond by saying, "Yes, but could you have imagined your books being stored in the cloud?" The larger point is not that physical things don't matter, but that their economic value shifts with the advent of information technology. We'll still need chairs to sit on, but we may "manufacture" those chairs in our own homes with a 3-D printer. Concurrent with any future change is the possibility (indeed, the likelihood) that a non-digital alternative will exist side-by-side with the innovation. We've seen that with watches, and it's beginning with high-end printed books and hand-crafted furniture. Indeed, current discussions of the "Internet of things" focuses on making dumb things (pipes, clothing, even furniture) smart. This will be accomplished through sensors and through object-to-object communication – only in place in your car's monitoring of tire pressure and other mechanical systems.

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Most importantly for this discussion, the type of workforce needed to support the production and management of these digital goods is very different from what was needed to produce their traditional counterparts and the skills expectations for those traditional counterparts goes up exponentially. In each extension of digital technology, additional opportunities for improvement arise, and these in turn change the skills requirements of workers.

Technology, in other words, has direct and indirect consequences on labor. It directly alters the skills needed to produce products and simultaneously creates employment opportunities in non-technology fields, both in services and traditional crafts. A further consequence of this restructuring can be seen in the *ways* in which we work. The worker of today often seeks levels of mobility and flexibility not easily satisfied by the traditional notion of a job. Even the term "worker" sounds like – and is – a dated expression. In this near future we are trying to imagine, individuals look to where they can apply their skills and talents. Younger workers in particular realize that they will hold multiple jobs, that they will move in and out of the "workforce," and that their talents will change as the demands of the marketplace change. In effect, **they are seeing their education and their skills as a means of producing income**. It is a very different thing to look at the world in this way. The prevailing view of work – that the ultimate objective is to enter into a fixed relationship with a corporation by getting a "job" – is rendered obsolete. It is replaced by a vision of work as a means of meeting the individual's needs: financial, personal, and creative.

Closely tied to this changing worldview is the recognition that interpersonal skills, problem solving, and strategic thinking apply across the entire spectrum of occupa-

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tional classifications. The retail worker, holding a job at a Banana Republic store (and, yes, even a Walmart greeter), is fully aware that what they are being asked to promote is also available on the Internet. They see customers take out their cell phones, comparing prices and features. They know that those phones have bar code scanners and that even the wholesale price is readily available to the informed consumer. The Home Depot sales person knows that the customer he is dealing with needs information as much as he needs help in finding the item. Just as surely as ATMs and airline ticket kiosks have replaced thousands of workers, so too will an increasingly sophisticated online retail environment. And as we go up the occupational ladder, to higher paying jobs, this dynamic becomes even more pronounced. It's not a matter of staying ahead of the machines and the electronic marketplace. That race has already been lost. The trick is to find where you can add value, either in advancing that world or in providing the personal services that machines and e-commerce cannot. Not everyone can make this transition. But certainly everyone will be forced to consider how they can contribute to an economy that no longer needs a whole range of traditional "skills."

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THE ROLE OF JOBS

Clearly, the question of job creation is at the core of the economic development profession. And it is central to our political dialogue. It is no exaggeration to say it will play a continuing role in presidential politics, national policy, and state and local elections. As these political and economic conversations unfold, however, the notion of what a job is and what it *will* be is changing. As I have tried to demonstrate, these changes go beyond traditional ideas of where work is performed and how compensation is structured. The fundamental relationship between employer and employee is shifting

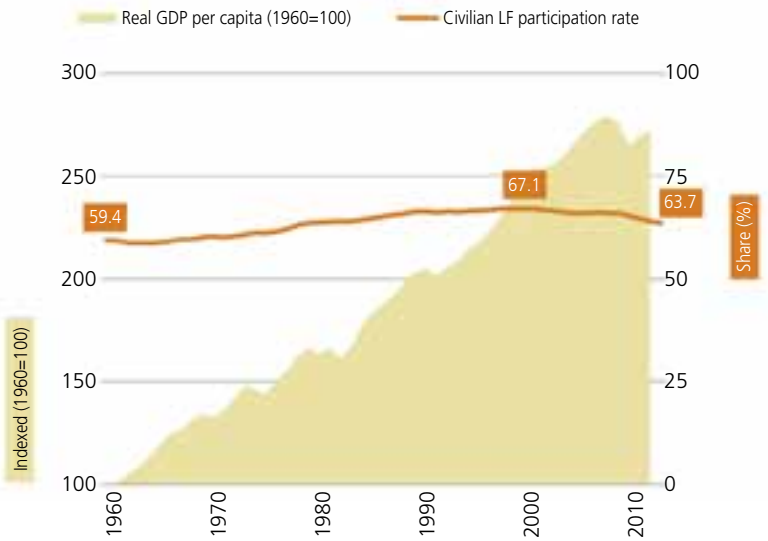
But describing this shift is not a vision of the future. That vision does not take shape until major employers – large corporations – adapt to a new employment model. And this new model may not be recognizable until there is a framework to measure it. The process of adapting to a new model is likely to be long and arduous. What may be most helpful to prepare for these changes from a policy perspective is to revisit some simple facts about "whose job it is to create jobs."

The question of jobs has always been a question of economic viability. As a profession, we have focused on jobs *not* just because no one likes dealing with the unemployed. We have focused on jobs because we operated under the assumption that our economy could not be productive without them. As a result, the concept of a job underpins our very notion of how an economy is structured. Yet one look at long-term trends in our gross domestic product and labor force participation rates shows little relationship between the two [see Figure 2]. So it is fair to ask what a productive economy will require from its workforce. In other words, even if our standard was the ability to create income instead of "holding a traditional job," we would need to ask whether that model is a sustainable *national* economic model. By asking this larger question, we gain insight into how the economic development profession can effect positive change in an individual community or region.

As we at TIP have been saying in our presentations for some time now, "business is not in the business of creating jobs." This statement always elicits a gasp from economic developers in the audience and a shrug of the shoulders from CEOs and HR directors. These divergent reactions speak to an enormous gulf between the expectations of EDOs (and politicians) and the market realities of operating a profitable business. From an employer's perspective, labor (i.e. "creating jobs") is desirable only when it is cheaper and more efficient than technology. Absent that edge, creating jobs is simply counter to the interest of a company seeking to maintain and expand its base.

Naturally, this discussion frequently defaults to the low wage rates of off-shore competitors. The advantage enjoyed by U.S. companies with Chinese or Mexican plants is most pronounced when labor costs operate at a high differential. In other words, an efficient, labor-intensive, high-volume foreign factory able to pay its workers at one third the level of comparable U.S. operations is

FIGURE 2. GROSS DOMESTIC PRODUCT PER CAPITA AND THE CIVILIAN LABOR FORCE PARTICIPATION RATE, 1960 TO PRESENT (1960 = 100)



Source: FRED, Federal Reserve Economic Data, from the Federal Reserve Bank of St. Louis: *Real GDP per capita indexed to 1960 [USARGDPC_NBD19600101] and Civilian Labor Force Participation Rate [CIVPART]*

at a clear cost advantage. We know there are exceptions to this rule (shipping costs, availability of raw materials, time-to-market), but the much lower labor costs provide a huge competitive advantage. But the larger question is not one of foreign versus domestic labor cost advantages. It is instead a question of the future of labor inputs *at any* cost. It is from this premise that we can argue that we need a different perspective on the workforce generally. Rather than focus on labor cost differentials, a new model would consider what makes a traditional labor force relevant in the first place. It would focus on flexibility and creativity – the very things that are gaining prominence at leading technology companies in their hiring and employment practices.

This is the framework in which to think about a different kind of labor market. Or whether the term "labor market" will be appropriate in the future. To put it another way, as long as the horizon between the physical production of goods and its IT equivalent is far off, labor markets and labor costs will matter. With each new incursion of digital information into production, labor demands change. They change and they shrink.

The problem is that we don't know how distant the horizon is for any given industry. And this matters. It matters immediately to workforce training as well as economic development agencies. These are the day-to-day questions of companies and economic developers. They are questions that follow directly from the larger question of international competitiveness, but with a twist. And that twist is technology. Beyond that lies the possibility of a fundamentally restructured workforce, both as a response to innovation and to the changing needs of individuals.

ENDNOTES

1 A discussion of the themes presented in Brynjolfsson and McAfee's work is provided in a July 8, 2012, *New York Times* editorial, "The Hollowing Out," by Thomas B. Edsall. Accessed at http://campaignstops.blogs.nytimes.com/2012/07/08/the-future-of-joblessness/.

2 http://www.youtube.com/watch?v=pZlJ0vtUu4w.

3 The way in which health care became the almost exclusive responsibility of employers would constitute an entirely different analysis. In fact, the Affordable Health Care does not change that presumption; it does however provide an alternative to those who do not have access to such coverage. This is not an insignificant change. It has economic development implications for sole proprietors and entrepreneurs. It may change the way in which young couples especially make location decisions – now no longer dependent exclusively on whether one of the people can gain coverage through an employer who provides health coverage.

4 "Swiss watch industry defies export gloom," by Haig Simonian, *Financial Times*, January 10, 2012.