The 2011 Shift Index
Measuring the forces of long-term change

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“We are shifting from a world where the key source of strategic advantage was in protecting and extracting value from a given set of knowledge stocks — the sum total of what we know at any point in time, which is now depreciating at an accelerating pace — into a world in which the focus of value creation is effective participation in knowledge flows.”

~ NY Times Columnist, Thomas L. Friedman, Published: January 19, 2010

“I believe that most large organizations today are suffering from a crippling disease — hierarchical bureaucracy. This disease is resulting in remarkable declines in long term return on assets, life expectancy of firms and engagement of people doing the work, as shown by studies such as Deloitte’s Shift Index.”

~ Knowledge Leader and Best Selling Author, Steve Denning, April 12, 2011

“Until now, executives have focused on two forms of strategic advantage: structural and capability-based. The Big Shift challenges both. It undermines traditional approaches to structural advantage by systematically reducing barriers to entry and movement.”

~ Bloomberg, December 10, 2009, Are Your Sources of Strategic Advantage Eroding?

“Overall, the Deloitte report provides fodder for those, like BusinessWeek’s Michael Mandel, who argue that the woes of the U.S. economy extend beyond the financial sector and began showing up well before the housing bubble.”

~ Business Week, November 23, 2009, Why You’d Better Beware of the Big Shift, By Harry Maurer and Cristina Linblad
A lot has changed since the 2010 Shift Index came out. In no particular order, the Euro has been in nearly continual crisis for many months; the Arab Spring has toppled autocratic regimes across the Middle East; Occupy Wall Street and its Occupy brethren inhabit a large number of city centers across the US amidst persistently high unemployment; and Steve Jobs finally succumbed to a long-term illness, much to the dismay of Mac, iPod, iPad, iPhone (and, one suspects, even PC) users everywhere.

Yes, a lot has changed. Yet one of the most valuable aspects of the 2011 Shift Index is its timely reminder that many of the most important trends that will drive our economic lives for the foreseeable future remain largely unchanged. The 45 year decline in companies’ profitability, as measured by their declining ROA persists, despite temporary fluctuations. The topple rate of leading firms continues to rise (supplemented, perhaps, by a rising topple rate of undemocratic political regimes around the world). And the competitive intensity confronting firms in the global market economy continues to intensify. So the core trends identified by the Shift Index remain very much as they were before.

There are three elements of the 2011 Shift Index that I would like to reinforce, due to their resonance with my own research. One that I have recently explored is its implications for thinking about one’s business, whether one makes a product or a service, as a service business. When one conceives the business this way, one learns to work from the customer back into your own organization. Consider the revenue stream, for starters. A product conception for revenues means that the big money comes from The Sale, when the customer buys the product. A large lump sum of money is paid at that point, and then the customer uses that product as he or she wishes. A product-focused business spends relatively little time or money with the customer after that, until the time comes for the next sale. This is the Push approach to business.

Things are different in a service-oriented company. The sale of the product is merely the inauguration of the customer relationship, with many subsequent interactions to follow. And the service-oriented company may offer to transfer the product to the customer in return for a stream of payments, instead of one initial sum. The company and customer remain engaged throughout the stream of payments. A clear example of this is GE’s Power by the Hour offering for its jet engines. Under this approach, GE’s customers pay per flight hour, rather than upfront. So GE makes money only when the customer’s planes are flying, which is when the customer makes money. In this way, a fixed cost is converted to a variable cost. And GE wants to keep those planes flying every bit as much as its customers do. From Push to Pull.

Another important dimension of the Shift Index is the importance it rightly assigns to openness. People, both as customers and as creative producers, access a wealth of useful knowledge, most of it from outside their own
four walls. This incredible use and re-use of knowledge permits both economies of scale and economies of scope. By opening up its server infrastructure to others, Amazon Web Services has created a new business that is built on the open access it provides to its internal operations. In the process, it spreads its fixed costs over much more volume (provided by the external customers using the infrastructure), making its own costs lower. By allowing third party merchants to use Amazon’s web page creation tools, Amazon achieves economies of scope: customers going to Amazon’s site have the same purchasing experience whether they are buying books (stocked by Amazon) or jewelry (stocked by third party merchants). A virtuous cycle ensues: the more we purchase, the more useful Amazon becomes to us as a shopping destination, and the more attractive Amazon becomes to those third party vendors looking for customers.

The final dimension of the 2011 Shift Index I wish to highlight is its fundamental orientation towards people, not towards technology. While there is a lot of technology in these pages, the whole perspective is anchored in a humanistic approach. Focusing on the passion of your people is vital to effective innovation performance. Being connected, both within your own organization and especially outside to many other people, organizations and institutions, is central to accessing the knowledge flows that bring prosperity. And today’s business empires, or autocratic states, are only temporary structures, destined to be undermined by the fundamental human desire to open up, to connect, to inspire, and to collaborate with one another.

Lest this be considered incredibly naïve, consider the most recent quarterly income statements from two leading innovators. One spent 13.4% of its sales on R&D, while those sales grew 7.3% from a year ago to over $17 billion. The other spent only 2.3% of its sales on R&D, yet its sales grew 39.0% from a year ago to reach over $28 billion. Which organization is getting more results from being connected, from empowered and passionate people, and from the pull exerted by its customers? While Microsoft (the first of these two innovators) is no slouch, few would dispute that Apple (the second innovator) is realizing greater leverage from its innovation investments. And Steve Jobs’ passing reminds us all of the value of focusing on the individual customer’s experience amidst the overwhelming panoply of technological possibilities.

So take the time to read this latest Shift Index, as a guide to what is coming over the longer term. It might help you connect with enduring trends that can carry you past the daily distractions and noise, to a more successful business, with more satisfied customers, thanks to more connected and impassioned people, both inside and outside your organization.

Henry Chesbrough
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### Read This

- **Focus for New Readers**
  These sections provide a concise introduction to the key ideas behind the Big Shift and this year’s Shift Index.

- **Focus for Seasoned Readers**
  These sections provide new insights and findings captured in this year’s Shift Index.

- **Connect the Dots**
  New to this year’s release, these journalistic nuggets help bring to life the key metrics of change captured in the Shift Index.

- **Join the Conversation**
  Participate in the debate by posting your opinion on these propositions. Scan the Quick Response (QR) code from your mobile or follow the Uniform Resource Locator (URL).
Executive Summary

In the midst of an economic downturn, when it is all too easy to fixate on cyclical events, there is real danger of losing sight of deeper trends. Short-term cyclical thinking risks discounting or even ignoring powerful forces of longer-term change. To provide a clear, comprehensive, and sustained view of the deep dynamics changing our world, Deloitte’s Center for the Edge has developed the Shift Index. The Shift Index consists of 3 indices and 25 metrics designed to make longer-term performance trends more visible and actionable.

Our first release of the Shift Index in 2009 highlighted the decline in firm performance that has been playing out for decades. Remarkably, in 2009, the Return on Assets (ROA) for U.S. firms had fallen to less than one-third of 1965 levels while improvements in Labor Productivity had modestly improved over the same period. While there has been a modest improvement in ROA over the past couple of years as the downturn eases up, we believe that this is simply a short-term adjustment similar to the improvements in ROA seen in previous economic cycles. The long-term trend is still an underlying reality and there is no reason to believe that these short-term adjustments, achieved largely through significant layoffs, mark a reversal of the long-term trend.

Additional findings of our Shift Index include the following:

- The ROA Performance Gap between winners and losers has increased over time, with the “winners” barely maintaining previous performance levels, while losers experience rapid deterioration in performance.
- The “topple rate,” the rate at which big companies lose their leadership positions, has more than doubled, suggesting that “winners” are in a precarious positions.
- Competitive Intensity in the United States has more than doubled during the last 40 years.
- While the performance of U.S. firms is deteriorating, the benefits of productivity improvements appear to be captured in part by creative talent, which is experiencing greater growth in total compensation. Customers also appear to be gaining and using their market power as reflected in increasing Consumer Power and Brand Loyalty.
- The exponentially advancing price/performance capability of computing, storage, and bandwidth is driving an adoption rate for our new “digital infrastructure”3 that is two to five times faster than previous infrastructures, such as electricity and telephone networks.

This 2011 release of the Shift Index updates all 25 metrics and finds new revelations and examples. This year, we also explore several themes in depth that have influenced our thinking on the Big Shift.

A few of the key themes that we will discuss this year are:

- ROA performance continues its long-term decline due to deteriorating firm performance. This year, we explore ROA performance in context of two macro trends, Mergers & Acquisitions (M&A) activity and declining interest rates, which have been put forth to explain (or explain away) the observed decline. Based on our analysis, we contend that the declining trend in ROA reflects fundamental firm performance.
- Layoffs and other short-term measures taken by firms are largely the cause of the recent uptick in ROA. As performance pressures mount, firms are reacting by taking short-term measures and pushing hard on employment and payroll as the principal cost-cutting levers. While offering short-term relief, current efforts taken by firms to eliminate jobs are not sustainable drivers of firm performance going forward.
- Connected individuals, not companies, are the ones harnessing flows and have more power because of it. Declining information asymmetry, lower switching costs, and emerging trends, such as a technology-enabled resources sharing, are increasing Consumer Power and providing additional options for consumption. While individuals are leveraging knowledge flows to increase their power in the marketplace, this hyper-connectivity also drives volatility in the economic, social, and political arenas.
- Firms have untapped opportunities to reverse their declining performance by embracing pull. To accomplish this, firms must develop and encourage passionate workers at every level of the organization. Additionally, companies must tap into knowledge flows and expand the use of powerful tools, such as social software to solve operational/product problems more efficiently and effectively as well as to discover emerging opportunities.

Given these trends, we cannot reasonably expect to see a significant or sustainable easing of performance pressure as the current economic downturn begins to dissipate — on the contrary, all long-term trends point to a continued erosion of performance. So what can be done to reverse these performance trends?
The answer can be found in the three waves of deep change occurring in today’s epochal “Big Shift.” The first, the “Foundation” wave, involves changes to the fundamentals of our business landscape catalyzed by the emergence and spread of digital technology infrastructure and reinforced by long-term public policy shifts toward economic liberalization. The metrics in our Foundation Index monitor changes in these key foundations and provide leading indicators of the potential for change on other fronts. Changes in foundations have systematically and significantly reduced barriers to entry and to movement, leading to a doubling of Competitive Intensity.

The second, the “Flow” wave, focuses on the key drivers of performance in a world increasingly shaped by digital infrastructure. This second wave looks at the flows of knowledge, capital, and talent enabled by the foundational advances, as well as the amplifiers of these flows. Because of the rapid change, higher unpredictability and volatility created by the Big Shift, knowledge flows are a particular key to improving performance. Developments on this front are lagging behind the foundations metrics because of the time required to understand changes in foundations and develop new practices consistent with new opportunities.

The third, the “Impact” wave, centers on the consequences of the Big Shift. Given the time it will take for the first two waves to play out and manifest themselves, this third wave—and its related index—provides an even greater lagging indicator. While current trends in firm performance indicate sustained deterioration, we expect, over time, that performance will improve as firms begin to figure out how to participate in and harness knowledge flows. Doing so will require significant institutional innovations, not just changes in practices, resulting in value creation through increasing returns performance improvement. In the end, we expect these innovations to lead to a fundamental shift in the rationale for institutions from scalable efficiency to scalable learning as firms use digital infrastructure to create environments where performance improvement accelerates as more participants join.

In end, these innovations will lead to a fundamental shift in the rationale for institutions from scalable efficiency to scalable learning as firms use digital infrastructure to create environments where performance improvement accelerates as more participants join. where we are in the Big Shift and what to anticipate in the future. Current metrics indicate that we are still in the first wave of the Big Shift and facing challenges in moving forward into the second. Changes still manifest themselves much more as challenges rather than opportunities because our institutions and practices are still geared to earlier infrastructures. At the same time, an understanding of these three waves leads to significant insights about the moves required to reverse current performance trends:

• Deeper, yet strategic, restructuring of firm economics to generate maximum possible value from existing resources;
• Development of new management practices to more effectively catalyze and participate in growing knowledge flows; and
• Significant innovation in institutional arrangements to drive scalable participation in knowledge flows and reap the increasing returns to performance improvement.

The Shift Index is updated regularly to track changes over time and measure movement along the Big Shift. We have designed this year’s Shift Index both as a stand-alone summary of the findings to date and as an update for those who have read previous editions.

In response to growing interest from executives, the Center for the Edge is also further researching which flow metrics at the individual firm level, could be drivers of performance, ultimately captured in operating and financial metrics. In particular, we are investigating the ability of companies to participate effectively in a larger and more diverse range of knowledge flows, with the intent of identifying a set of flow metrics that can be drivers of performance metrics for the firm to monitor on an ongoing basis.
2011 Shift Index: Key Themes

Challenging times and opportunities: Unemployment, volatility, and worker passion in an era of constant change

Introduction
The Big Shift is a story of long-term trends and the increasing pressures on firms in an environment of constant, and disruptive, change. The Shift Index was developed in 2009 to help describe and quantify the dimensions of the Big Shift. With this third edition of the Shift Index report, we have updated our 25 metrics and gone deeper into a few dimensions of the Big Shift. We hope to entice new readers and provide fresh perspectives to those we have connected with in the past. We have explored our metrics again, finding new insights and examples, and for each metric, relayed a story that we hope will resonate with the reader and make the metric come to life.

In this foreword, we explore several themes that have influenced our thinking on the Big Shift. First we continue to explore our most discussed finding: the persistent decline in firm performance, manifested in declining asset profitability. We will address two challenges put forth to explain the decline in Return on Assets (ROA) as a result of external factors. Analysis of these challenges suggests that they do not explain away the sustained decline in ROA over a period of more than four decades.

Next, we add our perspective to the public discourse around the hot-button topic of unemployment, presenting our findings from the perspective of firms, an often neglected player in this discussion. We argue that cuts to headcount, while providing relief in the short-term, are only a temporary balm for more fundamental performance issues. Although such measures may help to explain the recent upturn in asset profitability, we believe that only by embracing the changes required by the Big Shift can firms be able to reverse their declining performance in the long run.

This finding, along with the insights provided by our 25 metrics, left us with a question we wished to explore: if knowledge flows are increasing, and firms are not tapping into them, then who is? The answer can be found in what we refer to as the ‘connected individual.’ In this section, we discuss the social and economic impacts brought about by these individuals, testaments to the power of the digital infrastructure and its amplify effect on change. Finally, we conclude by discussing how firms can behave more like these connected individuals by tapping into knowledge flows and stoking worker passion. By creating a passionate workforce and giving these workers ample access to flows of knowledge, corporations can drive real, sustainable improvement and begin to reverse their long-term performance deterioration.

ROA Continues its Long-Term Decline Due to Deteriorating Firm Performance
One of the central themes of the Shift Index, and the topic which generates the most questions each year, is that asset profitability (ROA) has shown a downward trend over the past four decades; a trend illustrating a steady decline in firm performance that not many have even noticed, much less investigated. Indeed, there continues to be a profound cognitive dissonance around this point: on one hand, we all acknowledge experiencing increasing stress as performance pressures mount; on the other hand, we seem unwilling to accept that all of our efforts continue to produce deteriorating results.

The challenges to our findings prompted us to undertake additional analyses — to test, re-test, and validate our approach, data, and assumptions. We welcome and encourage such conversations as they test our thinking, open our minds to new possibilities, and bring us collectively closer to discovering an answer for declining firm performance.

In last year’s edition of the Shift Index, we addressed several questions surrounding the decline in ROA for the overall economy. We began by analyzing two other measures closely related to ROA — Return on Invested Capital (ROIC) and Return on Equity (ROE). For each of these proxies, we found a similar downward trend, further bolstering our argument for declining firm performance. The downward trend of ROE was not as dramatic as that of ROIC or ROA. But, as stated in the 2010 Shift Index, ROE may vary depending on a firm’s capital structure. In short, it does not provide the same comprehensive picture of a firm’s fundamental performance as ROA does.
In addition to investigating these two proxies, we also considered several alternate explanations for the decline in ROA. These included the transition from a product to a service economy and the growing prevalence of outsourcing. While these topics provided interesting additional dimensions of the changes we are experiencing, we ultimately found that the data did not support either argument. Again, we returned to our original finding: ROA is following a downward trend due to the deterioration of fundamental firm performance.

In the 2011 edition of the Shift Index, we will continue our open dialogue by investigating in greater depth the impact of two other challenges we have received. Two common objections we address this year are:

- **Increased M&A activity**
  - Firm assets are market valued at point of sale, usually resulting in an increase over book value being added to the acquiring firm’s balance sheets.
  - Depends on the return over time; current impairment rules would not result in write down of goodwill and certain other intangibles if subsequent performance is equal to or better than expectations at the acquisition date; therefore, ROA should accurately reflect market performance.

- **Outsourcing/offshoring**
  - Companies shed assets related to asset-intensive operations (e.g., manufacturing, call centers).
  - Assuming constant returns, as assets reduced, ROA should have improved over time.

- **Increased importance of intangible assets**
  - Intangible assets make up a larger portion of total assets and are increasingly important for driving competitive success.
  - Goodwill and many intangible assets are not amortized. In the absence of impairment writedowns of these assets, ROA should reflect market performance.

Although intangibles (including but not limited to Goodwill) have grown from 0.47% of the total asset base in 1965 to 5.54% in 2010, these intangible assets continue to constitute a minor portion of the total asset base. Thus, we do not believe that this increase in intangible assets is a primary driver of economy-wide Return on Assets.

**Interest Rates & ROA**
The second alternative explanation proposed is that the decline in ROA is a natural and inevitable consequence of declining interest rates over this time period. Proponents of this argue that when rates are low, there are implicitly lower expectations on all invested capital. Because investors cannot get better returns by putting their money elsewhere, it eases the performance pressure on assets. On one level, it is easy to understand how one might draw this conclusion. Over the past few decades, both interest rates and ROA have shown a strong decline. However, here we must reinforce our core belief in the value of longitudinal study. Though public policy, economic conditions, and the like may change from decade to decade, creating false positives, it is the long-term trends that truly illuminate changes in firm performance and can be used to derive sound explanations.

Looking at the longitudinal data in Exhibit 3, it becomes clear that ROA is not declining as a result of falling interest rates. For the first third of our analysis, from 1965 to 1981, interest rates rose from 4.1% to 16.4%. During this same period, however, ROA declined by almost 30% from 4.7%...
Exhibit 2: M&A Activity and Goodwill Created ($, Billions) (1992-2011)

Source: Compustat, Deloitte Analysis

Exhibit 3: Federal Reserve Interest Rate and Economy ROA (1965-2010)

Source: Data from Compustat, Deloitte analysis
to 3.4%. While interest rates and ROA have shown a similar trend in recent decades, one cannot draw causality between the two. Thus, we can assume that ROA decline cannot be explained away merely as the result of falling interest rates.

In fact, we believe that the declining interest rates of the past two decades may be shielding firms from the full effects of the significant decline in performance. Because interest rates are so low, investors have had lower expectations of invested capital. When interest rates rise, however, there will be even more pressure on companies to improve their performance.

Given this analysis, we still contend that the long-term decline in performance is the result of firms’ slow response to the Big Shift. If anything, the imperative to adapt to the changes in the Big Shift will become all the more pressing as interest rates— and expectations— rise in the future.

**Layoffs and Other Short-Term Measures Taken by Firms Are Largely the Cause of the Recent Upturn in ROA**

**Performance Pressures are Mounting**

Take one glance at the Sunday business section, and it is clear that today’s firms are facing tremendous pressures and scrutiny. It is not simply a matter of a poor economic climate. As our Competitive Intensity metric shows, market concentration has steadily decreased, meaning that more and more firms are battling it out for top market shares. Not only has the intensity of competition increased, but also the velocity and frequency at which changes are occurring. As described by our Firm Topple Rate metric, firms are dropping out of their ROA rankings at an increasing rate since 1965. Not only is overall performance declining, but firms are finding their time at the top of the pile to be all the more tenuous.

In parallel with Competitive Intensity, Virtual Flows, including inter-firm knowledge flows, wireless minutes, and Internet activity, have risen steadily over time. Some participants are harnessing these flows to add significant competitive pressures in the marketplace. The open source model, for example, was first adopted to address the severe and short-term pressure on firms. When cyclical pressures mount on firms, they are forced to improve their performance.

The data reveals that similar patterns have emerged multiple times since 1965 (see Exhibit 4). When cyclical economic pressures mount on firms, they are forced to address the severe and short-term pressure on significant price pressures on more traditional producers. As technology makes sharing knowledge easier and more prevalent, virtual flows will become increasingly important drivers of competition.

While some firms are embracing Pull tactics, such as scalable learning, to overcome mounting performance pressures, most are still using outdated Push business practices, reacting to one-off problems rather than finding innovative ways to circumvent them. These persistent issues are only exacerbated in economic downturns— but how do firms respond in particularly tough times? We have found that firms by and large are taking short-term measures in an effort to salvage quarterly earnings. Like plugging holes in a ship, these measures can offer temporary relief. However, over time, the underlying structural issues must be addressed if firms want to address the real causes of their performance challenges.

**The Layoff ‘Solution’**

Unemployment is a hot button topic in political discourse, media coverage, and around the dinner table. The social effects of unemployment have been covered from many angles: the long-term impact on youth, the gender divide (men have endured three-quarters of job losses since the beginning of 2008), and the disproportionate impact on already hard-hit urban neighborhoods, just to name a few.4

A less-discussed topic, however, is the impact on firms. Why are firms laying off workers? What is the effect on firm performance? Are these employment trends sustainable in the long run?

Headcount is one of the key levers firms use to improve performance, particularly in poor economic climates. Payroll expenses primarily accrue to Cost of Goods Sold (COGS) and Selling, General, and Administrative Expense (SG&A). When a firm lays off workers, the firm’s costs decrease, and assuming constant revenue, returns increase. Thus, ROA will increase following periods of heavy layoffs. This made us curious about the relationship between national unemployment (an indicator of the extent to which companies are using layoffs to achieve financial performance) and ROA. Our analysis shows a strong relationship between unemployment and ROA.

The data reveals that similar patterns have emerged multiple times since 1965 (see Exhibit 4). When cyclical economic pressures mount on firms, they are forced to address the severe and short-term pressure on

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performance. In these times, firms use layoffs as a release valve, triggering a spike in the unemployment rate. Exhibit 4 shows that following a short lag, Return on Assets rises as well. However, all these efforts to be more efficient, take people out, and drive productivity are proving insufficient in the face of long-term trends. While the Labor Productivity metric has increased by almost 2.5 times from 1965 to 2010, firm performance has continued a steady decline.

While companies have long used layoffs as a means to cut costs, the practice has become especially prevalent in more recent economic downturns. As explained in a McKinsey Global Institute report, management in the 1960’s and 1970’s considered labor to be a ‘quasi-fixed’ resource since they had already invested in their training and workers held firm-specific knowledge that was not easily transferable. In tough times, firms were less likely to lay off large numbers; they were instead willing to take a hit to profit and productivity so that workers could drive recovery faster on the back end.5

As shown in Exhibit 5, employment has constituted an increasingly larger portion of Real GDP loss in each subsequent recession since the event of 1973-1975. GDP loss measures the severity of a downturn on a macroeconomic level. Firms’ decisions whether or not to lay off workers during these recessions dictate the degree to which employment bears the brunt of the downturn and the degree to which firms absorb GDP loss internally, taking a hit to productivity. As shown in a McKinsey Global Institute study, where once companies were shielding workers and absorbing losses themselves, in this globally competitive economy, companies are seeking to preserve profits at the expense of employment. This increasing reliance on layoffs is not a sustainable practice in the long-run; in order to reverse declining performance, firms cannot focus solely on short-term, reactive solutions.

The Automation Paradox

We have argued here that the recent upturn in ROA reflects short-term and largely unsustainable measures rather than the more fundamental changes required to respond to the mounting pressures of the Big Shift. However, how does one reconcile this with the prevailing belief that automation is driving sustained productivity growth and making workers dispensable?

It is true that firms are finding ways to automate low complexity, and increasingly, mid-complexity positions. Indeed, the rapid adoption of self-checkout at retail locations has shown that even some face-to-face customer interactions can be replaced with technology. However, as shown in Exhibit 6, Fixed Investment IT Spend in 2000 was almost three times as high as in 2010, whereas unemployment was only 4.0%, as compared to 9.6% in 2010. Given these numbers, it would be difficult to make the case that the significant recent increase in layoffs is due to a sudden surge in automation. While IT spend rose significantly between 2009 and 2010 in parallel with the unemployment rate, this increase marked a return to pre-crash levels of investment.

Firms are seeking increased employment flexibility by relying on short-term, part-time, or contract workers. In particular, routine and administrative tasks are being

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Layoffs are not a sustainable solution to improving long-term firm performance.

www.deloitte.com/us/Layoffs
pushed out around the world to temporary workers, often in remote locations, propelled by digital infrastructure and sites, which make managing virtual resources easier. In 2010, the number of part-time workers reached a new high of 19.7% of all employees. According to one survey, 58% of firms expected to use more part-time, temporary, or contract employees over the next 5 years.6

At the same time, there is a growing compensation gap between high-skilled and low-skilled work.7 Skilled, or ‘creative class,’ workers are increasingly critical to a firm’s profitability and, as a result, these skilled workers have increased bargaining power with their employers, reinforced by greater visibility into alternative employment options than ever before. As shown in our Returns to Talent metric, creative class workers are garnering higher compensation and market power because of these advantages.

Lower skilled workers have less bargaining power and therefore feel the brunt of the increasing performance pressure on companies. Moreover, as jobs return to the economy, they are in highly-skilled service sectors, such as health care, and not in those industries hardest hit. This means a growing divide between the supply of skills and demand from the market, which may translate to a more persistent breed of unemployment, particularly for low-skilled workers.

The automation and flexible staffing of jobs have largely been focused on routine tasks, and thus, have diminishing returns. There are certainly examples of firms using flexible employment to drive real productivity gains and improve performance; however, these practices have not been widely adopted in the market. Ultimately, most firms are still engaging in Push tactics to deal with immediate problems. As these companies eliminate jobs, they squeeze harder on the remaining workers to get more output. While firms can push hard on employment for the sake of productivity in the short-term, it is not a sustainable practice for long-term growth.

As shown in the repeated cycles of unemployment in Exhibit 4, these short-term responses to longer-term pressures are not sufficient to address the real causes of declining performance. It is only when firms embrace the institutions and practices required to drive scalable learning and tap into the digital underpinnings of the Big Shift will they be better positioned to see a sustainable upward trend in ROA, rather than simply representing cyclical

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Consumers are gaining more power than firms because they are quicker to adopt disruptive technologies.

www.deloitte.com/us/ConsumerPower

Exhibit 6: Unemployment and Fixed Investment IT Spend Contributions to Real GDP (1997-2010)

![Graph showing Unemployment Rate and Fixed Investment IT Contributions to Real GDP from 1997 to 2010]

Note: Calculated as the sum of Fixed Investment final sales of Computers, Software, and Communication equipment

Source: Bureau of Economic Analysis, Compustat, Deloitte Analysis

Connected Individuals, Not Companies, are Harnessing Flows — and Have More Power Because of It

In decades past, the possession and protection of stocks of knowledge set apart the powerful from the uninformed. Today, however, it is one’s ability to harness flows of knowledge, made possible by the digital infrastructure, which gives advantage. But if companies are not tapping into these increasing flows to create value, then who is? The answer is the “connected individual,” whether acting as individual consumers or as creative talent, who harnesses flows to exert power in the marketplace and society in unprecedented ways.

Consumer Power and the Connected Individual

One clear outcome of this phenomenon is an upward trend in our Consumer Power score, which measures the value captured by consumers based on the degree to which consumers perceive they have choices, convenient access to and information about those choices, access to customized offerings, the ability to avoid marketing efforts, and minimal switching costs. In 2011, 49% of consumers surveyed strongly agreed that they have more information about brands and products. And as shown in Exhibit 7,

When cyclical economic pressures mount on firms, they are forced to address the severe and short-term pressure on performance. In these times, firms use layoffs as a release valve, triggering a spike in the unemployment rate.

47% of respondents strongly agreed that there wasn’t much cost associated with switching between brands. Only 6 and 7% of respondents strongly disagreed with either of these statements, respectively. Consumers are leveraging increased information to make real-time comparisons between prices and product features before they even get to the store. And for firms, this means it is more difficult to use information asymmetry to their competitive advantage.

While consumers perceive themselves as having more information, we wondered if they were changing their purchasing decisions in a way that affects company earnings. According to our Brand Disloyalty metric, consumers are starting to view brands in the same categories as more interchangeable. As a result, they are less likely to “buy in” to traditional advertising and
14

Exhibit 7: Consumer Power (2011)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There are a lot more choices now in this category than there used to be</td>
<td>3% 3% 7% 26% 20% 20% 21% 41%</td>
</tr>
<tr>
<td>2</td>
<td>I have convenient access to choices in this category</td>
<td>16% 12% 12% 20% 16% 12% 12% 24%</td>
</tr>
<tr>
<td>3</td>
<td>There is a lot of information about brands in this category</td>
<td>3% 3% 5% 21% 19% 22% 27% 49%</td>
</tr>
<tr>
<td>4</td>
<td>It is easy for me to avoid marketing efforts</td>
<td>7% 5% 10% 26% 16% 17% 18% 35%</td>
</tr>
<tr>
<td>5</td>
<td>I have access to customized offerings in this category</td>
<td>9% 7% 9% 27% 17% 16% 15% 31%</td>
</tr>
<tr>
<td>6</td>
<td>There is not much cost associated with switching away from this brand</td>
<td>4% 3% 5% 20% 21% 23% 24% 47%</td>
</tr>
</tbody>
</table>

Source: Synovate, Deloitte analysis

Consumers are leveraging increased information to make real-time comparisons between prices and product features before they even get to the store. And for firms, this means it is more difficult to use information asymmetry to their competitive advantage.

are instead leveraging new knowledge flows to alter their purchase decisions. Homemakers, who often make purchase decisions for the household, have seen the highest jump in brand disloyalty, suggesting that brands no longer hold the clout for consumers they once did. Additionally, consumer trust in firms has declined from 59% in 2008 to 46% in 2011, according to the Edelman Trust Barometer.8 Firms can no longer rely on customers “shopping blind” and buying out of trust and loyalty. Instead, they must win the hearts and wallets of an increasingly brand-agnostic and mistrustful population.

Emerging Trends in Consumer Choice

Technology is also enabling other consumer trends, some of which have significant implications for businesses and the market. One such trend is the growth of a ‘sharing economy,’ which is increasing the power of collective individuals by providing additional options for consumption. While the proclivity to share is by no means new, technology has enabled the sophisticated coordination of resources, from smartphone applications for accessing shared car services to the cloud platforms companies use in running their internal applications. Firms such as ZipCar prove how business models based on sharing can both grow the market and capture share from traditional incumbents. A single ZipCar, for example, is estimated to replace the need for 15-20 privately-owned cars, posing a significant threat to car dealerships in addition to the traditional car rental firms.9 At the same time, ZipCar extends the car rental market to college campuses and other consumers previously excluded from reliable access to a vehicle. Both rental companies and auto manufacturers have borrowed from the ZipCar sharing model in hopes of gaining access to these underserved markets. The passage of legislation in California that amends insurance law and permits auto owners to share their private vehicles is a telling example of how these emerging trends, made scalable by the digital infrastructure, are becoming mainstream.

Growing Pains of the Big Shift

The notion of empowering individuals through knowledge transfer is significant and seductive. In a world where consumers can widely disseminate knowledge and choose their preferred means for acquiring goods and services (buying, renting, borrowing), end-users can push back on firms, forcing them to be more transparent, to price competitively, and to engage in dialogue with their customers. While these are positive outcomes of the digital infrastructure, society is experiencing growing pains along the way; today’s increasingly inverted pyramid of power is driving greater volatility in the economic, social, and political arenas as hyper-connected individuals tap into increased flows of knowledge.


The power of individuals to create market disruptions has been put into sharp relief by the global recession. With greater access to information, both factual and questionable, an already fearful and reactive public is causing significant and oftentimes unanticipated shifts in economic activity. However, this volatility is not just a side effect of a poor economic climate; it is an outcome of long-term changes brought about by the Big Shift.

As shown by the Stock Price Volatility index data, there has been a long-term increase in stock price volatility (see Exhibit 8). The many online and on-air financial gurus that have emerged, with their legions of loyal fans, are likely one factor contributing to markets movements — at least in the short-run.

Not only are individual investors capable of driving short-term fluctuations in the marketplace, groups are also leveraging the digital infrastructure in socially disruptive ways, generating greater social volatility. The London Riots and youth flash mobs in Philadelphia demonstrate the power of the digital infrastructure to organize and rally individuals faster and more visibly than ever before. On August 8, 2011, in the heat of the London Riots, 1 in every 170 U.K. internet visits was to Twitter, and the Twitter handle “LondonRiot” received over 1.1 million tweets.²⁰ Egypt provides perhaps the most striking example — leveraging the digital infrastructure, the large youth population has banded together and rallied for political reform. The incarceration and trial of Egyptian autocrat Hosni Mubarak for allegedly ordering violence against peaceful demonstrators is a testament to how “the power-pyramid is being turned upside down” and individuals are affecting true change on a national, and global, platform.²¹

Firms Have Untapped Opportunities to Reverse Declining Performance by Embracing Pull

As of today, individuals have largely been the beneficiaries of flows, leveraging them to increase their own power and drive change. And for firms caught in a long-term trend of declining performance, this transfer of power to end-users is certainly a driver of increasing performance pressure. However, companies have untapped opportunities to “act like consumers” and reverse their declining performance. To accomplish this, firms must consider fostering passionate workers at every level of the organization.

At the intersection of these social and economic disruptions is a real and growing political volatility, characterized by faster cycles of change. As individuals become more empowered, the change they are affecting has real consequences—both in the United States and abroad. As Tom Friedman writes, “This globalization/IT revolution is also ‘super-empowering’ individuals, enabling them to challenge hierarchies and traditional authority figures—from business to science to government. It is also enabling the creation of powerful minorities and making governing harder and minority rule easier than ever.”²² Egypt provides perhaps the most striking example—leveraging the digital infrastructure, the large youth population has banded together and rallied for political reform. The incarceration and trial of Egyptian autocrat Hosni Mubarak for allegedly ordering violence against peaceful demonstrators is a testament to how “the power-pyramid is being turned upside down” and individuals are affecting true change on a national, and global, platform.²²

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²² Ibid.
Additionally, companies should consider tapping into knowledge flows and expanding the use of powerful tools such as social software.

One lesson we take from the Egyptian youth is how individuals with passion and access to knowledge flows can collaborate to create change. If a similar equation, passion + flows, was applied to workers within an organization, firms could begin to reverse declining performance. They can accomplish this by tapping into knowledge flows and expanding the use of powerful tools such as social software to support and foster passionate workers at every level of the organization.

Why is Passion Important?
What, exactly, is worker passion, and why is it important to firms? Worker passion, different from employee satisfaction, denotes a strong desire to continually improve performance. More than being satisfied with their current job, passionate employees constantly seeking to stimulate new thinking and creativity.

As cycles for innovation and knowledge creation speed up in today’s world, the stocks of knowledge held by any one organization or institution rapidly depreciate. Further, competition continues to intensify as technology based platforms make replication of services and solutions easier and faster. In this environment, companies must keep an eye fixed on developments across a broad range of industries, game changers, and new ideas — as they no longer enjoy the luxury of time to exploit accrued knowledge to generate value for an indefinite period.

In this competitive atmosphere where time-to-market is critical, creating and retaining passionate workers provides a strong competitive advantage to firms. Passionate workers drive sustained performance improvement, inspire innovation and possess both a “questing” disposition, which drives them to seek out new sources of knowledge, and a “connecting” disposition, which drives them to build relationships within the organization and outside of its walls to tap into the latest thinking and insights.

When asked how they respond to unexpected challenges, the passionate employee most often responded that they are inspired (seeing an opportunity to learn something new) or energized (seeing an opportunity for problem solving) rather than being indifferent or exhibiting negative behaviors. The passionate are twice as likely (72% versus 36%) as disengaged workers to express this disposition (See Exhibit 10). The questing disposition drives higher performance as passionate workers do not shy from challenges and actively pursue opportunities to blend new ideas from across companies, industries and disciplines into their current work (see Exhibit 9).
As the rate of change in the business environment increases, the passionate worker is most apt to adjust and thrive, and will likely foster those behaviors within their companies. They view challenges as exciting opportunities to drive themselves to a new level of performance. Employees who are not passionate tend to experience unexpected challenges as a source of stress and are increasingly likely to burnout and become a drain on the organizational vitality.

In addition to thriving in challenging environments, passionate workers also seek out connections with others who are relevant to their work and to their continuing efforts to find and overcome performance challenges. Looking at proclivity to engage in a range of inter-firm knowledge flows, from social media and news alerts to conferences and professional organizations, as well as frequency of engagement, passionate workers are twice as likely to participate in knowledge flows as disengaged employees. Our Shift Index suggests that effective participation in an increasing range of diverse knowledge flows will be a key driver of performance improvement in the Big Shift — as employees seek to bring external thinking into the organization to cross-pollinate ideas. Workers who lack passion and who self-select out of inter-firm or intra-firm knowledge flows will likely find their value diminished over time as they vainly draw on aging stocks of knowledge to try to deliver results for a shifting world.

The Future of Worker Passion
An important consideration for companies is the need to draw out the passion of workers of all ages and enable them to tap into knowledge flows.

The U.S. labor force is projected to reach 166.9 million by 2018, an 8.2% increase from the 2008, with an increasing proportion of older workers. Workers aged 55 years and older will make up 23.9% of the labor force, up from 18.1% in 2008. Meanwhile workers aged 16 to 24 are expected to make up only 12.7% of the labor force (down from 14.3%), and the primary working-age group, those between 25 and 54 years old, is projected to decline to 63.5% (from 67.6%).

The ability to ignite and sustain the passion of senior workers is becoming more and more important as the labor force ages. Organizations should explore opportunities to retain retiring employees as advisors within the company. Passionate older workers could be assigned roles where they can focus their energies on taking performance challenges that have a measurable effect on the company. This can eliminate the need for workforce reductions, and may allow for faster return on asset gains in periods of economic recovery and strengthening the organization in the long run.

Social Software & Knowledge Flows
Worker passion will be crucial for firms as they seek to compete in a globally connected and evolving service economy. A second critical element, as discussed earlier, is providing workers with access to flows that can drive real, sustainable value throughout the organization. For firms, social software is a powerful, and under-utilized, tool as they seek to leverage flows more effectively. While current technologies like ERP software are excellent tools for standard processes, and are geared towards scalable efficiencies, these technologies are ill-adapted to handle
Lighter, more nimble firms are often better positioned to more quickly to translate these disruptive technologies into new practices, and therefore, will likely be among the first to garner the business benefits.

non-standard business transactions, or "exceptions," which are increasingly common in business operations. These one-time events, which can be time sensitive and resource intensive to handle, are unwieldy to resolve via traditional means.

Social software tools, on the other hand, have a uniquely relevant set of capabilities to address the exceptions. The real-time and borderless nature of social software makes it well-suited for organizations to identify expertise, facilitate cross-boundary communication, preserve institutional memory, harness distributed knowledge and create new knowledge. In short, social software can give companies the ability to solve problems more efficiently and with better results — while discovering new opportunities.

Although social software is an invaluable tool in an increasingly connected world, today, it is largely relegated to consumer-facing functions. As shown in Exhibit 12, 62% of marketing professionals surveyed use social media, but only 34% of accounting/finance professionals tap into this flow. Further, while companies do not explicitly ban social media (only 16% of respondents reported that it was banned), they are not using it effectively (only 22% of respondents reported that social media is used internally). The Deloitte Inter-Firm Knowledge flow survey indicates that front line workers are the least likely to participate in inter-firm knowledge flows. Of front line workers surveyed, 30% do not participate in any inter-firm knowledge flows, virtual or physical (e.g., conferences and lunch meetings).

Firms stand to reap tremendous benefits if they can expand participation through adoption of social software tools throughout the organization. OSIsoft, a data solutions company, experienced a 22% improvement in average issue resolution time after deploying a Socialtext workspace (wiki) for their customer-facing technical support team and engineering units.

Prior to the wiki, OSIsoft had no central repository for expert knowledge and employees relied upon word-of-mouth connections to resolve issues. Moreover, the expert knowledge they did have was static and generic, rarely offering the level of detail and specificity needed to handle exception cases. E-mail was the primary tool for collecting and exchanging knowledge, so any documentation of how to resolve an issue was privately held and not easily available to other engineers when they encountered similar issues. With the wiki, OSIsoft was successful in creating a single, easily accessible source of reliable customer solutions that represented a breadth of issues and up-to-date information.

Knowledge flows and worker passion might seem like amorphous concepts, but firms can gain tangible results by engaging and supporting workers at every level of the organization and giving them the tools and channels to drive scalable learning. Of course, simply investing in social software is not sufficient to turn around almost four decades of deteriorating performance. However, it is a promising tool to help amplify knowledge flows within and across institutions. Companies that fall behind in the deployment of this technology are likely to increasingly fall behind in a world of accelerating change.

13 The survey defined participation in social media as “Using social media to connect with other professionals (e.g., Blogs, Twitter, LinkedIn).” While we intend for this metric to capture the use of social software for business, we recognize that this terminology is not yet commonplace and that the definition of ‘social media’ is subject to interpretation by the survey respondent.

Of course, the adoption of new technology in and of itself is not sufficient to reverse declining performance. Corporations will first have to “unlearn” certain practices in order to leverage the digital infrastructure as individuals have done to increase their own market power. Lighter, more nimble firms are often better positioned to more quickly translate these disruptive technologies into new practices, and therefore, will likely be among the first to garner the business benefits. As these new practices scale we may see the emergence ‘institutional’ innovations significant enough to improve aggregate firm performance. These new innovations in turn could drive new practices in a recursive and positively reinforcing manner to reverse decreasing returns.

**The Journey Continues…**

From our first conception of the Shift Index, our view was that traditional economic indicators did not accurately capture the long-term shifts that are producing a world of constant change and increasing performance pressures.

Creating a new set of indices is not a straight-forward or simple process. Through our discussions and analysis we continue to refine our perspective on the metrics that make up the Index. When we set out on this journey, more than anything else, we wanted to serve as a catalyst to re-focus attention on longer-term trends that, ultimately, have a much more profound effect on the markets and society we work and live in than the short-term changes that dominate our media attention.

Our goal, in part, is to motivate others to join us on this journey as we continue to develop and refine the analytics and insights that capture these longer-term changes. We invite everyone to undertake additional research to test, challenge, refine, and add to the metrics we have presented.

In that spirit, it is our pleasure to present the 2011 Shift Index. We welcome your thoughts and questions. Let the discussion continue.

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**Exhibit 12: Social media usage by position (2011)**

Note: Based on use of social media to connect with other professionals

Source: 2011 Deloitte Worker Passion/Inter-firm Knowledge Flow Survey (n=3108); Administered by Synovate
Introduction: The Big Shift
Focusing on traditional business metrics often masks long-term forces of change that undercut normal sources of economic value. Indeed, “normal” may, in fact, be a thing of the past. Even when the economy heats up again, companies’ returns will likely remain under pressure. Trends set in motion decades ago are fundamentally altering the global business environment, abetted by a new digital infrastructure built on the sustained exponential pace of performance improvements in computing, storage, and bandwidth. This infrastructure is not just bits and bytes — it consists of institutions, practices, and protocols that together organize and deliver the increasing power of digital technology to business and society. This power must be harnessed if business is to thrive.

No one, to our knowledge, has yet quantified the dimensions of deep change precipitated by digital technologies and public policy shifts. Fragmentary metrics and sporadic studies certainly exist. But nothing yet captures a clear, comprehensive, and sustained view of the deep dynamics changing our world. We experience instead a daily bombardment of short-term economic indicators — employment, inventory levels, inflation, commodity prices, etc.

To help managers in this decidedly challenging time, we have developed a framework for understanding three waves of transformation in the competitive landscape: foundations for major change; flows of resources, such as knowledge, that allow firms to enhance productivity; and the impacts of the foundations and flows on companies and the economy. Combined, these factors reflect what we call the Big Shift in the global business environment.

Additionally, we have developed a Shift Index consisting of three indices that quantify the three waves of long-term change we see happening today. By quantifying these forces, we seek to help institutional leaders steer a course for “true north,” while helping to minimize distraction from short-term events — and the growing din of metrics that reflect them.

Today, we face epochal challenges that continue to intensify. Steps we take now to address them will not only help us to weather today’s economic storm but can also position us to create significant economic value in an ever-more challenging business landscape. We believe that the Shift Index can serve as a useful compass and catalyst for the discussions and actions necessary to make this happen.
Select Findings
The Shift Index report highlights a core performance challenge and paradox for the firm that has been playing out for decades. ROA for U.S. firms has steadily fallen to almost one-quarter of 1965 levels at the same time that we have seen continued, albeit much more modest, improvements in Labor Productivity. While this deterioration in ROA has been particularly affected by trends in the financial sector, significant declines in ROA have occurred in the rest of the economy as well. Some additional findings that highlight the performance challenges facing U.S. firms include the following:

• The gap in ROA performance between winners and losers has increased over time, with the “winners” barely maintaining previous performance levels, while the losers experience rapid deterioration in performance.

• The “topple rate,” at which big companies lose their leadership positions, has more than doubled, suggesting that “winners” have increasingly precarious positions. Some of them dropped out of the market during the recent economy downturn, which temporarily raised the average ROA of the bottom players.

• U.S. Competitive Intensity has more than doubled during the last 40 years. While the performance of U.S. firms is deteriorating, at least some of the benefits of the productivity improvements appear to be captured by creative talent, which is experiencing greater growth in total compensation. Customers also appear to be gaining and using power as reflected in increasing customer disloyalty toward brands.

• The exponentially advancing price/performance capability of computing, storage, and bandwidth is driving an adoption rate for the digital infrastructure that is two to five times faster than previous infrastructures, such as electricity and telephone networks.

These findings have two levels of implication. First, the gap between potential and realized firm performance is steadily widening as productivity grows at a rate far slower than the underlying performance increases of the digital infrastructure. Potential performance refers to the opportunity companies have to harness the increasing power and capability of the digital infrastructure to create higher returns for themselves as they achieve even higher levels of productivity improvement through product, process, and institutional innovations.

Exhibit 13: Firm performance metric trajectories (1965-2010)
Second, the financial performance of the firm continues to deteriorate as a quickly evolving digital infrastructure and public policy liberalization combine to intensify competition (Recent regulatory moves to the contrary, the overwhelming policy trend since World War II has been toward reducing barriers to entry and movement in terms of freer trade and investment flows as well as deregulation of major industries). The benefits from the modest productivity improvements companies have achieved increasingly accrue not to the firm or its shareholders, but to creative talent and customers, who are gaining market power as competition intensifies.

How do we reverse this trend? For precedent and inspiration, we might look to the generation of companies that emerged in the early 20th century. As Alfred Chandler and Ronald Coase later made clear, these companies discovered how to harness the capabilities of newly emerging energy, transportation, and communication infrastructures to generate efficiency at scale. Today’s companies must consider how to make the most of our own era’s new infrastructure through institutional innovations that shift the rationale from scalable efficiency to scalable learning by using digital infrastructure to create environments where performance improvement accelerates as more participants join, as illustrated in various kinds of emerging open innovation and process network initiatives. Only then can the corporate sector generates greater productivity improvement from the rapidly evolving digital infrastructure and capture their fair share of the ensuing rewards. As this takes place, the Shift Index will turn from an indicator of corporate decline to an indicator that reflects powerful new modes of economic growth.

Three Waves; three Indices
The trends reported above, and the connections across them, are consistent with the theoretical model we used to define and structure the metrics in the Shift Index. The Shift Index seeks to measure three waves of deep and overlapping change operating beneath the visible surfaces of today’s events. In brief, this theoretical model suggests that a first wave of change in the foundations of our business and society are expanding flows of knowledge in a second. These two waves are expected to intensify competition in the near term and put increasing pressure on corporate performance. Later, institutional innovations emerging in a third wave of change is expected to harness the unique potential of these foundations and flows, improving corporate performance as more value is created and delivered to markets. In other words, change occurs in distinct waves that are causally related.

To quantify these waves, we broke the corresponding Shift Index into three separate indices. In this section, we will explain each wave and the metrics we have chosen to represent it.

The first wave involves the fast-moving, relentless evolution of a new digital infrastructure and shifts in global public policy that have reduced barriers to entry and movement, enabling vastly greater productivity, transparency, and connectivity. Consider how companies can use digital technology to create ecosystems of diverse, far-flung users, designers, and suppliers in which product and process innovations fuel performance gains without introducing too much complexity. This wave is represented in the first index of the Shift Index — the Foundation Index, which quantifies and tracks the rate of change in the foundational forces taking place today.

The Foundation Index reflects new possibilities and challenges for business as a result of new technology capability and public policy shifts. In this sense, it is a leading indicator because it shapes opportunities for new business and social practices to emerge in subsequent waves of change as everyone seeks to explore and master new potentialities. However, business will also be exposed to challenges as a result of increased competition. Key metrics in this index include the change in performance of the technology components underlying the digital infrastructure, growth in the adoption rate of this infrastructure, and the degree of product and labor market regulation in the economy.

The second wave of change, represented in the second index in the Shift Index, the Flow Index, is characterized by the increasing flows of capital, talent, and knowledge across geographic and institutional boundaries. In this wave, intensifying competition and the increasing rate of change precipitated by the first wave shifts the sources of economic value from “stocks” of knowledge to “flows” of new knowledge.

Knowledge flows — which occur in any social, fluid environment where learning and collaboration can take place — are quickly becoming one of the most crucial sources of value creation. Facebook, Twitter, LinkedIn, Yammer, Google+, and other social media can foster them,
as do virtual communities and online discussion forums and companies situated near one another, working on similar problems. Twentieth-century institutions built and protected knowledge stocks — proprietary resources that no one else could access. The more the business environment changes, however, the faster the value of what you know at any point in time diminishes. In this world, success hinges on the ability to participate in a growing array of knowledge flows in order to rapidly refresh your knowledge stocks. For instance, when an organization tries to improve cycle times in a manufacturing process, it can find far more value in problem solving shaped by the diverse experiences, perspectives, and learning of a tightly knit team (shared through knowledge flows) than in a training manual (knowledge stocks) alone.

Knowledge flows can help companies gain competitive advantage in an age of near-constant disruption. The software company SAP, for instance, routinely taps more than 1.5 million participants in its Developer Network, which extends well beyond the boundaries of the firm. Those who post questions for the network community to address will receive a response in 17 minutes, on average, and 85% of all the questions posted to date have been rated as “resolved.” By providing a virtual platform for customers, developers, system integrators, and service vendors to create and exchange knowledge, SAP has significantly increased the productivity of all the participants in its ecosystem.

The metrics in the Flow Index capture physical and virtual flows as well as elements that can amplify a flow — examples of these “amplifiers” include social media use and the degree of passion with which employees are engaged with their jobs. This index represents how quickly individual and institutional practices are able to catch up with the opportunities offered by the advances in digital infrastructure. The Flow Index illustrates a conceptual way to represent practices. Given the slower rate at which social and professional practices change relative to the digital infrastructure, this index will likely serve as a lagging indicator of the Big Shift, trailing behind the Foundation Index. It will be useful to track the degree of lag over time.

The good news is that strong foundational technology is enabling much richer and more diverse knowledge flows. That is why we give such prominence to them in the second wave of the Big Shift. The number and quality of knowledge flows at a firm — partly determined by its adoption of openness, cross-enterprise teams, and information sharing — will be key indicators of its ability to master the Big Shift and turn performance challenges into opportunities. The ultimate differentiator among companies, though, may be a competency for creating and sharing knowledge across enterprises. Growth in intercompany knowledge flows will be a particularly important sign that firms are adopting the new institutional architectures, governance structures, and operational practices necessary to take full advantage of the digital infrastructure.

The final wave — captured by the Impact Index — reflects how well companies are exploiting foundational improvements in the digital infrastructure by creating and sharing knowledge — and what impacts those changes are having on markets, firms, and individuals. For now, institutional performance is broadly suffering in the face of intensifying competition. But over time, as firms learn how to harness the digital infrastructure and participate more effectively in knowledge flows, their performance can improve.

Differences in approach between top performing and underperforming companies are telling. As some organizations participate more in knowledge flows, we should see them break ahead of the pack and significantly improve overall performance in the long term. Others still wedded to the old ways of operating are likely to deteriorate quickly.

This conceptual framework for the Big Shift underscores the belief that knowledge flows are expected to be the key determinant of company success as deep foundational changes alter the sources of value creation. Knowledge flows thus serve as the key link connecting foundational changes to the impact that firms and other market participants will experience.

To respond to the growing long-term performance pressures described earlier, companies should consider how to design and then track operational metrics showing how well they participate in knowledge flows. For example, companies might want to identify relevant geographic clusters of talent around the world and assess their access to that talent. In addition, they might want to track the
number of institutions with which they collaborate to improve performance. Success against these metrics can provide a clue as to how well companies will perform later as the Big Shift continues to unfold.

**Implications for Business Executives**

Our research findings highlight the stark performance challenges for companies. What is more, the data suggest that unless firms take radical action, the gap between their potential and their realized opportunities will likely grow wider. That is because the benefits from the modest productivity improvements that companies have achieved increasingly accrue not to the firm or its shareholders, but to creative talent and customers, who are gaining market power as competition intensifies.

Until now, companies were designed to become more efficient by growing ever larger, and that is how they created considerable economic value. However, the rapidly changing digital infrastructure has altered the equation: As stability gives way to change and uncertainty, institutions must increase not just efficiency, but also the rate at which they learn and innovate, which, in turn, can boost their rate of performance improvement. Scalable efficiency, as mentioned above, must be replaced by scalable learning. The mismatch between the way companies are operated and governed on the one hand and how the business landscape is changing on the other helps to explain why returns are deteriorating while talent and customers reap the rewards of productivity.

In contrast to the twentieth century — when senior management decided what shape a company should take in terms of culture, values, processes, and organizational structure — we now see institutional innovations largely propelled by individuals, especially the younger workers, who put digital technologies, such as social media, to their most effective use. Findings from our research indicate a correlation between the rapidly growing use of social media and the increasing knowledge flows between organizations.

Worker passion also appears to be an important amplifier: When people engage with their work and push the performance envelope, they seek ways to connect with others who share their passion and who can help them improve faster. Self-employed people are more than twice as likely to be passionate about their work as those who work for firms, according to a survey we conducted. This suggests a potential red flag for institutional leaders — companies appear to have difficulty holding onto passionate workers.

But management can play an important supporting role, recognizing that passionate employees are often talented and motivated, but also tend to be unhappy because they see a lot of potential for themselves and their companies, although they can feel blocked in their efforts to achieve it. Management should consider identifying those who are adept participants in knowledge flows, providing them with platforms and tools to pursue their passions, equipping them with proper guidance and governance, and then celebrating their successes to inspire others.

Performance pressures will continue to increase well past the current downturn. As a result, beneath these surface pressures are underlying shifts in practices and norms that are driven by the continuous advances in the digital infrastructure:

- A rich medium for connectivity and knowledge flows is emerging as Wireless Subscriptions have increased from 1% of the U.S. population in 1985 to over 90% in 2010, growing at a 20% compound annual growth rate (CAGR). As a result of technology advances in the areas of computing, storage, and bandwidth, innovations, such as 3G and emerging 4G wireless networks, and more powerful and affordable access devices, such as smartphones and tablets, the line between the Internet and wireless media will continue to blur, moving us to a world of ubiquitous connectivity.

- Practices from personal connectivity are bleeding over into professional connectivity — institutional boundaries are becoming increasingly permeable as employees harness the tools they have adopted in their personal lives to enhance their professional productivity, often without the knowledge of, and sometimes over the opposition of, corporate authorities.

- Talent is migrating to the most vibrant geographies and institutions because that is where individuals can improve their performance more rapidly by learning faster. Our analysis has shown that the top 10 creative cities have outpaced the bottom 10 in terms of population growth since 1990. Between 1990 and 2008, the top 10 creative cities grew more than twice as fast as the bottom 10.
• Companies appear to have difficulty holding onto passionate workers. Workers who are passionate about their jobs are more likely to participate in knowledge flows and generate value for their companies — on average, the more passionate participate twice as much as the disengaged in nearly all the knowledge flows activities surveyed. We also found that self-employed people are more than twice as likely to be passionate about their work as those who work for firms. The current evolution in employee mindset and shifts in the talent marketplace require new rules on managing and retaining talent.

Leaders must move beyond the marginal expense cuts on which they might be focusing now in order to weather the economic downturn. They need instead to be ruthless about deciding which assets, metrics, operations, and practices have the greatest potential to generate long-term profitable growth and shedding those that do not. They must keep coming back to the most basic question of all: What business are we really in?

It is not just about being lean but also about making smart investments in the future. One of the easiest but most powerful ways firms can achieve the performance improvements promised by technology is to jettison management’s distinction between creative talent and the rest of the organization. All workers can continually improve their performance by engaging in creative problem solving, often by connecting with peers inside and outside the firm. Japanese automakers used elements of this approach with dramatic effects on the bottom line, turning assembly line employees from manual laborers into problem solvers.

At the end of the day, the Big Shift framework puts a number of key questions on the leadership agenda: Are companies organized to effectively generate and participate in a broader range of knowledge flows, especially those that go beyond the boundaries of the firm? How can they best create and capture value from such flows? And most importantly, how do they measure their progress navigating the Big Shift in the business landscape? We hope that the Shift Index will help executives answer those questions — in these difficult times and beyond.
Key Ideas

Foundation Index

The fast moving, relentless evolution of a new digital infrastructure and shifts in global public policy are reducing barriers to entry and movement.

Advances in computing power accelerate the pace of innovation

Plummeting storage costs accelerate the creation of information and the need for data filters

Low-cost bandwidth bolsters connectivity, enabling consumption of richer data

Accelerating internet adoption makes digital technology more accessible, increasing competitive pressure as well as creating opportunity

Expansion in wireless communication expands knowledge flow and reach

Increasing economic freedom intensifies competition while at the same time enhancing the ability to collaborate

Flow Index

Individuals are finding new ways to reach beyond the four walls of their organization to participate in diverse knowledge flows

Wireless activity is surging due to demand for mobile data and a growing ecosystem of applications and services

Broader availability of Internet access enables “connected-ness” with a growing range of people, resources, and rich content

Increasing migration suggests virtual connection is not enough — people continue to seek rich and serendipitous face-to-face encounters as well

Travel volume continues to rise as virtual connectivity supplements, but does not replace in person interactions

Cross-border capital flows provide an efficient way to access pockets of global talent and innovation

Passionate workers are more likely to participate in knowledge flows and generate value for companies

Social media activity creates scalable ways to connect and tap into knowledge flows

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Digital Storage p. 55
Bandwidth p. 58
Internet Users p. 60
Wireless Subscriptions p. 64
Economic Freedom p. 66
Inter-Firm Knowledge Flows p. 74
Wireless Activity p. 79
Internet Activity p. 82
Migration of People to Creative Cities p. 86
Travel Volume p. 90
Movement of Capital p. 92
Worker Passion p. 96
Social Media Activity p. 102
Competitive Intensity is increasing as the digital infrastructure and changing public policy erode the barriers to entry and movement

Technological and business innovation, open public policy, and fierce competition, drive long-term increases in Labor Productivity

Digital infrastructures and public policy initiatives amplify Competitive Intensity, market uncertainty, and Stock Price Volatility

Cost savings and the value of modest productivity improvement tends to get value from productivity gains are being competed away and captured by customers and talent

Winning companies are barely holding on, while losers experience rapidly deteriorating performance

Big companies are losing their leadership position at an increasing rate

Shareholder returns for market “winners” increase at a modest rate; while “losers” destroy more value than ever before

Greater access to information and choices boost Consumer Power

Brand Disloyalty is increasing among consumers, particularly the younger generation

Talented workers garner higher compensation and market power as their value and career options expand

Executive Turnover is increasing as performance pressures rise

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Consumer Power
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Brand Disloyalty
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The forces of the Big Shift are affecting U.S. industries at varying rates of speed. One set of industries has already been severely disrupted and is suffering the consequences: declining return on assets ROA and increased Competitive Intensity.¹⁵ A second set, which includes the bulk of U.S. industries, is currently midstream: some are seeing declining ROA, and others are facing increases in Competitive Intensity, but none have yet encountered both. A third, smaller set of as-yet-unaffected industries shows little change in performance.

These findings — a follow-up to the macro-level study released in June 2009¹⁶ — reflect a U.S. corporate sector on a troubling trajectory. The difficulties are more apparent in some industries, but all industries will eventually be subject to the forces of the Big Shift, which represent a fundamental reordering of the economy driven by a new digital infrastructure¹⁷ and public policy changes.

The industry-level findings are cause for some alarm. U.S. industries are currently more productive than ever, as measured by increases in Labor Productivity.¹⁸ Yet those improvements have not translated into financial returns. Underlying this paradox is the growing Competitive Intensity in most industries. In some cases, consolidation has helped offset the effect of increasing competition, but it is a short-term solution. Likewise, although firms in most industries are investing heavily in technology, the benefits are short-lived, accruing only until a firm’s competitors do the same.

The breadth and magnitude of disruption to U.S. industries, and a trajectory that suggests more disruption to come, call into question the very rationale for today’s companies. Do they exist simply to achieve ever-lower costs by getting bigger and bigger — “scalable efficiency”? Or can firms turn the forces of the Big Shift to their advantage by focusing instead on “scalable learning” — the ability to improve performance more rapidly and learn faster by effectively integrating more and more participants distributed across traditional institutional boundaries?

U.S. firms can learn two key lessons from the industries experiencing early disruption. First, the assumption that productivity improvement leads to higher returns is flawed: industries with higher productivity gains do not necessarily experience improvement in ROA. This is the performance paradox mentioned earlier. Second, customers and talented employees appear to be the primary beneficiaries of the value created by productivity improvements. Access to information and greater availability of alternatives have put customers squarely in the driver’s seat. Similarly, creative talent finds itself in a better bargaining position as talent becomes more central to strategic advantage and labor markets become more transparent.

How, then, can firms also benefit from the Big Shift? The key is to not only create value, but to capture the value created. To do so, firms must learn how to participate in and harness knowledge flows and to tap into the passion of workers who will be a significant source of value creation as companies shift away from stocks of knowledge. This move, from scalable efficiency to scalable learning, will be a key to surviving, and thriving, in the world of the Big Shift.

**Most Industries are Feeling the Effects of the Big Shift**

The 2009 Shift Index highlighted trends at the economy-wide level: declining ROA, increasing Competitive Intensity, increasing Labor Productivity. The industry-level findings are similar. With few exceptions, all U.S. industries are being affected by the foundational forces of the Big Shift.

One set of industries is already deeply impacted by the Big Shift.¹⁹ These industries have experienced significant increases in competition and corresponding declines in profitability. A middle tier, representing the majority of U.S. industries, is experiencing the early effects of the Big Shift. A third tier consists of two industries that have, so far, been insulated from the forces of the Big Shift.

**In the Eye of the Storm**

While most U.S. industries have experienced declining ROA, only 4 of the 14 industries evaluated have also endured a significant increase in Competitive Intensity (see Exhibit 14). These early entrants into the Big Shift include the technology, media, and telecommunications and automotive industries. They embody the long-term forces that are reshaping the business environment and are harbingers of the changes to come in other industries.

In the technology industry, customers have gained power as open architectures and commoditization of components have intensified competitive pressure. As a result, the industry has experienced a significant deterioration in return on assets.
The media industry has become more fragmented as forms of content proliferate and the long tail becomes ever richer with options. In a very real sense, customers — supported by digital infrastructures that enable convenient, low-cost production and distribution of their own content — are emerging as competitors to traditional media companies.

The telecommunications industry has experienced dramatic changes over the past two decades. Wireline service, the former mainstay of the industry, is being supplanted by wireless and voice over Internet protocol (VOIP). Driven by regulatory changes and increased competition, firms have improved Labor Productivity, but have not realized better financial returns.

The Automotive industry has struggled with increased global competition as a result of trade liberalization and robust digital infrastructures that facilitate global production networks. Over the long term, Asset Profitability in this industry has decreased as asset growth has surpassed income growth. However, following the financial crisis of 2007-2008, we have seen an upward spike in the industry’s Asset Profitability due to a rise in industry income.

U.S. industries are currently more productive than ever, as measured by increases in Labor Productivity. Yet those improvements have not translated into financial returns.

**Entering the Storm**

The industries in this tier have not yet felt the dual impact of intensifying competition and declining ROA, but are likely to soon. Because these industries were already very competitive in 1965, as measured by industry concentration (see Exhibit 15), the initial fragmenting impact of the Big Shift may have been muted. On the other hand, many of these industries did experience erosion of ROA, suggesting that other forms of Competitive Intensity were increasing. As we will discuss, the metric for Competitive Intensity does not capture competition from other parts of the value chain. One of the pervasive themes of the Big Shift is the growing power of customers and creative talent and the effect on firms’ profitability as these two constituencies capture more of the value being created. Many firms in this tier are subject to this type of competition.

**Exhibit 14: Changes in Competitive Intensity and ROA (1965-2010)**

<table>
<thead>
<tr>
<th>Competitive Intensity</th>
<th>Decrease</th>
<th>Static</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace &amp; Defense</td>
<td></td>
<td></td>
<td>Health Care</td>
</tr>
<tr>
<td>Consumer Products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aviation Retail</td>
<td>Energy Banking &amp; Securities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Life Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Process &amp; Industrial Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automotive Media Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telecom.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Compustat, Deloitte Analysis

20 Insurance and Health Care ROA data is from 1972-2010. Data from 1965-1972 was from a very small number of companies for these industries and therefore not truly indicative of market dynamics. Health Care and Aerospace Defense ROA data display some cyclical. The increases discussed here are derived from a line fit. Note: industries are classified using self-reported SIC codes and the data is provided by Standard & Poor’s Compustat.

21 Static Competitive Intensity is defined as a change of less than 0.01 (+/-) in the HHI. Note that Life Sciences and Energy are on the cusp of increasing Competitive Intensity based on actual values versus a line fit. HHI is used in competitive and antitrust law to assess concentration of market power and is a proxy for competitive intensity (with the notion that markets where power is more widely dispersed are more competitive). As a result, HHI is an imperfect measure of competitive intensity because it does not attempt to measure competitive action (such as price wars) between players in an industry.

22 Static ROA is defined as a change of less than 5% (+/-).
The aviation, consumer products, and retail industries all experienced decreasing Competitive Intensity as measured by industry concentration, although aviation and retail also experienced a decline in ROA. Historically, the consumer products and retail industries were highly competitive; both have experienced significant consolidation among large firms to combat the margin pressures driven, in part, by greater customer power. The consolidation of these two industries is related. As retailers became more concentrated, consumer products companies began to consolidate as a defensive measure to preserve bargaining power with the retailers. Conversely, as consumer products companies consolidated, retailers felt additional pressure to consolidate in order to preserve bargaining power against the larger consumer products companies. The aviation industry was also competitive, but has recently seen a spate of consolidation following the economic downturn.

**The Calm Before the Storm**

This last tier is composed of just two industries that have bucked the overall trend and have seen Asset Profitability increase. The aerospace & defense and health care industries have actually improved ROA to 8.0% and 4.6%, respectively. As we will discuss, regulation and public policy have played a significant role in shielding these two industries from the effects of the Big Shift. For health care, ROA increased while the Competitive Intensity metric was also increasing. As described in the health care industry section, however, the health plans subsector is still dominated by six plans that account for two-thirds of all enrollees. Of the 313 metropolitan markets surveyed by the American Medical Association in 2010, 99% were dominated by one or two health plans. Limited competition, reinforced by regulatory protection, has sustained Asset Profitability in this industry.

Aerospace & defense appears to be an anomaly, the only industry that shows no impact from the Big Shift. Improvements in Asset Profitability can be attributed to consolidation and related scale efficiencies and Labor Productivity measures as well as a movement from hardware to software as a source of value. ROA has peaked in recent years as a result of historic highs in revenue resulting from wartime spending. The ability of companies in this industry to capture and retain value has been supported by the industry consolidation (leading to a decline in one key measure of Competitive Intensity) and high barriers to entry, including technology and capital requirements. Subsidies to incumbents act as a further barrier to entry, as do burdensome qualifying requirements, which require significant upfront investment by new players just to bid on government contracts. Collectively, these factors limit the effects of broader public policy trends towards economic liberalization and enable the relatively small number of industry participants to achieve higher Asset Profitability.

The future is uncertain for these two industries. Of the two, health care is perhaps more exposed to changes that could dramatically reshape the industry: changing legislation, medical tourism, new provider delivery and alternative care options are just a few. In an intriguing parallel, greater...

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**Exhibit 15: Competitive Intensity, All Industries (1965-2010)**

<table>
<thead>
<tr>
<th>Industry</th>
<th>1965 Actual</th>
<th>2010 Actual</th>
<th>Absolute change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process &amp; Industrial Products</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Banking &amp; Financial Institutions</td>
<td>0.02</td>
<td>0.03</td>
<td>0.01</td>
</tr>
<tr>
<td>Aviation &amp; Transport Services</td>
<td>0.03</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Energy</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.01</td>
</tr>
<tr>
<td>Retail</td>
<td>0.03</td>
<td>0.06</td>
<td>0.02</td>
</tr>
<tr>
<td>Insurance</td>
<td>0.04</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Aerospace &amp; Defense</td>
<td>0.04</td>
<td>0.11</td>
<td>0.07</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.01</td>
</tr>
<tr>
<td>Media &amp; Entertainment</td>
<td>0.07</td>
<td>0.02</td>
<td>-0.05</td>
</tr>
<tr>
<td>Technology</td>
<td>0.15</td>
<td>0.03</td>
<td>-0.13</td>
</tr>
<tr>
<td>Automotive</td>
<td>0.16</td>
<td>0.08</td>
<td>-0.09</td>
</tr>
<tr>
<td>Health Care Services</td>
<td>0.32</td>
<td>0.08</td>
<td>-0.24</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>0.37</td>
<td>0.03</td>
<td>-0.34</td>
</tr>
</tbody>
</table>

Source: Compustat, Deloitte analysis
emphasize on prevention of both of these industries may represent a major catalyst to accelerate change. In the aerospace & defense industry, the rise of asymmetric warfare driven by a new generation of “competitors” will make the industry increasingly susceptible to the Big Shift. Success may no longer be achievable through incremental improvements and scalable efficiency, but through product innovation. The increasing emphasis on advanced software capabilities in intelligence, surveillance, and reconnaissance perhaps sets the stage for a more fragmented and competitive software-driven industry.

**Technology or Public Policy as Key Differentiators**

This brings us to the question of why industries are affected by the Big Shift sooner rather than later? All of the industries in this report have access to the increasingly ubiquitous digital infrastructure, so the infrastructure itself does not appear to be a significant differentiator in how industries are affected. Of course, industries differ in terms of how they use the digital infrastructure and how creatively they rethink their own operations relative to the potential of this infrastructure. In this regard, intensifying competition appears to motivate firms to make the most of the infrastructure. A 2002 study found that the impact of IT investment on productivity growth depended upon the presence of one or more competitors that had used IT to develop fundamental innovations in business practices or processes, putting pressure on all companies to replicate the innovations. At the same time, while the digital infrastructure reduces barriers to entry and movement and enhances the likelihood that a disruptive innovator can change the game, other factors can dampen these effects in an industry.

In fact, our findings suggest that public policy significantly determines the extent to which a given industry is affected by the Big Shift. It is not coincidence that aerospace & defense and health care are the least affected industries and are also associated with high levels of regulation and government purchasing. Since 1989, the U.S. government has accounted for between 40 and 60% of total annual sales in the aerospace & defense industry. Procurement policies and national security considerations have a profound influence on this industry and its relationship with its largest customer — the U.S. government.

Similarly, the health care industry has been, and continues to be, deeply affected by regulation and government spending at the national and state levels. Varying state regulations create a barrier to entry for health plans to provide national coverage. Providers too are largely regulated at a state level and only a few have a national reputation (such as the Mayo Clinic) or a national network (such as some laboratory companies).

Thus public policy appears to be the primary determinant of the extent to which industries are affected by the Big Shift. The exponential advances of the digital infrastructure and its broader adoption across the business landscape create the potential for competition. Whether or not that potential is realized, however, depends on the regulatory environment and, in particular, the degree to which public policy actively increases barriers to entry (or movement) or helps to reduce them.

**Lessons From The Disrupted**

All industries, whether part of the first wave of impact or not, should take note of the trends driving the first tier of industries. The performance paradox — decreasing profitability in the face of improving productivity — is prevalent in technology, media, and telecommunications and automotive (see Exhibit 13).

At an industry level, there appears to be a relationship between productivity and competition: Industries that have faced significant increases in Competitive Intensity have also improved their Labor Productivity. For example, the technology industry has experienced one of the greatest increases in Competitive Intensity and has improved Labor Productivity through advances in technology and business innovations. Industries that are typically on the leading edge of innovation and adoption of new practices are most likely to experience higher increases in productivity.

Unfortunately, productivity is not translating into profits. The old assumption that improvements in productivity lead to higher returns turns out to be flawed. An unremitting focus on efficiency is no longer sufficient for success. Our research suggests that companies are struggling to retain the value they are creating through productivity improvements. Some of the most significant increases in productivity occurred in industries like telecommunications and technology, where productivity increased upwards of 800%, yet ROA still declined (see Exhibit 15). These industries are prime examples of innovation and

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productivity improvement that did not translate into improved firm performance.

At the other end of the spectrum, we find aerospace & defense. The capital requirements associated with aircraft construction and the restrictions tied to manufacturing and sales of advanced weapons systems create a unique ecosystem within which this industry has managed to improve its ROA.

While productivity improvements seem to be necessary, especially in competitive markets, alone they cannot sustain, much less improve, profitability. In fact, the rate of ROA deterioration seems to be unrelated to the rate of Labor Productivity improvement (see Exhibit 16). There were no industries that experienced both an increase in ROA and a high increase in Labor Productivity. The Big Shift requires that companies broaden their focus to include other operating metrics if they want to thrive in an era of increasing economic pressure.

But if improvements in productivity are not showing up on the companies’ bottom lines, where are all those gains going? What are the implications for industries that are trying to reverse the trend of declining profitability?

**The Economy Wins but Firms are Losing**

The economy, as a whole, is benefitting from greater value creation. In his book, *The Power of Productivity*, William Lewis makes a connection between a country’s wealth and its productivity, but firms are unable to retain the value. As competition intensifies across all industries, productivity gains are competed away, and consumers and talented workers are reaping the benefits. Consumers and talent have been able to increase their share of value largely through participation in information flows, which provide greater information and access to alternatives than ever before.

Armed with information and alternatives, consumers are less loyal than in the past. The digital infrastructure enables consumers to access a wider range of vendor and product options, and to gain information about, compare, and switch between vendor and product options. Choices abound, information is plentiful, and brand loyalty is declining. Want a camera? There are many independent online resources that provide news, reviews, and information about digital photography. Need a programmer? Buyers can gain instant access to thousands of professionals who offer technical, marketing, and business services.

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**Exhibit 16: Changes in ROA and Labor Productivity (1987-2010)**

<table>
<thead>
<tr>
<th>Labor Productivity</th>
<th>Low Increase</th>
<th>Moderate Increase</th>
<th>High Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA Increase</td>
<td>Aerospace &amp; Defense</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA Static</td>
<td>Consumer Products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA Decrease</td>
<td>Aviation Energy Life Sciences Media</td>
<td>Automotive Banking &amp; Securities Retail</td>
<td>Technology Telecom.</td>
</tr>
</tbody>
</table>

Source: Compustat, Bureau of Labor Statistics, Deloitte analysis

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28 Labor Productivity increase is classified as low, 0 to 50; moderate, 50 to 100; or high, >100. Labor Productivity data is not available for the Health Care and Insurance industries.
29 Static ROA is defined as a change of less than 5% (±).
Similarly, talented workers today are less loyal to their employers, often viewing jobs as transactional. Workers use the digital infrastructure to participate in both information and knowledge flows. For example, where employees once would have used a software program’s built-in help function, they now search online to find a solution. If a solution is not apparent, a worker can post a question and small communities develop to suggest ideas. Through participation in these knowledge and information flows, talented workers are learning at a faster pace than ever before. In addition, talented workers use the digital infrastructure to connect with their professional network to generate and explore job opportunities, including developing new ventures of their own. Talent, particularly creative talent, looks for jobs that provide them with the greatest benefit. In today’s environment, benefits take the form of fast-paced learning environments and monetary rewards. Talented employees are also gaining power as a result of their crucial role in developing and sustaining the intangible assets that increasingly drive competitive differentiation and profitability.

These changing power dynamics will affect all industries, including those that were historically less competitive. As traditional industry boundaries dissolve, competition will emerge from unexpected edges. Consumers will move fluidly across industry boundaries, looking beyond traditional providers to find the solutions that meet their needs. Talent will also look beyond traditional firms for employment. According to the Intuit Small Business Report (2007), “Entrepreneurs will no longer come predominantly from the middle of the age spectrum but instead from the edges. People nearing retirement and their children just entering the market will become the most entrepreneurial generation ever.” TALENTED WORKERS TODAY HAVE THE OPPORTUNITY TO TAKE LEARNING FROM ONE INDUSTRY AND APPLY IT TO OTHERS AS THE DIGITAL INFRASTRUCTURE HAS LOWERED SWITCHING COSTS IN THE EMPLOYMENT LANDSCAPE. Consequently, industries that do not offer sufficient monetary rewards or development opportunities may lose critical talent as employees flee to other industries. For example, technology companies participating in e-commerce provide opportunities for retail talent and offer higher monetary rewards.

The power consumers and talent have gained fundamentally changes the competitive landscape. This shifting power dynamic will lead to increased competitive pressure for firms as they work harder to meet consumer demand and attract and retain talent. One of the pervasive themes of the Big Shift is the growing power of customers and creative talent and the effect on firms’ profitability as these two constituencies capture more of the value being created.

One of the pervasive themes of the Big Shift is the growing power of customers and creative talent and the effect on firms’ profitability as these two constituencies capture more of the value being created.

The two major trends underlying Consumer Power are more convenient access to alternatives and greater information about alternatives. Each of these trends is driven by consumers’ use of digital infrastructure to participate in information flows. The ubiquity of devices (desktops, laptops, mobile, etc.) to access the information, the increasing richness of the information (descriptions, reviews, comparisons, pricing etc.), along with increased trustworthiness of the source (independent consumers), has destroyed the information asymmetry companies once had.

**Consumers**

The Shift Index Consumer Power and Brand Disloyalty survey indicates that few sectors have been spared in any of the metrics evaluated. The indices were normalized to a 0—100 scale — any score over 50.0 indicates that the majority of respondents believe they have more power as consumers or are more disloyal towards brands. The Consumer Power index values for the consumer categories ranged from 56.3 for newspapers to 72.4 for hotels. Similarly, the Brand Disloyalty index values range from 45.0 for soft drinks to 75.9 for airlines.

**2011 Shift Index**

Measuring the forces of long-term change

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31 The Consumer Power and Brand Disloyalty indices were created as the aggregate responses to six questions per each index. While only categories that were directly related to consumers were studied, we assume the impact to industries and firms upstream on the value chain as the disruptions trickle up.
Exhibit 17: Consumer Power and Brand Disloyalty Matrix (2011)

Source: 2011 Deloitte Consumer Power/Brand Disloyalty Survey (n=3765); Administered by Synovate

Exhibit 18: Consumer Access to Information and Availability of Choices (2011)

Source: 2011 Deloitte Consumer Power/Brand Disloyalty Survey (n=3765); Administered by Synovate
Although the survey focused primarily on B2C consumer categories, similar trends hold true in B2B categories as well.

The numbers indicate that consumers perceive themselves to have significant power in all categories and are relatively disloyal to brands in many categories as well (see Exhibit 17). The few categories that fall below the midpoint value for Brand Disloyalty (Newspapers and Soft Drinks) are low-cost items where consumers may not invest a lot of time exploring options (see Exhibit 18). Some of the higher-cost categories (Hotel, Airline, Home Entertainment) fall on the high end of the spectrum for both Consumer Power and Brand Disloyalty. For these categories, consumers are participating in information flows to gauge value and reliability and are consequently becoming more brand-agnostic.

Talent

The second group of winners from the Big Shift is talented employees. The Center for the Edge research shows that average total cash compensation to creative talent in the United States grew 22% — from $87,000 to $107,000 — from 2003 to 2010. This pattern repeated in all industries, with growth in total cash compensation for creative talent ranging from 18% in the consumer products and process & industrial products industries all the way to 28% in the banking & financial services industry.

The gap between compensation for creative and non-creative workers is also growing. Based on the Returns to Talent metric, the gap increased 28% over the past eight years across the entire U.S. talent pool. Looking at the gap across industries provides an equally compelling picture: 12 of the 15 industries had gap increases of 20% or greater.

In a world where industry boundaries are blurring and disruptions can come from outside traditional industry lines, firms are also competing across industry boundaries for the best talent. Talented employees are likewise searching for opportunities across industry boundaries, often applying their learning from one industry to careers in another.

In the future, we expect to see a cross-industry war for more and more categories of talent. This poses a special challenge for those industries that are currently lagging in rewarding talent through faster-paced learning environments or higher compensation.

Knowledge Flows are Key to Converting Challenges to Opportunities

As the source of economic value creation shifts from stocks to flows of knowledge, participation in these flows is essential if firms are to convert challenges to opportunities. Currently, the value that firms create is being captured by consumers and creative talent: They have harnessed knowledge flows ahead of the firms and they are reaping the benefits. Firms have an opportunity to participate in the same knowledge flows and networks and to rebalance that equation. Participating in knowledge flows will also “grow the pie” and move firms away from the zero-sum game mindset that drives much of their behavior today.

Participating in knowledge flows can be mutually beneficial for firms, talent, and consumers. The greater the firm’s participation in knowledge flows, the more value they can create. This value will be distributed between firms, talent, and consumers, but as they start offering more non-monetary value to talent and consumers, firms have an opportunity to retain an increasing share of the monetary value. Talent, particularly the creative and passionate talent, is attracted to firms that are rich in relationships, generate knowledge flows, and provide tools and platforms to support employee growth and achievement. A large part of Google’s attraction is its reputation for allowing employees to grow; special programs, such as “20% time,” which allows engineers one day a week to work on projects that are not in their job descriptions, are magnets for passionate talent. The Center for the Edge research shows that, in their quest to learn and create, passionate workers participate in more knowledge flows than their peers. It follows that firms that attract the creative and passionate will participate in increasing volumes of knowledge flows and create more value. Consumers too are attracted to firms that are continuously creating value for them, either in product features or expanded services, and may be willing to pay a premium for the value. Apple’s ability to maintain a price premium in otherwise commoditized product categories is one example.

Cross-Industry Perspectives

32 Although the survey focused primarily on B2C consumer categories, similar trends hold true in B2B categories as well.
Inter-firm Knowledge Flows scores were calculated based on communication levels between firms across eight categories of knowledge flows. See the metric discussion for further information.

Two of the Shift Index metrics, Inter-firm Knowledge Flows and Worker Passion, attempt to measure the rates of flow and passion by industry.

Inter-firm Knowledge Flows
The Shift Index survey of Inter-firm Knowledge Flows for the overall U.S. workforce revealed a 2011 index score of 14. This score ranged from 11 for the retail industry to 17 for the media & entertainment and insurance industries. Employees in the media & entertainment industry are more likely to connect with other professionals via social media, phone, or lunch meetings than peers in other industries. Individuals in the insurance industry are more likely to engage through membership in community and professional organizations. Employees in the retail industries are least likely to participate in any type of interfirm knowledge flow, either virtual or physical. In absolute terms, though, the current levels of knowledge sharing across firm boundaries are very low in all industries, and we expect participation in Inter-firm Knowledge Flows to increase as competition intensifies.

Worker Passion
Worker Passion, different from employee satisfaction, denotes an intrinsic drive to do more and excel at every aspect of one’s profession. The 2011 survey of Worker Passion found that 21% of the overall U.S. workforce is passionate about their work.

U.S. workers are generally not passionate about their professions: 79% of the U.S. workforce (ranging from 70 to 85% depending on the industry) reported not being passionate about work. In nearly every industry, more employees were disengaged or passive than were engaged or passionate with most employees falling into the “passive” category. Even in the highest scoring industry (Health Care), only 30% of employees reported being passionate about work. The highest incidence of disengagement was in the Insurance, Automotive and Telecommunications industries.

While the factors contributing to Worker Passion are complex, there is a clear need for companies to foster passionate employees in the coming years. Firms will
Exhibit 20: Inter-firm Knowledge Flow Index Value, All Industries (2011)

- Average Inter-Firm Knowledge Flow Index Value

Note: IFKF participation was updated in 2011 to include participation in discussion groups/forums. Source: 2010 Deloitte Worker Passion/Inter-firm Knowledge Flow Survey (n=3108); Administered by Synovate

need to tap into the passion of their employees to stay competitive in a globalized labor market, which requires constant renewal and enhancement of professional skills and capabilities. The Center for the Edge research indicates that passionate workers participate in more knowledge flows in all but two industries (see Exhibit 22). Therefore, the firms that attract and retain passionate workers will likely benefit from participating in more flows and creating more value.

Efficiency is no longer sufficient
The performance pressures on U.S. industries will continue well past the current downturn. Today’s business environment has been fundamentally changed by the underlying shifts in practices and norms as a result of advances in digital infrastructure and public policy playing out over decades.

While conventional wisdom would suggest a greater focus on efficiency and investments in a time of growing economic pressure, the findings of the Big Shift suggest a longer-term view. In fact, the first tier of industries to be affected by the Big Shift has been unable to overcome performance pressures. While firms in these industries have improved their efficiency, these improvements have delivered diminishing returns. Today’s business environment requires a focus on value creation and capture. Knowledge flows are the key to surviving and thriving through these tough times and beyond. The good news is that knowledge flows are proliferating and becoming richer on a global scale as a result of the increasing capability of digital infrastructure and public policy initiatives to remove regulatory barriers to knowledge flows. In order to improve performance and retain a greater share of the value created, firms must amplify Inter-firm Knowledge Flows and instill greater Worker Passion. Without more effective participation in knowledge flows, firms will be unable to respond successfully to the Big Shift.
Exhibit 21: Worker Passion, All Industries (2011)

Source: 2011 Deloitte Worker Passion/Inter-Firm Knowledge Flow Survey (n=3108); Administered by Synovate
Exhibit 22: Inter-firm Knowledge Flows by Passion Type, All Industries (2011)

Source: 2011 Deloitte Worker Passion/Inter-Firm Knowledge Flow Survey (n=3108); Administered by Synovate
Shift Index in Practice

Companies could generate actionable insight by better understanding flow dynamics

While there has been a modest improvement in ROA over the past couple of years as the downturn eases up, we believe that this is simply a short-term adjustment similar to the improvements in ROA seen in previous economic cycles.

In response to growing interest from executives, the Center for the Edge is further researching which flow metrics at the individual firm level, could be drivers of performance, ultimately captured in operating and financial metrics. In particular, we are investigating the ability of companies to participate effectively in a larger and more diverse range of knowledge flows, with the intent of identifying a set of flow metrics that can be drivers of performance metrics for the firm to monitor on an ongoing basis.

Flows in a firm are the result of social and working practices, manifested in three ways: virtual flows, physical flows, and flow amplifiers. Virtual flows are the communication of information through virtual means such as phone, internet, and video. Virtual flows are enabled by advancing digital infrastructure and increasing virtual connections. Physical flows are the movement and connectivity of individuals. Flow amplifiers are enabling tools, such as social media and collaboration platforms that scale flow and enable ongoing bi-lateral interations. Both virtual and physical flows are amplified by technology and platforms that cross geographical and time disparities.

Examples of flow metrics include: measurement of access to knowledge flows, depth of flow engagement, virtual and physical closeness to colleagues, the connectedness of the organization, business unit and individual, and the correlation of flows to profit and revenue. As with operating and financial metrics, the flow metrics that matter most to an individual organization would vary depending on the industry, corporate goals, and organizational structure.

Companies could generate actionable insight by better understanding flow dynamics. Because flow participation and performance is a continuum and the quality of flow participation drives performance, a key management challenge could be identifying and encouraging quality participation in information flows through policy, tools, and culture.

The insights derived from this research may inform thinking around how organization can be better equipped to operate with more flexibility and agility in response to the pressures of The Big Shift.
The Shift Index: Numbers and Trends

Shift Index Structure
There is no shortage of indicators for measuring today’s cyclical events, but what we often need is a way to quantify long-term trends. Our Shift Index, a composite of 25 metrics tracking a variety of concepts, is a way to measure the deep, secular forces underlying today’s cyclical change.

The Shift Index consists of three indices — the Foundation Index, Flow Index, and Impact Index — that quantify the three waves of the Big Shift. Exhibit 23 summarizes these indices and describes the specific indicators included in each.

The current Shift Index Report focuses on the U.S. economy and U.S. industries, although the detailed analysis of industry-level data.

The choice of metrics above was the result of a robust selection process. Many metrics are directional proxies chosen in the absence of ideal alternatives. Some are drawn from secondary data sources and analytical methodologies; others are proprietary. Given the limited data we could find or generate to directly measure the forces underlying the Big Shift, we have not attempted to prove causality, although we have not refrained from offering hypotheses regarding potential causal links. In this regard, we hope the Shift Index will catalyze research by others to test and refine our findings.

The Three Indices: A Comparative Discussion
Findings from the 2009, 2010 and 2011 Shift Indices suggest that deep changes in our economic foundations continue to outpace the flows of knowledge they enable and their impact on markets, firms, and people. Fitting a trend line to each of the three indices, we see that the Foundation Index has moved much more quickly in the past 17 years (with a slope of 8.63) relative to the Flow Index (6.48) and the Impact Index (1.63). These comparative rates of change are shown in Exhibit 24.

Tracking these relative rates of change helps us to determine the economy’s position in the Big Shift as a whole. This initial release of the Shift Index suggests that...
the United States is still largely in the first wave of the Big Shift, although specific industries vary in their positions and are moving at different rates.

We expect that companies, industries, and economies in the earliest stage of the Big Shift will see the highest rates of change in the Foundation Index. Over time, as the Big Shift gathers momentum and pervades broader sectors of the economy and society, the Flow Index and Impact Index will likely pick up speed, while the rate of technological improvement and penetration captured by the Foundation Index will likely begin to slow.

Comparing the relative rates of change and magnitudes of the three indices reveals telling gaps. The gap between the Foundation Index (190) and the Impact Index (101), for example, defines the scope of the challenges and opportunities that arise from rapidly changing digital infrastructure. Essentially, it measures the economic instability that results from performance potential (reflected by the Foundation Index) rising more quickly than realized performance (reflected in the Impact Index). If realized performance is significantly lower than potential performance, there is growing room for disruptive innovation to narrow this gap. In this sense, the gap is also a measure of the opportunity awaiting creative companies that determine how to more effectively harness the capabilities of digital infrastructure. Given the sustained exponential performance increases in digital technology, this gap is unlikely to close in the relevant future. But it can be narrowed by a substantial increase in the rate at which businesses innovate and learn.

Insight also emerges from relative changes in the gaps between the Foundation Index and the Flow Index and between the Flow Index and Impact Index. The Foundation-Flow gap measures the degree to which flows have grown through new social and business practices, relative to the growth in digital infrastructure. The Flow-Impact gap measures the impact upon market participants, relative to the growth of flows in the economy.

Our initial findings show that the Flow-Impact gap is substantially larger than the Foundation-Flow gap, meaning that participants are relatively more successful at generating new knowledge flows than at capturing their value.

Our initial findings show that the Flow-Impact gap is substantially larger than the Foundation-Flow gap, meaning that participants are relatively more successful at generating new knowledge flows than at capturing their value. Relative changes in these gaps over time will provide executives with an important measure of where progress is being made, where obstacles exist, and where management attention needs to be paid.
2010 Foundation Index

The Foundation Index, with an index value of 190 in 2010, has increased at a 10 percent compound annual growth rate (CAGR) since 1993. This index, shown in Exhibit 25, tells the story of a swiftly moving digital infrastructure propelled by unremitting price performance improvements in computing, storage, and bandwidth that show no signs of stabilizing.

Our findings show that the rate of change in the performance of technology building blocks substantially exceeds the rate of change of the two other foundational metrics — adoption rates and public policy shifts. It remains the primary driver of the strong secular change captured by the Foundation Index as a whole.

Exhibit 25: Foundation Index trends (1993-2010)

Exhibit 26: Foundation Index drivers (1993-2010)

Source: Deloitte analysis

For further information on how the Foundation Index is calculated, please refer to the Shift Index Methodology section.
As Exhibit 25 demonstrates, Technology Performance metrics (e.g., Computing, Digital Storage, and Bandwidth) have been driving the changes in the Foundation Index since 1993. These metrics have been increasing rapidly at a 25% CAGR as a result of technological innovations and decreasing costs. Infrastructure Penetration metrics (e.g., Internet Users and Wireless Subscriptions) have been growing slower, but at a still significant CAGR of 17%. Public policy has maintained a relatively constant position in the Foundation Index for the past 17 years. However, policy is still a key wild card. There is considerable risk that policy responses to the current economic downturn may increase barriers to entry and movement. The Shift Index will represent this trend over time relative to the changes in the other foundations.

2010 Flow Index

The Flow Index, with an index value of 155 in 2010, has increased at a 7% CAGR since 1993.36 The Flow Index, shown in Exhibit 27, measures the rate of change and magnitude of knowledge flows resulting from the advances in digital infrastructure and public policy liberalization.

When considering the Flow Index, it is important to bear in mind that the face-to-face interactions driving the most valuable knowledge flows — resulting in new knowledge creation — are difficult to measure directly, forcing us to rely on proxies like Migration of People to Creative Cities and Travel Volume to provide indirect measures of this kind of activity. Social media use, conference and webcast attendance, professional information and advice shared by telephone and in lunch meetings — all of these serve as suggestive proxies of various kinds of knowledge flows. As Exhibit 28 demonstrates, Virtual Flow metrics (e.g., Inter-Firm Knowledge Flows, Wireless Activity, and Internet Activity) have been driving the index, increasing at an 10% CAGR.

However, policy is still a key wild card. There is considerable risk that policy responses to the current economic downturn may increase barriers to entry and movement. The Shift Index will represent this trend over time relative to the changes in the other foundations.

While virtual flows are gaining importance as a result of technological advancements, physical flows are still a key to knowledge creation and transfer. As a result, Physical Flow metrics (e.g., Movement of Capital, Migration of People to Creative Cities, and Travel Volume) maintain a significant contribution to the Flow Index, increasing at a 6% CAGR since 1993. Flow Amplifiers (e.g., Worker Passion and Social Media Activity) have also been gaining importance and are expected to be a major driver of the index in the future.

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36 For further information on how the Flow Index is calculated, please refer to the Shift Index Methodology section.
2010 Impact Index

The Impact Index, with an index value of 101 in 2010, has grown at a 1.5% CAGR since 1993. This index, shown in Exhibit 29, captures the dynamics of firms’ performance as they respond to increasing competition and productivity, as well as powerful new classes of consumers and talent.37

This index is designed to measure the rate of change and magnitude of the impact of the Big Shift on three key constituencies: markets, firms, and people. For people, it attempts to determine how effective they are as consumers and creative talent at harnessing the benefits of knowledge flows unleashed by advances in the core digital infrastructure. Because they are already good at doing this — and are only getting better at it — the index is set to increase as they derive more value from the Big Shift.

At least in the short term, however, markets and firms appear to be moving in the opposite direction. Partly at the hands of the consumers and talent who are doing so...
Well, pressures on returns are unparalleled, and the traditional way of doing business is increasingly under siege. So as markets grow more volatile, competition intensifies, and firm performance declines, the Impact Index will also increase.

Albeit small shifts in the Impact Index are indicative of powerful trends. For example, Exhibit 30 shows that where we are today (an index value of 101) is the result of parallel growth in the impact of the Big Shift on all three constituencies. The markets driver, for example, has gone up more than 33% since 1993, at a CAGR of 1.7%, indicating that competitive pressures are rising steeply. Strikingly similar is the increase in the firms driver which measures the negative effect of these pressures on corporate performance and returns. This driver has increased by 20% since 1993, itself just at a CAGR of 1.1%. This relationship between growth in market pressures and deterioration of firm performance, which is nearly one to one, is particularly revealing with regard to the mismatch between today’s management approaches and the forces of the Big Shift. Finally, while we are forced to make assumptions when it comes to the impact of these forces on people, because our way of measuring this through a recent survey precludes us from assessing historical trends, we intuitively know that technological platforms and knowledge flows tend to change the world first on a social level, well before institutions catch on. So while we cannot accurately calculate how it has changed for them over time, we can reasonably assume that people have been most affected by the Big Shift and the most consistently.

We must note that the Impact Index is more susceptible to economic cycles than the other two indices, and, as such, the three drivers show much more volatility. The recessions in 2001 and 2008 particularly moved the needle, representing much greater pressures on firms, consumers, and talent during those times. As one would expect, firm performance metrics (e.g., Asset Profitability, ROA, Performance Gap, Firm Topple Rate, and Shareholder Value Gap) are affected most by these economic events.

To limit the extent to which cyclical fluctuations can sway the Impact Index, we have used data smoothing to put the focus on long-term trends instead of short-term movements (for further information on data smoothing, please refer to the Shift Index Methodology section).

Once peaks and valleys are removed, we see clearly that the growing power of creative talent and consumers, a driving force behind Competitive Intensity, is sapping value from corporations at the same time that Labor Productivity is on the rise.

There is considerable risk that policy responses to the current economic downturn may increase barriers to entry and movement.
2011 Foundation Index

Technology Performance
53  Computing
55  Digital Storage
58  Bandwidth

Infrastructure Penetration
60  Internet Users
64  Wireless Subscriptions

Public Policy
66  Economic Freedom
The fast moving, relentless evolution of a new digital infrastructure and shifts in global public policy are reducing barriers to entry and movement.

The Foundation Index quantifies the first wave of the Big Shift, which involves the fast-moving, relentless evolution of a new digital infrastructure and shifts in global public policy that have reduced barriers to entry and movement. Key findings include:

- The exponentially advancing price/performance capability of computing, storage, and bandwidth is contributing to an adoption rate for the digital infrastructure that is two to five times faster than previous infrastructures, such as electricity and telephone networks.
- The cost of 1 mm transistors has steadily dropped from over $222 in 1992 to $0.13 in 2010, leveling the playing field by reducing the importance of scale and thus increasing opportunities for innovation. Intel technologists anticipate this trend to continue for at least the next four generations of processors.
- The cost of 1 gigabyte (GB) of storage has been decreasing at an exponential rate from $569 in 1992 to $0.06 in 2010. The increase of both storage and bandwidth has helped to enable the boom in user-generated content, which has helped to break down information asymmetries between vendors and customers who now have easier access to product price and quality information. The cost of 1,000 megabits per second (mbps), which refers to data transfer speed, dropped 10 times from over $1,197 in 1999 to $47 in 2010, allowing for cheaper and more reliable data transfer.
- The percentage of the U.S. population using the Internet has grown from 1% in 1990 to 68% in 2010, taking less time to penetrate 50% of U.S. households than any other technology in history. As access continues to spread and as content and services improve, we expect the Internet to become an increasingly dominant enabler of the robust knowledge flows central to economic value creation.
- Wireless subscriptions have grown dramatically since 1985, jumping from 1% of the U.S. population to more than 90% in 2010, creating another medium for connectivity and knowledge flows. As core digital technology continues to improve, the line between the Internet and wireless media will continue to blur, further enhancing our abilities to connect regardless of physical location.
- U.S. Economic Freedom has shown an upward trend from 1995 to 2010, increasing 5% over that period while consistently staying above the world average. Over the past 15 years, it was primarily driven by investment freedom (a 14% increase), financial freedom (a 14% increase), trade freedom (an 11% increase), and business freedom (an 8% increase). While there is no prospect for a near-term leveling of improvements in digital technology, the trend toward increasingly open public policy is uncertain moving forward. The current turmoil in world markets has created a very real potential for a policy backlash and a rebuilding of protectionist barriers. These barriers would detract from the benefits created by advances in the digital infrastructure and its adoption by market participants. It is encouraging, however, that while a move to protectionist policies is certainly possible, it would be difficult to sustain unless large parts of the world followed suit.

Advances in computing, storage, and bandwidth, coupled with wireless networks and powerful devices, such as smartphones and netbooks, have created an increasingly robust platform for users to connect and communicate anywhere and anytime. Meanwhile, access to this platform has become easier and more affordable, creating a new foundation for the ways we interact and participate in knowledge flows.
These foundational changes define a new performance potential and thus reflect both new possibilities and challenges. This new potential refers to the opportunity companies have to precipitate, participate in, and profit from knowledge flows enabled by an ever-improving digital infrastructure and the reduction in interaction costs that make it easier to coordinate complex activities on a global scale. At the same time, these foundational changes also represent significant and growing challenges for firms. Technological advances and economic liberalization have systematically and significantly reduced barriers to entry and movement. This, in turn, has substantially increased competitive intensity (see the Competitive Intensity metric in the Impact Index) and has generated growing performance pressure (see the firms metrics in the Impact Index). However, by adjusting institutional architectures, governance structures, and operational practices, companies and institutions can harness the powerful potential brought about by the Big Shift and progressively turn mounting challenges into growing opportunities.

The Foundation Index
The Foundation Index, as shown in Exhibit 31, has a 2010 value of 190 and has increased at a 11% CAGR since 1993. Its metrics capture the price/performance trends in technology, its adoption by the U.S. population, and corresponding advances in public policy. The Foundation Index is a leading indicator: Advances in core technologies and their adoption define the potential for firm performance. However, this potential will take quite some time to materialize in performance, as institutions lag behind at developing practices that truly leverage the digital infrastructure.

We have built the Foundation Index around three key drivers, shown in Exhibit 32:

- **Technology Performance**: Core digital performance trends that enable knowledge flows, creating pressures and opportunities for market participants. This driver consists of three metrics: Computing, Digital Storage, and Bandwidth.

As computing power grows and becomes ubiquitous, today’s highly complex problems, in fields ranging from medical genetics to nanotechnology, are expected to become the building blocks of future innovation.

Exhibit 31: Foundation Index Trends (1993-2010)

Source: Deloitte analysis
• **Infrastructure Penetration**: The adoption of innovative products and technologies brought on by the advances in the core digital infrastructure. This driver consists of two metrics: Internet Users and Wireless Subscriptions.

• **Public Policy**: Technological advances and adoption rates can be either dampened or amplified by public policy initiatives; this driver represents the concept that the liberalization of economic policy removes barriers to the movement of ideas, capital, products, and people. It consists of one metric: Economic Freedom.

Consistent with its role as a leading indicator of the Big Shift, the Foundation Index has grown most rapidly over the last 16 years. This growth has primarily been driven by accelerating improvements in the performance of technology, represented by the Technology Performance driver, which has grown at a 25% CAGR since 1993 (see Exhibit 33). The penetration of these technological infrastructures, represented by the Infrastructure Penetration driver, has also been increasing, albeit at a slower 17% CAGR (see Exhibit 34), confirming that adoption of technology advances somewhat lags behind the rate of innovation.

As key technologies, such as the Internet, approach a saturation point, growth in the Infrastructure Penetration driver is expected to slow. However, advances in the technologies themselves are expected to continue at a rapid pace in the near future. This slowdown in adoption does not mean that participation in knowledge flows will slow or stop; on the contrary, saturation will indicate a robust installed base equipped to fully engage in knowledge flows. As the digital infrastructure continues to improve, users will be able to engage with it in new and innovative ways, further enhancing their abilities to connect and learn.

Public policy liberalization, measured by the degree of Economic Freedom, has remained at a very high level relative to the rest of the world, but has improved only modestly in recent years, growing at a 1% CAGR (see Exhibit 35).
The chart (right) represents the combined movements of the underlying metrics in the index, after data adjustments and indexing to a base year of 2003. For more information on the index creation process, see the methodology section of the report.

Exhibit 33: Technology performance (1993-2010)

Exhibit 34: Infrastructure penetration (1993-2010)

Exhibit 35: Public policy (1993-2010)
Computing

Advances in computing power accelerate the pace of innovation

Introduction
Computing has gone through a number of transformations in the last 30 years, moving from mainframe to client server and, today, into the cloud. The driver of these transformations has been the remarkably consistent drop in computing cost/performance. This exponential decline, first described in 1965 by Gordon Moore who predicted that the number of transistors on an integrated circuit would double every 24 months and the cost would decrease by half, has proven to be one of the most enduring technology predictions ever made. It also serves as a self-fulfilling prophecy as semiconductor vendors seek to maintain the trend.

To maintain the downward progression in computing cost/performance, semiconductor vendors invest in ever-more research and development (R&D) and capital equipment to develop new semiconductor designs. Engineers shrink transistors down to the atomic level, materials scientists explore the electrical properties of the exotic materials used in chips, physicists employ quantum mechanics to build atomic computers, and process engineers improve manufacturing throughput and quality. Increasingly, computer architects are part of the equation, employing multiple computing cores to achieve processing efficiency.

Once the engineers, scientists, and architects develop a working proof of concept, equipment vendors invest billions of dollars creating the manufacturing equipment required to produce the new semiconductor specification. These investments continue apace, even during recessions, as vendors position themselves for the resumption of economic growth.

The Shift Index will look for changes in computing cost/performance curves over time, however, we expect this metric to be highly predictable. Over the past 40 years, there have been times when Moore’s Law appeared in danger of failing, yet in each case Moore’s Law persisted as a result of human ingenuity to extend Moore’s Law into a relevant future.

Observations and Implications
As Exhibit 36 shows, the cost of transistors has steadily dropped, from over $222 dollars per 1MM in 1990 to $0.13 in 2010, a negative 66% CAGR.

One recent innovation that promises to both extend Moore’s Law and reduce semiconductor energy requirements is 3-D architecture. While today’s chips are built in three dimensions, they operate in a planar fashion...
Are You a Fraud?

February 4, 2011 — Multiple arrests were made in relation to a credit card fraud ring that affected at least 57 people. The arrests come after members of the Louisiana Financial Crimes Task Force concluded a three-month investigation into numerous credit card fraud complaints from St. Tammany Parish residents. It was discovered that all of the victims had one thing in common, they had all used their card at the same fast food outlet in Mandeville. Police discovered during their investigation that Christopher M. Brumfield, 25, of Mandeville recruited Todd Pea Jr., who worked the drive-thru at a Mandeville fast food outlet, to collect credit card and debit card numbers using a separate credit card swiping device. Pea would swipe cards once on the restaurant’s machine and then on a separate machine. He would then pass on the electronic credit card information to members of the criminal organization, who transferred the information to counterfeit credit cards. Once transferred to the counterfeit cards, members of the criminal network, used the credit card information to purchase a variety of merchandise within a short period of time.

In order to reduce chances of credit card fraud such as this, Visa announced dramatic improvements to its security capabilities early in 2011. Visa Advanced Authorization is better able to detect “high speed fraud,” where criminals attempt multiple transactions within a very short time period — minutes or even seconds apart. Because Visa’s network is not only able to process thousands of transactions per second, but also instantly recall and analyze millions of pieces of information in its memory, Visa is able to identify emerging fraud trends as they happen — not hours or days later. An analysis of past global transactions suggests Visa’s enhancements could help identify $1.5 billion in fraud, representing a 29% performance improvement from 2009. In particular, fraud detection rates on the riskiest transactions improved by 122% over the previous model.

This increase in fraud identification is the result of an enhancement to the underlying processing platform that powers Visa’s Advanced Authorization — a security technology that analyzes and scores every Visa transaction for its fraud potential. VisaNet is the foundation of Visa Advanced Authorization, a modular processing platform that handles more than 10,000 transactions per second and contains a significant amount of processing memory. A new operating system implemented earlier this year allows more information to be analyzed at once and performs more complex processing functions in milliseconds. This provides Visa with a more comprehensive view into the global payments system, spending patterns and better positioning the company to detect and prevent fraud in near real time.

— electrons move in two dimensions across the chip. Intel’s new Tri-Gate architecture allows electrons to move “up, left, and down.” This translates to higher performance with less power. Intel estimates that individual Tri-Gate transistors at 22 nm will show a 37% increase in performance and require half the power of a planar transistor built on a 32-nm architecture. If Intel’s estimates hold, that virtually guarantees that Moore’s Law will extend well past 2020.

“For years we have seen limits to how small transistors can get,” Moore said in an Intel Press Release. “This change in the basic structure is a truly revolutionary approach, and one that should allow Moore’s Law, and the historic pace of innovation, to continue.”

Even if architectural and process innovation cannot overcome the next limit to Moore’s law, Moore points out that it will “not be the end of the world … You just make bigger chips.” Semiconductors are built on wafer-thin slices of silicon crystal. Today, cutting-edge fabs manufacture 300-mm wafers. The next step is 450-mm wafers. Taiwan Semiconductor Manufacturing Company Limited (TSMC), one of the largest independent semiconductor foundries in the world, has announced plans to launch a 450-mm pilot line in 2013-2014 and production in 2015-2016.

As computing power grows and becomes ubiquitous, today’s highly complex problems, in fields ranging from medical genetics to nanotechnology, are expected to become the building blocks of future innovation. Those who use computing to analyze, arrange and apply these building blocks will likely usher in new waves of innovation. One thing seems clear: success will depend upon having the talent and organizational ability to effectively harness this processing power to deliver new innovations to market.
Plummeting storage costs accelerate the creation of information and the need for data filters

**Introduction**

Beginning with the introduction of magnetic drum technology for early mainframe computers in 1955, storage cost/performance has decreased exponentially, making storage globally ubiquitous. These cost/performance improvements are described by Kryder’s Law which predicts that storage capacity (on a unit basis) doubles every 12 to 18 months. And while Kryder’s Law was an observation after the fact, it has proven remarkably descriptive of the trend in storage capacity since 1955. Today, more than 50 years after the application of magnetic storage to digital computing, users can store on a thumb drive what formerly required thousands of square feet.

The Digital Storage metric tracks changes in the storage cost/performance curve over time. We expect this metric to be relatively stable as innovation and increased usage of the devices and applications that create and capture digital information drive growth and innovation in the devices and applications used to store information. “Information creation” and available storage are the yin and yang of the digital universe.”

**Observations and Implications**

Over the past 19 years, the compounding effects of technology innovation, competitive pressures, market demand and the substitute effect (storage as utility) have driven storage costs down dramatically and contributed to exponential increases in performance. The cost of 1 GB of storage has decreased from $568.9 in 1992 to $0.06 in 2010 as shown in Exhibit 37. To put this trend in perspective, without the improvements in storage capacity and related drop in costs since 1992, it would cost $3.4B to store all of the information available on the Web today. Instead, storing all of the information on the Web today costs only a fraction of that, $0.4M!

Experts believe that cost/performance will continue to decrease at its current pace in the foreseeable future. However, in the long term, innovation will depend on new technologies, including nanotechnology, 3-D holographic storage, carbon nanotubes, and heat-assisted magnetic recording.

The demand for storage is expected to continue to grow over the next three years, but while on-premise growth stagnates, cloud-based storage is experiencing massive growth.

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Source: Leading technology research vendor

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In the trial of Green vs. Blitz USA Inc. March 2011, Mrs. Green alleged that her husband’s death was caused, in part, by the lack of a flame arrestor on gas cans manufactured by Blitz USA Inc. Although the lawsuit had been settled a year earlier, Mrs. Green sought to reopen her lawsuit upon learning that the defendant had failed to produce relevant documents. Obtained through manual collection processes, the information discovery process failed to identify documents critical to the trial. Finding that the defendant had committed information discovery abuses, including failing to disclose relevant evidence, the court ordered the defendant to pay the plaintiff $250,000 in addition to other punishments. The trial of Green vs. Blitz USA Inc. is the latest in a line of cases that have been highly critical of manual (or self) information collection efforts by legal counsel and individual custodians, the limitations of which could be overcome through electronic discovery.

In the past, law firms deployed large numbers of junior associates and paralegals to conduct discovery to determine which documents were relevant. In fact, discovery is 80% of the cost of litigation. Historically, this manual collection process was largely deemed defensible provided the information collection process was closely monitored. However, lately, this behavior of manual collection of information and discovery is being considered simply too risky for any conservative enterprise.

Over the past decade, the troves of digital information in litigation have exploded right along with inexpensive storage & search technology. Today, a case with 20 GB, more than 40,000 documents, is considered small. Enabled by this rapid progress in technology, throwing junior lawyers at information discovery is no longer feasible. The better practice is to leverage the custodians to point out where relevant electronically stored information (EST) might exist and utilize software tools to conduct broad collections from key players. For example, Jill Kirila, a partner with the litigation firm Squire Sanders & Dempsey in Columbus uses Equivio (Relevance) for e-discovery. “We reduced one project that was estimated to cost more than $500,000 in human review. We were able to do it for under one third of that using Equivio,” said Partner Jill Kirila.

Solutions from Equivio (Relevance) and Xerox (CategoIX) are helping to maximize the value of human input in the process by applying new filtering and predictive indexing technologies to accelerate discovery beyond keyword search. Once an expert lawyer completes discovery on a set of documents, typically a few thousand, the system is “trained” and can analyze an immensely large set of documents for the case. The idea is not to remove lawyers from the process, but to allow them to focus on what they are trained to do.

While low-cost storage has enabled the document overload, storage, and cloud computing play a role in the delivery of e-discovery solutions as well. Customers can pay software license fees for gigabyte analysis limits or can hire hosted solutions which simply apply a per GB charge when analysis is needed. This provides a scalable solution for law firms with variable discovery demands.

e-discovery solutions have yet to be challenged in court and the consensus at legal conferences seems to be favorable. At the rate of information storage growth, it is only a matter of time before throwing bodies at the problem, even low-cost domestic and international talent, becomes unworkable.
adoption\textsuperscript{51}. Cloud-based storage is expected to play a significant role in meeting the demand at lower costs by migrating storage away from on-premise solutions and onto shared cloud servers.

Although cloud-based storage is expected to be increasingly important to both individuals and businesses, these groups are at different levels of understanding cloud-based storage and the benefits it offers. Several cloud-based products and services are emerging for individuals. For example, the cloud may provide individuals with ubiquitous access to data with the same safeguards against failure that businesses have enjoyed for years. Individuals are also experiencing the cloud through emerging cloud-based services, such as Apple’s iCloud (a combination of iTunes/hard drive cloud storage solution that allows individuals to access content from any device) and Dropbox (which allows dragging and dropping family photos), however, they may not consider themselves users of the cloud nor understand the real value it is providing.

For businesses, the value proposition is more evident. Cloud storage is scalable: it can efficiently accommodate variable data flows, such as when a retailer is in the midst of the Christmas rush. Cloud storage also locates data near scalable computing resources, allowing businesses to access massive computational power without having to invest in computing assets. Because it is scalable, cloud-based storage can be more cost effective, avoiding the need to invest in expensive on-premise storage that may be underused. Business concerns with the cloud center primarily around security and risk of failure.

It is not unusual for a technological innovation to provide dramatic benefits to either individuals or businesses (think iPhones and client/server). The difference with cloud storage is the wide relevance of its value proposition around simplicity, efficiency, and dependability. Cloud storage has a unique potential to address both individual and businesses storage needs and overcome previous limitations.

In solving our storage limitations, we create a new challenge: the proliferation of digital data. As the cloud enables vast and accessible storage, our attention becomes increasingly scarce. More and more documents, emails, videos, blogs, papers, comments, articles, advertisements, etc., will vie for our limited attention. While participating in and sampling from streams of data, information and knowledge is increasingly important in the Big Shift;\textsuperscript{52} the proliferation of digital data makes it more difficult to separate the valuable signal from the valueless noise.


\textsuperscript{52} The role of knowledge streams in the Big Shift is discussed in greater detail in the Flow Index section.
Low-cost bandwidth bolsters connectivity, enabling consumption of richer data

Introduction

Nearly two decades after the beginning of the boom in commercial internet traffic, the internet continues to revolutionize the way people communicate, consume content, and conduct commerce. The consistent decline in bandwidth’s cost for performance is a fundamental driver of the growth in internet traffic and rich connectivity.

We expect bandwidth’s cost/performance curve to continue to decline. Innovations in the underlying technology and progressive industry standards have improved bandwidth performance significantly. First, enhanced computational power that allows content to be further compressed and improved cable technology have increased the capacity of fiber. Additionally, the standard setting bodies and the processes required to deploy new bandwidth technology have been successful in maintaining the trend of increased speed and performance. The cost efficiencies come from manufacturing and deployment of the latest standard. In each successive round of deployment, the cost to deploy the new standard drops to a point where carriers rush to upgrade technology in an effort to grow revenue through new services and applications. Combined, these trends suggest that the decline in bandwidth cost/performance curve will persist into the foreseeable future.

Observations and Implications

In 2010, the delivered cost represented by the bandwidth metric declined markedly. This decline in costs for the end user correlated with increased adoption of 10-GbE switches. Although the standard was adopted in 2003, the early 10-GbE solutions were premium, low-volume solutions, and, thus, expensive to manufacture. As more data centers adopted the 10-GbE technology, manufacturers became more adept at producing them until the market reached an inflection point in 2009: volume increased substantially, competitive pressure grew, and manufacturing costs came down. The result was a dramatic reduction in price to the customer. These costs are expected to continue to drop for the next couple of years before flattening as the cycle begins again with adoption of the next new standard.

With widespread deployment of the new standard at Internet service providers (ISPs), greater bandwidth is available at lower costs; the world is increasingly connected through infrastructure capable of delivering faster, richer and more mobile user experiences. In prior years, the bandwidth cost/performance trends pointed toward cheap and reliable connectivity becoming the norm. Now, improved bandwidth is enabling new applications and business models, from high definition videoconferencing to cloud computing, which were previously limited by bandwidth constraints.

The decline of bandwidth cost/performance is highly disruptive for many established markets. Optical fiber into the home, for example, threatens video rentals. Cable and digital television face the threat of disintermediation in an age where bandwidth enables consumers to pick and choose content, often selecting specific Web content over multichannel packages.
Putting the ‘Net’ in Netflix

Netflix founder Reed Hastings is often quoted as saying, “there is a reason we didn’t call the company DVDs by mail...”. Two independent events — a $40 video rental late fee and a gym membership pricing scheme — inspired Reed to contemplate a better pricing and distribution model for entertainment content that led to the birth of Netflix in 1998. Netflix is now the #1 consumer of bandwidth in the United States. It surpasses Web surfing, Facebook, and iTunes combined. In 2010, the “Net” in Netflix finally became a reality as streaming video, enabled by relatively low-cost bandwidth, surpassed DVD mailers as the primary distribution mechanism.

Netflix is disrupting more than just the media industry. Recently, a Netflix content delivery director posted the bandwidth performance of all the major ISPs. The release and discussion thread helped consumers (especially Netflix fans) make purchasing decisions on ISPs and highlighted those ISPs lagging in bandwidth performance. In addition, Netflix also helps subscribers work with bandwidth constraints levied by ISPs that have bandwidth limits or tiered pricing by allowing customers to select the quality of their content streaming. Netflix bandwidth selection enables consumers to decide the trade-off between high-definition streaming and buying additional bandwidth—customers can elect to receive lower quality digital streams in order to maximize the content they receive under any data limits.

More broadly, improved bandwidth makes it easier to collect and transfer data, providing both consumers and companies access to more information to help make decisions, and unlocks new opportunities that hinge on the availability of bandwidth. For instance, employees can participate in problem solving remotely through telepresence capabilities and transmission of video in a way that is not possible via simple teleconferencing. Individuals can listen to music streaming from their laptops or watch videos. Neither videoconferencing or music streaming would have been possible without the availability of cheap and fast bandwidth. The speed of information sharing among consumers and the ability for consumers to connect with relevant parties within a company has increased transparency and decreased arbitrage opportunities that existed with past ‘lumpiness’ of information sharing.

Declining bandwidth cost/performance is changing the way we work, interact, and organize commerce. As bandwidth becomes increasingly commoditized, we expect connected businesses and individuals to reap the benefits through new applications that make use of it.

Exhibit 38: Bandwidth Cost Performance (1999-2010)

Source: Leading technology research vendor
Accelerating internet adoption makes digital technology more accessible, increasing competitive pressure, as well as creating opportunity.

**Introduction**

The rate at which more people are actively using the Internet indicates how rapidly this digital infrastructure is being adopted. The Internet is itself the sum total of all the functionality and technological advancements underlying it—the advances in reliable broadband and mobile Internet infrastructure, the vast “server farms” that support search engines and the countless Internet applications that run on browsers. Use of the Internet is also significant to the Big Shift because the Internet provides users with instant access to the breadth of information and resources needed to fuel innovation, collaboration, and efficiency.

As access becomes more widespread and services continue to improve, the Internet will increasingly become a dominant medium for the knowledge flows that are central to economic value creation. Consider how LinkedIn, Facebook, and Twitter enable individuals to post news articles, videos, photos, white papers, and other media to audiences of followers, friends, and professional colleagues. Or how the German software maker SAP used the Internet to create a virtual platform in which customers, developers, system integrators, and service vendors could create and exchange knowledge, increasing the productivity of all the participants in its ecosystem in the process. The relatively low cost and nearly instantaneous sharing of ideas, knowledge and skills facilitated by the Internet is making collaborative work considerably easier.

ComScore’s State of the Internet Report is the basis of the data for this metric. ComScore defines active “Internet Users” as persons using the Internet at least once during the month-long period in which they are surveyed. Data for personal computer (PC) and mobile Internet users were provided in this report, but only the PC Internet user figures were incorporated into the index given the very high overlap of mobile and PC Internet users in the United States. The overall usage figures were normalized against the U.S. population to provide a penetration value for this installed base.
Observations and Implications

In the United States, approximately 212 million individuals were actively using the Internet by December 2010. Over the past 20 years, Internet users as a percentage of the U.S. population have grown rapidly, from 1% in 1990 to 8% in 1995 to 68% in 2010 (see Exhibit 39).

To put these numbers in context, consider that it took less time for the Internet to penetrate 50% of U.S. households than any other technology in history (see Exhibit 40). The Internet achieved 50% penetration of U.S. households in 9 years, whereas it took the telephone, electricity, and the computer 46, 19, and 17 years, respectively, to reach the same milestone.54

One of the drivers for the increase in Internet Users has been the constant improvement in technology cost/performance discussed elsewhere in the Foundation section. Both Internet access and PCs have become increasingly affordable, making it possible for more people to get online. For example, Gartner reported that the average system price for PCs fell from $832 in 2008 to $657 in 2010, with prices expected to hit $482 by 2014.55

Mobile Internet users are also gaining critical mass. In 2010, more than 60% of U.S. households had at least one mobile broadband device and more than 25% of households had two or more such devices.56 Technological improvements, such as third generation of wireless networks (3G) and advances in smartphone and tablet device capabilities have allowed for easy remote Internet access. The Apple iPhone, iPad, and iPod Touch products exemplify this trend: Globally, over 200 million products sold and over 15 billion application downloads from the Apple App Store to date.57

The mobile Internet demographic skews toward younger users and provides a hint of the future. According to a recent study, when given a choice of consumer electronic devices, Boomer Internet users (ages 45+) overwhelmingly chose PCs over mobile phones (51% and 21%, respectively), while the opposite held true (47% and 38%, respectively) for Gen Y users (ages 18-24).58 Pew Center research revealed that 91% of Gen Y users go online; this number gradually falls off for older audiences, hitting 30% for users over 74 years old.59 We are well into a trend toward mobility, accessibility, and the convergence of the physical and virtual.

56 “Survey Analysis: A Map of Mobile Broadband Consumer and Rate of Adoption” Gartner
59 “Generations Online 2010,” Pew Internet and American Life Project
User behavior trends are both shaping, and shaped by, the evolving information-sharing capabilities of the Internet. The October 2010 comScore State of the Internet Report provides a snapshot of Internet user behavior in the United States: The average user was online 24.8 days in the month, for a total of 31.7 hours, and viewed 2,620 pages. Of the time spent online, the categories driving usage were search portals (6.5 hours per month per user), conversational media (4.3 hours per month per user) and entertainment (3.9 hours per month per user).

In addition, the content categories which attracted the greatest numbers of unique visitors (UVs) per month were community (180 million UVs), photos (142 million UVs), and Newspapers (130 million UVs). The content categories that experienced the greatest growth in absolute terms were Photos, Newspapers, and Sports, which each garnered 50, 46, and 37 million additional UVs, respectively. In terms of relative growth, several prominent new markets are rapidly emerging — for example, online gambling tripled in size to hit 33 million UVs, while training & education doubled in size to hit 10 million UVs. Collectively, these growing user bases represent rich commercial opportunities and platforms for exchange of information.

On a monthly basis, 84% of users viewed at least one online video; 94% of users conducted at least one search with the average searcher conducting 123 searches. In addition, the U.S. Department of Commerce estimated that total e-commerce spending in 2010 was $165 billion, up 14.8% from 2009. As users spend more time and become more comfortable on the Internet, they discover and create more diverse and robust ways to connect and share information. At the same time, societal trends and advances in the digital infrastructure are also fostering new ways for users to engage with the Internet—and with each other via the Internet. For instance, online games and game systems and online music platforms have helped increase the number of active Internet users and will continue to fuel that growth.

As new segments of the population come online and creative ways to engage emerge, there will likely be substantial opportunities for sales, advertising, and...
In 2005, Lance Priebe and Lane Merrifield, two game designers at New Horizon Productions in Kelowna, Canada, were looking for social networking sites for their 6-year-old children. They quickly realized the dearth of options — Facebook and MySpace were targeted at older audiences and had yet to include any age-appropriate games for the 6-14 range. The pair decided to create their own. Out of the gap was born Club Penguin, one of the world’s most popular multiplayer online role-playing games. Introduced to the public in October 2005 with 15,000 initial beta users, less than a year later Club Penguin had 2.6 million members. By late 2007, when the Walt Disney Company purchased New Horizons Productions for $350 million, Club Penguin had 12 million user accounts.61 Now, in 2011, the game boasts a user base of 150 million children worldwide with multiple language versions.62

Club Penguin allows players to control avatars (cartoonish penguins) and explore a winter-set virtual world. Like Second Life, players at Club Penguin spend most of their time interacting with each other and connecting through safe chat features. The world of the game includes multiple gathering spots, shops, monthly parties, a theater where players can help stage a monthly play, costumes, and an in-game newspaper (The Penguin Times) offering comics, puzzles, and advice columns. Each penguin (user) has an igloo which they can personalize and invite friends to. Players also use in-game currency to buy virtual clothing, costumes, igloo decor, and to care for virtual pets. Players earn currency by playing a variety of fun mini-games and multiplayer games. Items, such as pins, flags, and stamps are either found hidden in the game or earned through mini-games and are used to display status.

Club Penguin works on a “freemium” model: All users can join Club Penguin and play for free, but paid monthly memberships drive most of the revenue. When Disney bought Club Penguin, approximately 90% of users were free, however, the game has increasingly tilted toward paid memberships with an array of exclusive options and opportunities for paid subscribers in the game. Reviews note that options are limited for those who do not pay for membership, however, many children seem to continue to enjoy coming to Club Penguin into their teenage years. To maintain the appropriateness and safety for the target audience, the site includes filters, paid monitors, and multiple parental control features.63 Club Penguin’s success has led to video game spin-offs for Nintendo as well as several mobile applications.

While the tremendous growth in Club Penguin’s user base has stalled recently (by April 2008, Nielsen reported that traffic to the site had shrunk by 7%), multiple competitors have come on the scene. As long as the options for online entertainment and social media, targeted specifically at children continue to evolve, internet use among the young shows no sign of abating.

Research. Take, for example, the growth of massively multiplayer online role-playing games (e.g., World of Warcraft) or the ecosystem of social networks (e.g., Facebook) and social game developers (e.g., Zynga) which cater to both mass market audiences and niche segments. More than just consumers, new Internet users are influencers of purchase decisions and producers of content. For instance, in recognition of the influence that children have on food and beverage purchase decisions, General Mills runs “Create A Comic” (a Web site where children can create animation starring patented characters) to promote its Honey Nut Cheerios cereal brand.64 Likewise, the growth of online marketplaces like Craigslist demonstrates how widespread Internet adoption enables a significant number of individuals to partake in transactions which would previously have been impossible. The business opportunities afforded by Internet adoption will also carry risks, as users choose to engage in ways that may be unexpected or uncontrollable.

Internet-enabled collaboration has changed the game during the past 20 years for pursuits as diverse as scientific research, software development, conference planning, political activism, and fiction writing to name a few. We will continue to keep a close eye on how these changes bring utility and value to both customers and businesses over time. Leveraging the creativity and collaboration of Internet users will be a key to businesses trying to keep up with a constantly changing future.

63 http://www.commonsensemedia.org/website-reviews/club-penguin
64 “In Online Games, a Path to Young Consumers.” New York Times, Apr 20, 2011
Explosion in wireless communication expands knowledge flow and reach

Introduction
The network of mobile devices in America creates a platform for broad, robust, location-specific knowledge flows and drives increased connectivity among individuals and institutions. Together with the Internet Users metric, the Wireless Subscriptions metric represents the adoption of the digital infrastructure. Widespread adoption of the digital infrastructure enables two- and multiway communication and the sharing of data, information, and knowledge from nearly any geographic location. People now have the ability to participate in knowledge flows anytime and anywhere, putting information literally at their fingertips. With the ubiquity of wireless connections, the proliferation of wireless devices and the development of new applications designed to exploit wireless capabilities, carriers will be challenged to manage capacity and to develop innovative pricing plans that will accommodate changing customer needs.

Observations and Implications
As shown in Exhibit 42, the number of Wireless Subscriptions as a percentage of the population has grown rapidly, from 10% in the mid-1990s to 92.7% in 2010. In absolute terms, the numbers are striking. In 1985, there were approximately 340,000 Wireless Subscriptions; by 2010, this number was approximately 289.2 million. While Wireless Subscriptions have increased at an 83% CAGR since 1985, reflecting the widespread adoption of the digital infrastructure, this growth may begin to flatten or even decline as carriers attempt to better accommodate their subscribers’ use of multiple devices.

In the past few years, consumers have become increasingly dependent on mobile devices to communicate. The nature of their communications is changing as well. Text messaging, data services, applications, location-based services, and cloud storage are driving Wireless Subscriptions, evidenced by the proliferation of smartphone devices and rise of media tablets. Like the smartphone before it, the tablet is transforming consumers’ use of wireless, from simple voice and text applications to email, word processing, games, mapping, and social media.

However, even as tablets penetrate the market, they are not cannibalizing mobile phones. Voice traffic was down only 1.4% in 2010 and SMS/text traffic increased 22.9% with carriers reporting over 2.05 trillion text messages on their networks. This combination of form factor, new applications, and mobility is driving a completely new


Source: CTIA

The Wireless Subscriptions metric captures the number of active Wireless Subscriptions as a percentage of the U.S. population based on CTIA’s Wireless Subscriber Usage Report. This metric is a proxy for core technology adoption.
When Emily Connor moved out of her mom’s house during her second year of college and started working part-time with four families, she knew it was time to get her own cell phone, maybe even a smartphone. She was missing connections with friends, missing important scheduling changes for the families she babysat, getting lost driving in unfamiliar neighborhoods and not making use of her time when her charges were sleeping. But the 21-year old college student did not have much of a credit history and she did not have much cash to spare. Earning her money in cash jobs, on paper she looked like the sum of her debt—student loans and delinquent payments on a store credit card.

At 68 years old, Cheryl Henry had heard all the horror stories about families getting hit with thousand-dollar cell phone bills and she swore she was not interested. But when her husband’s health required her to begin making daily trips to the VA hospital 60 miles away and she could never find a pay phone and barely had time to email her children at night to keep them updated, she cautiously began to consider getting a cell phone. When her son visited for a week, he had been able to pull all sorts of useful information off his phone before they met with the doctor. She was spending hours at a time in hospital waiting rooms and often wished she could look up more information about what the doctors were telling her, just like her son did. But she was still intimidated by a complex contract and the fear of running up expensive phone bills every month. She did not want anything too fancy or complicated — just a functional phone that could help her meet her connectivity needs.

A few years ago, both of these women would have had trouble getting a phone, and a plan, that met their needs. With prepaid cell phones, mobile providers hit upon an innovative business model which allowed them to take a minimal risk on new customers who do not have an established history, or who want to restrict their cost of usage, such as students, recent immigrants, or retirees.

Prepaid carriers, such as Metro PCS and Boost Mobile, have now entered the smartphone market with low, all-inclusive prices; smartphones are accessible not only to customers without an established credit history, but also to never price-conscious customers who are unwilling to spend on expensive smartphones. Today, Metro PCS customers can choose from 5 smartphone styles, the cheapest of which is $79 with no contract. As wireless communication becomes more intrinsic in our lives; carriers are innovating the technology, equipment, and services to enable more individuals to receive and share information more freely. This connectivity will scale further as technology advances and becomes even more accessible for all price bands.

As consumers increasingly use more than one mobile device, companies are trying to create a standardized, interchangeable user experience across these multiple devices. For example, internet search and social media are now available on the computer, smartphone, tablet, and even television. Similarly, companies are creating applications designed to engage their customers across all devices. These efforts will further reinforce the trend toward using multiple devices.

Moreover, as wireless devices proliferate and new applications are developed, Wireless Subscriptions, and the quantity of digital data, will continue to grow, requiring greater amounts of bandwidth, storage, and computing. The digital technology that allows for this ubiquitous connectivity has created an invisible infrastructure which is now enabling applications to work together, such as personal health devices, parking meters, global positioning system (GPS), individual users, and giant databases. For business leaders, this invisible infrastructure has a profound effect on the ability to open up new markets, utilize new business models, and reach parts of the world previously unreachable.

The current generation of wireless devices is more useful and technologically advanced than any previous generation. In the past two years, the number of devices with three or more transmitters — accommodating Bluetooth, Wi-Fi, and other types of connections in addition to cellular — has increased by 700%. But this explosion in the use of wireless technology is testing the capacity of our current networks. Not only are there more and more wireless devices, but each of them is consuming more and more data.

With the increase in subscribers who use multiple devices, carriers are exploring ways to streamline plans across these devices. European carriers are leading the way, offering shared data plans that allow a user to share a data allotment across multiple devices, such as an iPhone or iPad. The new shared plans target customers instead of SIM cards, consolidate subscriptions, and remove one barrier to increased data flow. Similar plans are emerging in other countries, with the basic premise that a customer pays a small fee each month for each additional device that shares data. Recent announcements from Verizon indicate that carriers within the United States are also considering these plans — similar to existing plans that allow families or businesses to share minutes across multiple phones. Wireless routers, such as Novatel’s MiFi, allow customers to connect up to five wireless devices to their own personal Wi-Fi hotspot. Should this trend toward consolidation of Wireless Subscriptions continue, we expect growth of this metric to slow or even decline.
Increasing economic freedom intensifies competition while at the same time enhancing the ability to collaborate.

**Introduction**

Changes in public policy also play a foundational role in the Big Shift. Broadly speaking, policy trends toward economic liberalization on a global scale have been driving down barriers to the movement of products, money, people, and ideas, both within countries and internationally. These flows intensify competition, putting pressure on margins, and speeding the rate at which companies gain and lose market leadership.

The Economic Freedom metric represents the degree to which public policies in a country support economic liberalization. A higher Economic Freedom index for a country indicates more open policies regarding trade, investment, finance, and business practices which further catalyze and accelerate the foundational changes of the Big Shift.

The 2010 Index of Economic Freedom produced by the Heritage Foundation and copublished with The Wall Street Journal, described economic freedom as the “right of every human to control his or her own labor and property… with that freedom both protected by the state and unconstrained by the state. In economically free societies, governments allow labor, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself.”

**Observations and Implications**

Globally, economic freedom suffered in 2010 due to the financial crisis and global recession. The global average Economic Freedom score for the 2010 Index is 59.4 (out of a possible 100), a 0.1 point decrease from 2009. Exactly half of the world’s major economies curtailed economic freedom to some degree by introducing various interventionist measures. This was the first time in the history of the index that average economic freedom declined for consecutive years.

For the U.S., economic freedom (see Exhibit 43) has trended upward from 1995 to 2006, increasing from an index value of 76.7 to 81.2 in 2006. However, since 2006 U.S. economic freedom has fallen 3.2 points, ranking 8th out of 179 countries. This decline in economic freedom is attributable to decreases in financial freedom, monetary freedom, and property rights. The recent passing of the Dodd-Frank Act introduced broad-sweeping regulations...
Fighting for the Right to Braid

Today, Melony Armstrong of Tupelo, Mississippi, runs her own African hair braiding business and a school where she teaches the art. However, Melony does not take her teaching for granted. In all but a handful of states, performing African hair braiding professionally without a government-issued license is illegal. Until 2005, regulations set by Mississippi’s State Board of Cosmetologists required that Melony complete 3,200 hours of coursework to be allowed to teach African hair braiding. Even though the coursework had little to do with African hair braiding, the requirements allowed practicing cosmetologists to keep barriers to entry into their industry high. This all changed when Melony Armstrong took on the state’s cosmetology establishment, joining with two aspiring hair braiders and the Institute for Justice to file a lawsuit against the state to contest these regulations.

The Institute for Justice is a pro bono law firm that engages “in cutting-edge litigation and advocacy both in the courts of law and in the court of public opinion on behalf of individuals whose most basic rights are denied by the government — like the right to earn an honest living, private property rights, and the right to free speech, especially in the areas of commercial and Internet speech.”66 Even with a high rating for Economic Freedom in the United States, there are still regulatory barriers that make it difficult for struggling entrepreneurs to enter many business arenas. Through organizations like the Institute for Justice, these remaining barriers are being challenged and overcome. The Institute for Justice selects cases where government-imposed licensing requirements make it impossible for entrepreneurs to start their own businesses with the intent of laying a broad foundation for future litigation to free other industries and occupations. The effects of such licensing restrictions are starkest for businesses that require little capital or education. The licensing laws for braiding hair seemed a perfect example.

Melony’s efforts paid off when the Mississippi Senate voted to amend the Board of Cosmetology’s regulations around hair braiding licenses. Now, African hair braiders are only required to register with the Department of Health, post basic health and sanitation guidelines at their places of work, and complete a self-test on that information. Thanks to their efforts, thousands of entrepreneurs across Mississippi can now be free to pursue their career of choice.

to the financial sector, including capital holding requirements which impact a bank’s lending capabilities. The United States remains above the world average in all but the government spending and fiscal freedom components, with labor freedom and business freedom scoring the highest at 94.8 and 91.3, respectively.

Historically, the primary drivers of economic freedom in the United States (in terms of percentage increases since 1995) have been: trade freedom (8.5%), business freedom (6.3%), investment freedom (5%), and fiscal freedom (3.5%).

Open labor markets enhance overall employment and productivity growth. There is a positive correlation between labor freedom and Migration to “Creative Cities,” Travel Volume, and Labor Productivity. Open labor markets enable individuals to pursue jobs of choice and to congregate in “spikes,” geographies where talent is concentrated, such as Silicon Valley and Boston. Our case research shows that these spikes are expected to foster opportunities for rich and serendipitous connections that help to accelerate talent development and improve productivity. Additionally, we would expect that workers who are free to select jobs of choice will be more passionate about their work and eventually more productive.

Business freedom has a strong positive correlation with Competitive Intensity and GDP. The greater the business freedom, the more competitive the environment and the greater the overall economic output of the country. The U.S. regulatory environment supports the freedom to start a business, which lowers barriers to entry and facilitates rich entrepreneurial activity. According to the Heritage Foundation’s report and the World Bank’s Doing Business study, starting a business in the United States takes six days compared to the world average of 28. The United States also has some of the most straightforward bankruptcy proceedings in the world, which may encourage more businesses to take the calculated risks that can spur innovation and competition.

Compared to other countries, the labor, financial, and business markets in the United States are some of the most open and modern in the world. As other countries adopt more open policies, the competition and disruption we have described will increase. We should note, however, that, unlike the persistence of digital technology performance trends, continued trends toward economic liberalization are much less certain. The current economic turmoil in world markets creates real potential for a public policy backlash, thus potentially driving some countries to erect protectionist barriers. While protectionist public policies could temporarily constrain some of the forces driving the Big Shift, they would be difficult to sustain unless large parts of the world followed suit.

2011 Flow Index

Virtual Flows
74  Inter-Firm Knowledge Flows
79  Wireless Activity
82  Internet Activity

Physical Flows
86  Migration of People to Creative Cities
90  Travel Volume
92  Movement of Capital

Flow Amplifiers
96  Worker Passion
102 Social Media Activity
Remote communications today are easier than ever. Wireless connectivity and Internet access are virtually ubiquitous in the United States, and there is rarely a moment today that we are not connected to the rest of the world. What may seem commonplace today was a luxury little less than two decades ago. As the digital infrastructure penetrates ever more deeply into the social and economic domains, practices from personal connectivity are bleeding over into professional connectivity: Institutional boundaries are becoming increasingly permeable as employees harness the tools they have adopted in their personal lives to enhance their professional productivity, often without the knowledge, and sometimes despite the opposition, of their employers.

With the Flow Index, we measure the changes in social and working practices that are emerging in response to the new digital infrastructure. More and more people are adopting practices that utilize the power of the digital infrastructure to create and participate in knowledge flows. Our approach to measuring these knowledge flows includes measuring flows of capital, talent, and knowledge across geographic and institutional boundaries.

The Flow Index measures Virtual Flows, Physical Flows, and Flow Amplifiers. Virtual Flows occur as a direct result a strong digital infrastructure. As computing, digital storage, and bandwidth performance improve exponentially, virtual flows are likely to grow more rapidly than the other drivers of the Flow Index. However, Physical Flows will not be fully replaced by Virtual Flows. As people become more and more connected virtually, the importance of tacit knowledge exchange through physical, face-to-face interactions will only increase, leading to more physical flows. Both Virtual and Physical Flows are enriched by Flow Amplifiers. These amplifiers enhance the robustness of both kinds of flows, making them even more meaningful. Some of the findings from our inaugural research are given below:

• Talent migrates to the most vibrant geographies and institutions because that is where it can improve its performance more rapidly by learning faster. Our analysis shows that the most creative cities tend to grow much faster than the least creative cities; in fact, between 1990 and 2008, the top 10 creative cities grew more than twice as fast as the bottom 10. This migration to creative cities is not only beneficial for the cities and their economic livelihood; it also correlates with an increase in Returns to Talent. By better understanding the drivers of the disproportionate growth in creative cities, business leaders can create organizations that mimic the environment that makes those cities so creative.

• Companies appear to have difficulty holding onto passionate workers. Workers who are passionate about their jobs are more likely to participate in knowledge flows and generate value for their companies — on average, the more passionate participate twice as much as the disengaged in nearly all the knowledge flows activities surveyed. We also found that self-employed people are more than twice as likely to be passionate about their work as those who work for firms. The current evolution in employee mindset and shifts in the talent marketplace require new rules on assessing, managing and retaining talent.

• Knowledge flows across companies are currently in their infancy. But our survey-based research indicates that increased interest and participation in new types of knowledge flows available through the current digital revolution, such as participation in social media and use of Internet knowledge management tools, will likely drive a marked increase in knowledge flows across firm boundaries. 36% of those surveyed this year currently
Internet traffic in North America is expected to almost quadruple from 2010, increasing at a 26% CAGR to hit 22,000 petabytes per month by 2015.

participate in social media in the professional sphere across firms and will likely drive significant growth in knowledge flows in coming years. This assumption is also supported by our research on the growth of social media platforms: Between 2007 and 2008, the total minutes spent on social media sites increased 27, while the same metric increased 48% between 2009 and 2010. Moreover, the average daily visitors to social media sites grew to 94 million in 2010, up 52% year over year from 62 million in 2008.

- Residents of the United States travel more and more each year. And as people’s movement increases, Big Shift forces are amplified and opportunities for rich and serendipitous connections are more likely. Travel within the United States has increased 56% over the past 19 years. This rise in travel also correlates with labor productivity, suggesting that the amount people travel can directly affect the way they work. One plausible explanation for this is that people benefit in multiple ways from the physical interactions that are more likely as a result of higher travel volume. Face-to-face interactions will always play a role in promoting productive and trust-based business relationships. By better understanding the role travel plays in a Big Shift world, business leaders can more strategically consider the trade-offs when making decisions about travel.
- Historically, FDI has been viewed as a way to improve efficiency, obtain resources, participate in labor arbitrage, and enjoy privileged access to local markets, which often favors local manufacturers. However, increasingly, firms are taking a more strategic long-term view by approaching FDI opportunities as ways to identify and access pockets of talent and innovation across the globe. U.S. FDI flows (both inflows and outflows) have increased steadily over the past few decades, with capital movement in 1970 being only 3% of what it is today.
- Wireless Activity (mobile phone usage in minutes talked and SMS text messages sent) and Internet Activity continue to grow exponentially. Ten years ago, the average user spent 64 minutes per month on his or her mobile phone; today, the average user spends over 600 minutes per month on their mobile phone. SMS text messages, which are a more recent phenomenon, have shown similar growth: in Q1 2009, the average U.S. mobile subscriber sent/received 486 text messages per month. By the end of 2010, the average number of text messages sent/received grew to over 600 per user per month. On the Internet, traffic across the 20 highest-capacity routes has grown 37% in the past year. The on-demand rich media experiences offered by the ever-improving modes of virtual communications will continue to shape how we interact with the world, both personally and professionally.
Taking a step back, we can see the interrelated nature of many of the foundation and flow metrics discussed in this report. The results of our research have shown that as economic freedom increases, people are freer to take control over their careers and lives. This leads to an increased likelihood of mobility and a profound increase in population growth within creative cities. These epicenters of creativity, with a high concentration of talent, have helped to propel recent growth in GDP and power much of the increase in productivity. We attribute this, in part, to the increased opportunity for rich and serendipitous encounters.

The Index

The Flow Index, shown in Exhibit 44, has a 2010 score of 155 and has increased at a 7% CAGR since 1993.68 The Flow Index measures the velocity and magnitude of knowledge flows resulting from the adoption of practices that take advantage of the advances in digital infrastructure and public policy liberalization.

The metrics in the Flows Index capture physical and virtual flows as well as elements that can amplify a flow — examples of these “amplifiers” include social media use and the degree of passion with which employees are engaged with their jobs. Given the slower rate with which social and professional practices change relative to the digital infrastructure, this index will likely serve as a lagging indicator of the Big Shift, trailing behind the Foundational Index. As such, we track the degree of lag over time.

Eight metrics within three key drivers are included in the Flow Index:

- **Virtual Flows**: Knowledge flows enabled by advancing digital infrastructure and its impact on increasing virtual connections. This driver consists of three metrics: Inter-Firm Knowledge Flows, Wireless Activity, and Internet Activity.

- **Physical Flows**: Knowledge flows enabled by the movement of people and capital, strengthening virtual connections with physical interaction. This driver consists of three metrics: Migration of People to Creative Cities, Travel Volume, and Movement of Capital.

- **Flow Amplifiers**: Knowledge flows amplified and enriched as people’s passion for their profession increases and technological capabilities for collaboration improve. This driver consists of two metrics: Worker Passion and Social Media Activity.

Historically, the Flow Index has grown at an increasing rate, reflecting faster and faster growth in its underlying metrics. Exhibit 44 shows the contribution of each metric to the overall index value, and Exhibits 46 through 48 show the

68 For further information on how the Flow Index is calculated, please see the Shift Index Methodology section. Note that because several metrics in the Flow Index are indexed to 2008 due to limited-data availability, the value in 2003 (the base year) does not equal 100.

The charts (right) represent the combined movements of the underlying metrics in the index, after data adjustments and indexing to a base year of 2003. Due to data availability, certain Flow Index metrics were indexed to 2008. For more information on the index creation process, see the methodology section of the report.

Source: Deloitte analysis


Source: Deloitte analysis


Source: Deloitte analysis
growth of each index driver. Comparing the three, it is evident that the Virtual Flows and Amplifiers have been driving the increasing rate of the change of the Flow Index.

As shown in Exhibit 46, Virtual Flows have grown at a consistently accelerating pace with an overall CAGR of 11%. This has been powered by the exponential growth of wireless and Internet Activity. We expect this trend to continue if not accelerate, as the above metrics continue growing exponentially, and knowledge flows between companies start increasing exponentially as well. In contrast, Physical Flows, as shown in Exhibit 47, have grown fairly linearly, with a CAGR of 6%. We expect this trend to continue at a steady pace, reflecting the long-term secular trends in capital flows, Migration of People to Creative Cities, and travel.

Exhibit 48 depicts Flow Amplifiers, which were flat initially, but started growing near the millennium; this is a function of both the metrics and the methodology. The initial period reflects the two metrics in this category (Worker Passion and Social Media Activity) both being relatively new (one is based on a custom survey, and the other represents a recent phenomenon). With no prior data for Worker Passion, we assumed a flat trend for passion for the past years using job satisfaction trends as a rough proxy.

A key challenge for companies in the 21st century is to become more open to ideas from the outside and to make use of resources wherever they may be located, internally or externally.

Therefore, the more recent curvature of the graph is a reflection of the recent exponential growth in Social Media Activity.

Overall, we expect the Flow Index to grow at an ever-increasing pace in the coming years. With more people adopting new conventions and practices that take advantage of the advances in digital infrastructure, it is very likely that the growth rate of this index may eventually surpass that of the Foundation Index.
Inter-Firm Knowledge Flows

Individuals are finding new ways to reach beyond the four walls of their organization to participate in diverse knowledge flows

Introduction
As the digital infrastructure and public policy shifts undermine stability and accelerate change, the primary sources of economic value are shifting. “Stocks” of knowledge—fixed and enduring know-how and experience—were once what companies accumulated and exploited to generate profits. Think of the proprietary formula for baby foods or the patents protecting blockbuster drugs in the pharmaceuticals industry.

In a less predictable and faster changing world, however, stocks of knowledge depreciate more quickly. The value of what we know at any one point in time diminishes. As one simple example, consider the rapid compression of product life cycles occurring in most industries. Even the most successful products are quickly supplanted as new generations come through the pipeline faster and faster. In the past, companies had time to exploit what they learned and discovered and could generate value from that knowledge for an indefinite period. Not anymore.69

To succeed now, companies (and individuals) have to continually refresh what they know by participating in relevant “flows” of knowledge that extend beyond the four walls of the firm. Tapping into these flows, especially those that create new knowledge, increasingly defines one’s competitive edge. Technological advances that allow people to connect virtually enable greater participation in flows.

While research suggests a high correlation between interfirm knowledge flows and innovation70, a critical subtlety is that some types of flows result in greater benefits. We believe the most valuable knowledge is tacit knowledge — the knowledge which resides in our heads and which cannot easily be codified or abstractly aggregated. Tacit knowledge often embodies critical insights about processes or nuances of relationships and is best communicated through stories and personal connections—modalities that are discounted in most enterprises.

While it would be impossible to quantify the core and richness of the types of flows that harness the greatest value, we have attempted to look at the drivers of rich, personal interactions as a proxy for interfirm knowledge flows. In our survey-based study, each respondent was scored based on how frequently the individual participated in each of eight activities that suggested the potential for knowledge flows. Some of the activities, such as conference attendance, represent more traditional professional networking while others, such as social media, are relatively new to the professional world. Over time, we expect to be able to see trends regarding participation in various kinds of interfirm knowledge flows and the impact of that activity on organizations.

Observations and Implications
The Inter-Firm Knowledge Flow score is an index value of participation in knowledge flow activity; thus it is best understood relative to other years or compared across industries or job types rather than as an absolute number. For the past three years, the Inter-Firm Knowledge Flow Index value has remained the same. This means that, on average, workers are participating in knowledge flow activities at about the same frequency they were three years ago, and that overall, there is still opportunity for workers to become more active in connecting with others in their professional lives.

By enabling individuals to seek new perspectives, keep abreast of innovative approaches and learn from seasoned practitioners, interfirm knowledge flows serve two key purposes: refreshing organizational knowledge and infusing worker passion. The stagnation in the Inter-Firm Knowledge Flow value suggests that individuals are not seeking out external sources of information or that companies are failing to equip their employees with access to interfirm flows. This limits the organization to the stocks of knowledge amassed by current employees.

69 Deloitte Research
Although the overall level has not changed, respondents’ participation in each type of knowledge flow activity is slowly changing (see Exhibit 49). Physical events, such as conferences and lunches, persist as the most common type of interfirm knowledge flow — 46% of those surveyed reported attending at least one conference per year. Participation in online forums and community organizations has declined, while use of social media is trending up over three years, indicating increased acceptance of new platforms and methods of tapping into knowledge flows. The marketing, human resources (HR), and sales functions lead in use of social media, while customer service, accounting/finance, and manufacturing lag. While newer methods of interaction like social media are

Exhibit 49: Percentage participation in Inter-Firm knowledge flows (2011-2009)

![Bar chart showing percentage participation in Inter-Firm knowledge flows from 2011 to 2009.]

*2011 Email Alerts redefined
Source: Synovate 2011, 2010, 2009
WP/IFK Measurement = Significantly higher at 95% confidence interval

Exhibit 50: Inter-Firm knowledge flow participation and frequency (2011)

![Bar chart showing percentage participation and frequency of Inter-Firm knowledge flows in 2011.]

Source: Synovate, Deloitte analysis
Exhibit 51: Social media usage by employee function (2009-2011)

Exhibit 52: Percentage participation in Inter-Firm knowledge flows by user age (2011)

Source: Synovate, Deloitte analysis

*Note 2011 Email Alerts redefined

Source: Synovate 2011, 2010, 2009

WP/IFK Measurement = Significantly higher at 95% confidence interval
What does a master sommelier have in common with your office IT support staff? And what does this mean for you?

Chances are that both are connecting with other professionals in their fields and questing online for insights on how to improve their performance. If knowledge is power, then the potential for self-empowerment has grown tremendously with the proliferation of web-based platforms where geographically dispersed users of diverse skill levels sign on to access high-value knowledge flows and build their expertise.

The Spiceworks Community boasts a membership of 1.5 million IT professionals from 196 different countries who share IT best practices, how-tos, product reviews, relevant articles, and scripts and codes through a web-based forum. Part professional association and part software company, Spiceworks has grown rapidly since it began in 2006 with the mission to, in the words of CEO and co-founder Scott Abel, “simplify the lives of small and medium business (SMB) IT pros.” Members ask questions, contribute expertise, and provide feedback to influence vendors. They are encouraged to form SpiceCorps, local, member-driven groups that host in-person networking events. Spiceworld provides an annual conference for users, community members, and IT vendors to meet and exchange ideas in person.

The Guild of Sommeliers enables wine and hotel and restaurant professionals from across the globe to tap into the knowledge of the best wine professionals to keep members on top of new developments and standards. It fosters collaboration, inspiration, and ongoing education for the sommelier community through discussion forums, study groups, blogs, quizzes, and a compendium knowledge base in addition to live networking and enrichment events and tastings. Guild President, Fred Dame, led the founding of the U.S. Guild in 2003 to extend the educational reach of the Court of Sommeliers (which is open only to Master Sommeliers) “to promote the knowledge and service of fine wine and cuisine.” The web-based membership forum also includes job postings and social networking.

Whether you are looking to solve a specific problem at work or delve deeper into your passions, online communities offer new opportunities to connect, build knowledge, and drive performance to new levels.

Of all types of flows, social media, Web forums, and alerts are among of the few flows that employees engage in on a daily or weekly basis. With the capability of immediate and iterative information and feedback loops, employees are able to access and digest information as they need it in a way that is applicable to their work.

There is a strong correlation between age and the types of flows in which employees are likely to participate. Younger employees gravitate toward social media, while employees older than 45 are more likely to attend conferences or connect by phone, over lunch, or within a professional organization.

There is a predictable correlation between an employee’s role within a company and participation in different types of knowledge flows. Individuals in senior roles have higher participation across all types of knowledge flows (see Exhibit 52) — though most pronounced in conferences, lunch meetings, phone calls, and professional organizations. Of respondents at the executive and senior manager level in the 2011 survey, 95% indicate they participate in at least one type of interfirm knowledge flow — as compared to 85% at the middle management level (increased from ~80% in 2009), and 70% at the frontline level (increased from ~65% in 2009). Executive and senior manager participation has remained consistent over three years of survey data.

Inter-firm knowledge flows can fuel efficiency and innovation, benefitting the entire organization by providing access to flows that are relevant to a function or position. Corporations have an imperative to make interfirm knowledge flows available and to train employees on how to maximize their use (e.g., identifying, digesting,
Socialytic tools are business applications that apply analytics against social and collaborative networks. Defined by IDC in “Predictions 2010: Recovery and Transformation” report.


By enabling individuals to seek new perspectives, keep abreast of innovative approaches and learn from seasoned practitioners, interfirm knowledge flows serve two key purposes: refreshing organizational knowledge and infusing worker passion.

Increasingly, “socialytic” tools enable firms to monitor flows with customers and partners, as well as flows within the enterprise, to improve performance. Currently, socialytic tools are most often used to understand customer behavior or to measure the efficacy of marketing campaigns, however, a potentially more exciting use is to evaluate employee interpersonal engagement relevant to performance. In our preliminary socialytic analysis of flows within the enterprise (including use of Web, email, social media, and VOIP) we gained substantial insight into the effective use of interfirm and intrafirm knowledge flows to impact firm performance. As engagement and collaboration platforms proliferate, understanding how to use these flows will be increasingly important.

While many executives pursue the supposed nirvana of a frictionless economy, we believe that aggressive talent development inevitably and necessarily generates friction. A key challenge for companies in the 21st century is to become more open to ideas from the outside and to make use of resources wherever they may be located, internally or externally. Enabling and encouraging participation in interfirm knowledge flows, while providing appropriate guidance, governance, and training programs, will help create a robust network of internal and external relationships, providing opportunities for the “productive friction” that results when people with different backgrounds and skill sets engage with each other on real problems. Friction forces people out of their comfort zones and often involves confronting very different views as to the right approach to a given challenge or opportunity. This friction will shape the learning of the individual and the organization.

Source: Synovate, Deloitte analysis
Wireless Activity

Wireless Activity is surging due to demand for mobile data and a growing ecosystem of applications and services

Introduction
Wireless telephones and mobile internet are increasingly vital communication channels which enable knowledge flows. Measuring knowledge flows directly is difficult; if not impossible, however, wireless minutes and text messaging volume provide suggestive proxies for knowledge flow activity on mobile devices. Together, they represent the increasing degree to which connectivity and mobility are becoming essential in both personal and professional life.

Wireless Activity is highly correlated to the technological advancements of the digital infrastructure that enable users to leverage mobile phones in a multitude of ways. As a platform for knowledge flows, Wireless Activity will continue to grow as technology metrics, such as Computing, Digital Storage, and Bandwidth evolve at exponential rates.

Observations and Implications
As shown in Exhibit 54, both wireless minutes and text messaging volume have risen sharply over the past decade despite competing connectivity applications, such as computer-based instant messaging. Total wireless minutes have grown from 11 billion in 1991 to 2.24 trillion in 2010, although the strong upward trend began to flatten by 2009. Text messaging volume also increased exponentially, from 14 million in 2000 (the earliest year for which data are available) to 173 billion in 2010. The growth rates for these two activities highlight the shift in how users are engaging wireless technology to connect with and share information with one another. Wireless minutes have grown at a CAGR of 32% over the past 19 years as compared to SMS messages (see Exhibit 54), which grew at a CAGR of 156% over the past ten years. SMS volume rose more than four times as quickly as wireless minutes did in its first ten years. This rapid growth of SMS volume could be attributed to technological advancements, such as intercarrier texting, as well as shifting social norms.

While both forms of wireless activity have boomed, Exhibit 55 suggests that mobile phone calls are losing ground to text messaging, particularly in younger demographics. According to a Nielsen survey, the typical teenaged mobile subscriber (age 13-17) in the United States now sends or receives 2,779 text messages per month and uses only 631 voice minutes.74 We expect this trend to continue as the short and simple SMS medium gains popularity among other demographics.


Source: CTIA, Deloitte analysis

The Wireless Activity metric measures the total number of wireless minutes and total number of SMS messages in the United States per year.

This metric is a proxy for connectivity and knowledge flows.
Mean data consumption increased from about 90 MB per month during the first quarter of 2009 to 298 MB per month during the first quarter of 2010.

In recent years, the rapid growth of data consumption has marked another fundamental shift in how individuals communicate and disseminate information via their wireless devices. Mean data consumption increased from about 90 MB per month during the first quarter of 2009 to 298 MB per month during the first quarter of 2010.75 This growth is concentrated amongst the heaviest users; in 2010, the top 10% of data users generated approximately 90% of all traffic. Smartphones, and more recently media tablets, have driven this data-centric usage by making mobile browsing easy for the user.

Meanwhile, the robust application marketplace is fundamentally changing the way customers engage with their mobile devices; in January 2011, Apple announced that more than 10 billion applications had been downloaded from the App Store, ranging from games to travel applications to social media.76 The explosive growth in applications has spurred data consumption and allowed users to participate in knowledge flows in many different ways.

Increased wireless activity both reflects and enhances the frequency and richness of virtual connections. Improvements to wireless technology and mobile internet access have empowered individuals to connect — through email, social media, blogging, etc. — at all times and in all places.

On April 20, 2010, the explosion of Deep Water Horizon caused the largest marine oil spill in history, releasing up to 4.9 million barrels of oil and causing economic and ecological distress in the Gulf Coast region. In the wake of this cataclysmic event, citizens were angry and concerned—they saw oil seeping into their fishing grounds, waterways, marshes, and beaches and wanted to make sure that everyone understood their reality and that someone cleaned it up. Meanwhile government agencies and civic organizations scrambled to deploy resources effectively across a vast and dynamic spill zone. There were hotlines and other outlets to report spill activity, but these methods had two weaknesses: inaccuracy and the high level of effort required for a citizen to file a report. Enter wireless technology and applications.

Using smartphone applications, such as SpillMap, regular citizens could tag a location and submit content-rich incident reports complete with text, photos, and video. This geo-aware and open-source application tapped into the power of crowd sourcing and mobile activity, allowing users to tag incidents in seconds, without logging in or waiting on hold. With over 15,000 posts, SpillMap (and the corresponding Web site, spillmap.org) made real-time conditions publicly available to government agencies, civic organizations, and other interested parties. Not only did the volume of incidents reported on SpillMap exceed the volume of incidents reported on many hotlines, but the geo-specific and image-rich posts often provided greater value, helping volunteer organizations prioritize and deploy resources, and allowing users all over the country to receive updates in real time. The success of Spillmap is just one example of how wireless communication options have transformed not only how we connect with one another but also with the world.
Broader availability of internet access enables “connected-ness” with a growing range of people, resources, and rich content

**Introduction**

Over the past decade, the channels that support connection over the Internet have continued to grow. From email to instant messaging to streaming video to social media—there are ever-increasing ways for people to share information, communicate, and view content. The richness and magnitude of the data transmitted across these channels is constantly expanding as a result of the societal and technological changes that provide the foundation for this activity.

While it is nearly impossible to quantify Internet volume as a whole, the rate of traffic growth on the major intercity routes in the United States provides a reasonable proxy for the country’s Internet traffic patterns. By studying this trend over time, we can see the quantity of data being transmitted via the Internet and attempt to interpret the effects on knowledge flows.

**Observations and Implications**

Internet Activity has grown exponentially in the last 20 years. For the top 20 routes (in terms of capacity), average Internet traffic increased 58% between 2009 and 2010. Some of the most rapid growth was found along the following routes: Chicago-Denver, New York-San Francisco, and Chicago-San Francisco. As shown in Exhibit 56, internet traffic in North America is expected to almost quadruple from 2010, increasing at a 26% CAGR to hit 22,000 petabytes per month by 2015. Underlying this growth are the rapid improvements in computational power, storage, and bandwidth that enable richer and more robust Web content.

Not surprisingly, we found a high correlation between the growth in Internet volume and the growth in the use of connectivity platforms, such as the Internet and wireless devices. The widespread adoption of the technological infrastructure that will drive Internet Activity is evident in...
the penetration levels: 68% for Internet Users and 90% for Wireless Subscriptions as of 2010.\textsuperscript{79}

This trend is expected to continue, bolstered by technological advances that make the Internet more accessible. In the past year, the number of mobile Internet users increased 28%.\textsuperscript{80} No longer confined to desk or home, users armed with cell phones and wireless access are now able to remotely access video, Web content, images, music, and other forms of information in virtually any location. A single laptop can generate as much data volume as 450 basic-feature phones (voice and SMS); a high-end handset, such as an iPhone or Blackberry, creates as much traffic as 30 basic-feature phones. These newer-generation devices offer consumer content and applications which account for much of the richness and volume of mobile internet traffic.

Internet Activity is also being driven by growth in online music exchanges. New business models for the sale and sharing of music online, such as Apple’s iTunes and internet radio operator, Pandora, have enabled strong growth. As shown in Exhibit 57, the amount consumers spend annually on online music grew from $4.7 billion in 2008 to $5.8 billion in 2010, an 11% CAGR.\textsuperscript{81}

The amount of video content being transmitted over the Internet also continues to grow. Recent research indicates that U.S. consumers watch an average of 2.45 hours per week of over-the-top video content over broadband connections (using providers, such as Netflix and Hulu).\textsuperscript{82} According to digital analytics provider comScore, more than 80% of the U.S. Internet audience watched videos online during any given month (84.6% in December 2010).

The number of content providers is also increasing, further spurring Internet activity. These professional sites offer original content to subscribers through news, product information, blogs, reviews, games, and entertainment. With content providers vying for viewers, new players are popping up in the delivery space, where content delivery networks (CDNs) seek more efficient ways to deliver video and other forms of content to end users. Advances in the CDN infrastructure and business model are supporting the increased demand for professional content.

\textsuperscript{79} For further information, please refer to the Internet Users and Wireless Subscriptions metrics.
\textsuperscript{80} ComScore, Deloitte Analysis
\textsuperscript{81} Gartner, Forecast: Online Music, Worldwide (2008 — 2015)
\textsuperscript{82} "Market Trends: Over-The-Top Video, Worldwide, 2011", Gartner
Electronic networks and geographic spikes (concentrations of talent in dense urban areas) reinforce each other, helping to integrate physical and virtual connections. Our analysis of migration to “creative cities” (as identified by Dr. Richard Florida) has shown large disparities between population growth in the 10 most- and the 10 least-creative cities in the United States. What is striking, but perhaps not surprising, is the high correlation between Internet volume and the distinction of being a creative city. Some 90% of the cities having the highest Internet volume were also creative cities, indicating the remarkable role of geography in the growth of information sharing and Internet volume.

Online communities are also flourishing. Social media dominates this category and social networking leaders continue to gain new members. In 2010, 22% of total time spent online globally was associated with social media and

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**e-Patient Dave and the Participatory Medicine Movement**

In January 2007, during a routine shoulder x-ray, Dave deBronkart discovered that he had Stage IV kidney cancer. With a grim prognosis for survival, Dave turned to the Internet for information and support to supplement his treatment at Beth Israel Medical Center in Boston.

Dave embarked on a variety of efforts, including participating in an expert online patient community through the Association of Cancer Online Resources (ACOR), starting an online journal and support community on the social networking site, Caring Bridge, and sharing his hospital medical records with medically knowledgeable friends and family. “It goes without saying that there’s immense value to discovering that you’re not alone. Immense value,” says Dave. “In my case, I was already at the best place in the world for my disease, and they were already planning to give me the treatment that the ACOR members recommended. However, what my doctors couldn’t give me was information on how to deal with the treatment, which is very difficult. ... There is no Web site, FDA-approved or anything, that will tell you that. But the people who have been down that road all know what they encountered, and they shared that with me.” Complementing his treatment regime with a wealth of online resources and support, Dave was deemed cancer-free in 2009. Today, Dave is a spokesperson for the participatory medicine movement, which advocates for the active role of patients as responsible drivers of their health.

Dave’s journey illustrates how widespread growth in Internet activity is changing multiple facets of health care. The proliferation of expert-run doctor and patient communities (e.g., WebMD and ACOR) reflects the tremendous demand for information for medical diagnosis, treatment options, and support. There is also growing Internet activity around research, marketing, and treatment. For example, the Mayo Clinic recently used Twitter to solicit feedback on its research into celiac disease. In marketing, Palomar Pomerado Health in California has partnered with Cisco and virtual world operator, Second Life, to give prospective patients virtual tours of its newest health care facility. In treatment, the emergence of fields like e-therapy (online provision of mental health services) demonstrates how greater accessibility and richness of content is allowing the Internet to become a channel for the delivery of medical services.

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83 For further information, please refer to the Migration of People to Creative Cities metric.
84 http://www.inspire.com/ijdr2/journal/the-inspire-q-and-a-inspire-talks-with-e-patient-dave-de-bronkart/For further information, please refer to the Migration of People to Creative Cities metric.
social networks had reached 72% of all active users in the United States. Facebook, Twitter, and LinkedIn claimed 500-, 100-, and 60-million users, respectively, and social network advertising exceeded $1.5 billion in 2010. This explosive growth has continued into 2011. These platforms offer new ways for businesses to participate in, and create, social networks on the Internet. Emerging practices, such as open source software, that leverage the Internet through networks, communities, and other connectivity platforms hold great promise for companies.

With the growth in Internet Activity, filtering the signal from the noise becomes even more difficult. Society’s information overload should only increase, for better and for worse, as more and more data is exchanged virtually. The capability to filter and amass the right information at the right time for the right purposes will be one of the great challenges in the Big Shift—both for individuals and institutions.

Some 90% of the cities having the highest Internet volume were also creative cities, indicating the remarkable role of geography in the growth of information sharing and Internet volume.

85 Nielsen, http://blog.nielsen.com/nielsenwire/online_mobile/socialmedia-accounts-for-22-percent-of-time-online
87 TechCrunch, http://techcrunch.com/2010/04/14/twitter-has-105779710-registered-users-adding-300k-a-day/
Migration of People to Creative Cities

Increasing migration suggests virtual connection is not enough — people continue to seek rich and serendipitous face-to-face encounters as well.

Introduction

When it comes to creating flows of new, tacit knowledge, face-to-face interactions are by far the most valuable. Yet these interactions and the knowledge flows they can generate are difficult to measure directly and we must turn instead to proxies.

One of these is the growth in population, as provided by the U.S. Census Bureau, within the “creative cities” defined by Richard Florida.90 As a greater number of creative individuals (including professions, such as computer engineers, health care professionals, and architects)91 gather in one place, one can reasonably assume that they will likely have a greater number of face-to-face interactions with each other — and more new knowledge will likely be created.

Cities that attract creative talent are rich spawning grounds for knowledge flows, especially across firms. As people congregate in these creative epicenters, they are more likely to make serendipitous connections with people from outside their own firm. As creative talent congregates, innovation and economic growth can be expected to ensue.

In designating cities as “creative,” Richard Florida assigns each U.S. region92 a score based on the region’s technology, talent, and tolerance. Cities with a high creative index score have high concentrations of creative class workers (talent), high concentrations of high-tech companies, and innovative activity (technology) and are demographically diverse (tolerance). We extend Florida’s work by tracking migration patterns across “creative cities” and the rate at which the population gap between the 10-most and 10-least creative cities (cities are identified in Exhibit 58) widens.93

We see this metric as a proxy for the level of tacit knowledge, geographic spikiness, and mobility to areas most likely to have rich knowledge flows. As the migration of

Exhibit 58: Top 10 Creative Cities and Bottom 10 Creative Cities (2004)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Creative Cities / Regions</th>
<th>Creativity Index</th>
<th>Overall (all regions rank)</th>
<th>Technology Rank</th>
<th>Talent Rank</th>
<th>Tolerance Rank</th>
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<td>0.963</td>
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<td>9</td>
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</table>

Source: Richard Florida, “The Rise of the Creative Class”

91 Ibid.
93 The list of creative cities was pulled from Florida’s The Rise of the Creative Class.
people to creative cities relative to other cities maintains an upward trend, society can be perceived to be more “spiky” and more likely to engage in tacit knowledge creation and exchange—at least in creative areas of the country.

**Observations and Implications**

Increasing returns appear to be at work here—cities that have higher concentrations of creative talent are growing faster than those with lower concentrations. Consider the population growth of the top 10 creative cities (with population greater than one million) against the bottom 10. The top 10 cities show an upward trend in population growth (see Exhibit 59) and an increasing gap relative to the bottom 10.94

On average, the population growth of the top 10 creative cities has outpaced growth in the bottom 10 since 1990. By 2009, the growth gap between the two comparative sets

Exhibit 59: Migration to Creative Cities growth and gap (1990-2009)

Exhibit 60: Correlation between Migration of People to Creative Cities and Economic Freedom (1993-2009)

Source: US Census Bureau, Richard Florida’s “The Rise of the Creative Class”, Deloitte analysis
had increased to an absolute 25% (from 14% in 2000). In other words, the growth of the top 10 creative cities has been more sustained than that of the bottom 10. Between 1990 and 2009, the top 10 cities grew by 45%, whereas the bottom 10 grew by only 20%. The absolute number of people is also telling: 38 million people live in the top creative cities, approximately 12% of the U.S. population, as compared with the 15 million, 5% of the U.S. population living in the bottom 10 creative cities.

Although Big Shift forces are significantly driven by technological advances, not all of the connections are virtual. While the internet helps to connect people in virtual groups, increases in economic freedom make it easier for people from around the world to travel and gather in geographic “spikes.” These spikes represent concentrations of talent in dense geographic settlements, like Silicon Valley and Boston (see Exhibit 60). The share of the world’s population living in urban areas has grown from 30% in 1950 to about 50% today. As we have seen, much of this growth is into the cities and regions that drive the world’s economy, causing them to grow much more rapidly than less creative cities. At a time when the world is increasingly flat, the world is also paradoxically becoming increasingly spiky.95 These spikes are becoming more important as individuals

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In the developed world, technological advances that save and improve lives are evident everywhere: Hereditary propensities can be uncovered with a personal genome mapping, artificial heart transplants are viable, major surgeries can be performed noninvasively. But in the developing world, perils like indoor air pollution, which takes the lives of an estimated 2 million people each year, have gone largely unaddressed. That is the challenge that Nathan Lorenz and Tim Bauer set out to solve in 2003 when they founded EnviroFit, which develops clean-burning cookstoves and other technologies that are intended to reduce pollution and promote energy efficiency.

Lorenz and Bauer, who were named “Heroes of the Environment” in 2009 by Time Magazine, met as students in Colorado State University’s Engines and Energy Conservation Laboratory during the SAE Clean Snowmobile Challenge, a contest to create an energy-efficient snowmobile. EnviroFit, which is based in Fort Collins, Colorado, is one of many new companies and incubators, made possible by the rich ecosystem of clean energy talent and resources.

The non-profit Colorado Clean Energy Cluster was founded in 2006 to bring together academics, corporate innovators, and the public sector in order to develop Northern Colorado into an internationally recognized center for clean energy initiatives and projects. From 2006 to 2009, employment in clean energy companies in the Cluster grew 31% despite a 9% contraction nationally.96

As companies are drawn by the physical proximity that allows for joint R&D efforts and resources, so is the creative talent. People are increasingly moving to creative cities where they can engage in the rich face-to-face interactions. EnviroFit and the other companies of the region will continue to draw people to the clean energy spike city of Fort Collins.

and companies face more pressure to develop talent. Spikes are seen to offer more opportunities for talent development. The flip side is that individuals seek out spikes out of fear, driven to congregate, or risk being marginalized.

The spike phenomenon is expected to become stronger as connectivity improves. Connectivity enables specialization within a spike and coordination of activities across spikes. For example, Silicon Valley was able to specialize in technology innovation and commercialization, while moving manufacturing activities to other spikes. At the same time, China has developed a series of spikes specializing in manufacturing for technology companies. Serendipity within spikes is enhanced by wireless technology that more effectively integrates physical and virtual presence.

Our analysis found a high correlation between the growth of creative cities and the growth of GDP, suggesting that as the population found in creative cities grows, there may be a significant positive impact on economic value creation (see Exhibit 61).

The population flow to creative cities also correlates strongly with the Returns to Talent metric in the Impact Index. This suggests that the types of talent that make up the workforce in creative cities are valued higher and higher as they become more concentrated in these creative epicenters (see Exhibit 62) and interact more and more within and across spikes.

As labor freedom and economic freedom increase, people appear to have a propensity to migrate to creative cities, leading to higher concentrations of talent. These epicenters of creative talent likely contributed to the recent growth in GDP and played a role in productivity increases.

There is a simple but powerful reason that, in the past two decades, talented people have moved to creative cities at an increasingly higher rate. They are migrating because they likely believe they can learn faster and better there.97 And with interfirm knowledge flows98 becoming increasingly vital to economic value creation, talented workers are going where these flows are most likely to occur.

The same self-reinforcing dynamic may hold true for talented workers who “migrate” to companies that have high concentrations of creative talent. Like cities, companies that do not attract top talent now will find it ever harder to do so in the future. Innovation today requires extensive pooling of knowledge and other resources and is accelerated by tacit knowledge gained through face-to-face interactions. Despite the tremendous increase in virtual flows, companies still need physical proximity to the talent and resources that are required for extreme growth. By better understanding the disproportionate growth in creative cities, business leaders can mimic the practices that attract talent in their own organizations. Practices, such as recognizing and tapping into creative talent, making the best use of technology and striving for innovation and diversity have helped cities become creative epicenters and can be applied at the institutional level. Similar approaches — such as pull platforms and mass career customization practices99 — will help companies adapt to the exigencies of the Big Shift.100

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97 We acknowledge that this is not the only factor to creative city growth — creative cities also tend to be pleasant places, and creative people may just like hanging out with other “creative people” or may be seeking a different way of life.
98 For further information, please refer to the Inter-Firm Knowledge Flows metric.
Travel Volume

Travel Volume continues to rise as virtual connectivity supplements, but does not replace in person interactions

Introduction

Steady advances in technology and physical infrastructure during the last 20 years have increased both the reach and accessibility of travel.101 U.S. residents are travelling more and more each year, despite temporary declines related to the recent financial downturn. Not all interactions are equal. Some are more likely to result in the creation of new knowledge rather than in simple knowledge transfer. Face-to-face interactions, in particular, tend to drive the most valuable knowledge flows. As the movement of people increases, so do the opportunities for rich and serendipitous connections between them, connections that are vital for knowledge flows to take place.

While we cannot measure these flows directly, metrics, such as Travel Volume, as measured by the passenger Transportation Services Index (TSI), provide suggestive proxies. Changes in Travel Volume over time can help to illuminate the relationship between transportation and other long-term changes in the economy. In fact, in 2004, the U.S. Transportation Secretary Norman Mineta announced the TSI as a new economic indicator, using changes in passenger activity as a measure of macroeconomic performance.102 While movements in the TSI reflect economic and political pressures, we are mostly interested in the longer-term trends in Travel Volume and what these trends may indicate about knowledge flows.

Observations and Implications

Travel Volume has shown a strong upward trend since 1990 (the year TSI was introduced). Exhibit 63 shows passenger travel volume indexed off of the year 2000 (index value of 100); over the past two decades, Travel Volume has increased 57%, from a value of 71 in 1990 to 111 in 2010.

Although TSI growth has trended strongly upward, notable troughs have occurred:103

- In 2001, 9/11 and reverberations of the dot-com crash caused the TSI to drop over 23% in one month. It did not rebound to pre-9/11 levels until June 2004, nearly three years later.
- In 2003, overproduction, billions of dollars invested in expansion, and too much debt contributed to lagging airline financial health and a reduced number of flights, causing a decrease in revenue passenger miles.
- The downturn in the economy in 2009 led to reduction in both personal and professional travel. Travel Volume has already begun to increase to its previous trajectory as the economy recovers.

Exhibit 63: Transportation Services Index-Passenger (1990-2010)


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Increases in Travel Volume have been shown to be correlated with growth in GDP. While there is likely no causality between the two, people’s movement on land and in air is strongly interrelated with economic expansions and contractions. Secretary Norman Mineta noted, “A transportation system that keeps the business of America moving is vital to the strength of our Nation’s economy” and, we argue, equally fundamental to Big Shift forces.

Indeed, there appears to be a strong positive correlation between travel activity and broader labor productivity. One plausible explanation is that people benefit from face-to-face physical interactions facilitated by travel and as a result are able to be more productive in their jobs.

Somewhat paradoxically, the growth in digital technology infrastructure is actually positively related to growth in travel. While we might have predicted an inverse relationship, physical travel should decrease as the ability to connect virtually increases, travel volume is, in fact, positively correlated with Internet users, Wireless Subscriptions, wireless minutes, SMS volume and Internet volume. It is plausible that the frequency and ubiquity of virtual communication actually increases the propensity to travel by creating more reasons to connect with people physically. In this regard, the virtual world actually scales the number of face-to-face interactions that one can engage in, an example of one type of knowledge flow leading to another.

Travel will likely remain the primary mode for increasing face-to-face interactions. Business leaders should consider the trade-offs when cutting back on travel during economic downturns or thinking of technology as a substitute rather than as a complement. Travel is not only an indicator of macroeconomic factors at work, but also remains deeply intertwined with the evolving digital infrastructure.

105 Correlation analysis detailed in the Shift Index Methodology section.
Cross-border capital flows provide an efficient way to access pockets of global talent and innovation

Introduction
The flow of capital across geographic and institutional boundaries is an important, albeit indirect, indicator of the forces of long-term change. These capital flows can be understood as a form of arbitrage in which knowledge moves, via conduits created by investment, from one country—and company—to another.

Companies in emerging economies, for example, take stakes in (or buy outright) companies in developed countries in order to access knowledge and expertise among other reasons (e.g., brand equity). Companies from developed countries, on the other hand, have traditionally invested in emerging market companies to acquire local knowledge, such as the most efficient distribution channels in local markets. Thus, capital flows enable some of the knowledge flows that drive economic value creation.

Although FDI measures both flows of capital (e.g., equity investments and intracompany loans) and stocks of capital (e.g., reinvested capital and retained earnings), the Shift Index considers only capital flows. The total flow represents the movement of capital between countries triggered by both public policy liberalization and competitive pressures that force companies to seek efficiency and innovation outside of their home country.

Observations and Implications
Between 1970 and 1999, U.S. FDI flows steadily increased, tracking GDP (see Exhibit 64). From 2001 to 2003, FDI flows decreased as a result of the economic downturn and the aftermath of the 9/11 terrorist attacks; investors faced greater uncertainty and U.S. policymakers began viewing foreign investments as a risk to national security.

In 2004, the United States regained its status as the world’s principal destination for direct investments, a position it held for most of the last two decades (see Exhibit 64). As a provider of FDI, the United States also showed a sharp increase, although in 2005 U.S. parent companies acted to take advantage of a one-time tax provision, resulting in a drop in FDI.106

The upward trend that began in 2004 peaked in 2007, with the financial crisis of 2008 ending FDI growth. According to the United Nations Conference on Trade and Development (UNCTAD), flows to the United States, the largest host country in the world, declined by 60%

Exhibit 64: Foreign direct investment flows (1970-2010)

Source: UNCTAD, Deloitte analysis

Exhibit 65: Movement of Capital (1970-2010)

Source: UNCTAD, Deloitte analysis


Source: UNCTAD, Deloitte analysis
New Jungles to Explore: Tata Buys Jaguar and Land Rover

A few years ago, Indian car company Tata was most recognized in the United States for its heavy trucks and introducing the world’s cheapest car. But despite this reputation, Tata had ambitions of expanding into a global luxury brand. And to do this, it needed to enter the extremely competitive U.S. market, which already supported a legion of domestic and imported brands. Undeterred, Tata purchased the luxury car brands Jaguar and Land Rover from Ford Motor Company in 2008.

Tata Motors’ Vice-Chairman Ravi Kant had previously stated, “The only way that I can enter the U.S. market is through mergers and acquisitions. So if I get an opportunity, then I will look at it very actively.” The decision to acquire Jaguar and Land Rover was a strategic move to expand Tata’s product portfolio and geographic presence, making Tata a global player in the automotive industry. It was easier for Tata Motors to buy Jaguar and Land Rover for their new technology, advanced market distribution channels and brand equity than for Tata to develop them on its own.

Caught in the slumping global automotive industry, Tata initially sustained huge losses. However, by reducing costs, improving efficiencies and managing cash flow, Tata Motors turned around the ailing companies. As the market began to rebound in 2009, so did the fortunes of Jaguar and Land Rover. In a remarkable recovery, Jaguar and Land Rover posted a $1.7 billion net profit in 2010, a huge win for Tata and its international portfolio.

Economists argue that relative rates of growth between economies are indicative of relative rates of returns and corporate profitability; thus, growth rates are a key factor in the direction and magnitude of capital flows. Public policy, including relative tax rates, interest rates, inflation, and any protectionist policies (e.g., business visas), have a direct impact on FDI levels. Investors’ expectations about the performance of national economies also drive investment trends. All these factors can be quite volatile, thus the volatility of investment trends (see Exhibit 65).

Looking past this cyclical FDI volatility, the long-term trajectory of FDI levels shows a strong upward trend over time.

As U.S. FDI continues to grow, the question is for what purpose? Historically, FDI was a way to improve efficiency, to take advantage of opportunities for resource and labor arbitrage, and to access local markets which often favor local manufacturers. Although most U.S. companies still use foreign affiliates to achieve short-term efficiency improvements, firms are increasingly taking a longer-term approach, using FDI to identify and develop centers of innovation across the globe. Innovation, whether in product or process or management practice, is no longer confined to developed economies.

The level of R&D being performed for U.S. multinationals by overseas affiliates has been relatively flat, however, the regional distribution of that R&D is changing (see Exhibit 67 and 68). In 1994, an overwhelming 73% of foreign affiliate R&D was performed in Europe. By 2006, Europe’s share decreased to 65%. At the same time, the share being performed by the Asia-Pacific region increased from 5 to 13% and that of the Middle East increased from 1 to 3%. By placing their R&D centers in emerging markets, U.S. firms are able to tap into diverse pockets of talent.

Today, developing countries in the Asia-Pacific region are growing at a faster rate than developed countries in North America and Europe and are emerging sources of management talent and innovation. For example, both the Chinese motorcycle industry in Chongqing and the Hong Kong-based apparel company Li & Fung have demonstrated the process and management practices referred to as “process networks.” Process networks use a loosely coupled, modular approach to organizing the activities in extended business processes that speeds time-to-market, cuts costs, and enhances product quality. Li &
Li & Fung deploys a network of 515,000 specialized business partners to create a customized supply chain for each new item of apparel. The ability to build scalable networks of diverse partners forms the core of this management innovation, enabling Li & Fung to participate in rich knowledge flows that drive performance improvement. With this network, Li & Fung built a company of $16 billion in revenue while enjoying double digit revenue growth and high profitability.

While developing countries offer many reasons to invest, U.S. companies cannot afford to overlook the bigger opportunity to learn new institutional architectures, governance structures, and operational practices from foreign affiliates and partners in the developing world. Managing and scaling a flexible network of diverse partners without running into overhead complexity is just one example. At the same time, as emerging markets rebound from the global recession more quickly than the United States and Europe, powerful emerging market companies are increasingly acquiring companies in developed economies. This trend of reverse FDI offers a conduit for emerging market companies to access western expertise and expand globally.

Innovation, whether in product or process or management practice, is no longer confined to developed economies.

Today, developing countries in the Asia-Pacific region are growing at a faster rate than developed countries in North America and Europe, and are emerging sources of management talent and innovation.
Passionate workers are more likely to participate in knowledge flows and generate value for companies

What exactly is worker passion? Passion is not commonly associated with work—HR departments often try to measure “employee satisfaction,” which is an entirely different thing. Passion is when a person discovers work that they love and when that work becomes more than just a mode of income. A passionate worker is fully engaged in his or her work and interactions and constantly strives to get to new levels of performance. Satisfaction, meanwhile, describes how content an individual is with a job. A satisfied worker can be content with a job, perhaps because it fulfills a worker’s income, location and scheduling needs, and yet have no passion for the work.

From an employer’s perspective, a passionate worker is talented and motivated and has a sense of unfulfilled potential. Passionate workers may tend to be frustrated, however, if they feel blocked in their efforts to achieve that potential for themselves and their companies.

A generation ago, most workers followed a similar career path: work for a single employer and rarely deviate from a field of expertise, secure in the notion they would collect a good pension after decades of loyalty. Work was less a pursuit of passion than a means to put food on the table and a roof overhead. A worker hoped to earn enough money to pursue their real passions after work or after retiring.

Unlike prior generations that often enjoyed considerable job stability, today’s workers no longer compete only with workers in local labor markets, but, thanks to falling interactions costs, with workers across the globe. As a Silicon Valley billboard put it, “1,000,000 people overseas can do your job. What makes you so special?”

Why does passion matter? Because staying competitive in the newly globalized labor market requires all of us to constantly renew and update our professional skills and capabilities. The effort required to increase our rate of professional development is difficult to muster unless we are passionately engaged with our professional activities.

We must also consider differing generational viewpoints and aspirations regarding the meaning of work. The Intuit Small Business Report (2008) notes rapid changes in the demographics of small business ownership and postulates that, “entrepreneurs will no longer come predominantly from the middle of the age spectrum, but instead from the edges. People nearing retirement and their children just entering the job market will become the most entrepreneurial generations ever.” Different motivations will lead to similar paths; the broad spectrum of entrepreneurs who will be pursuing their passions as professions will drive a fundamental change in the way we view work.

Observations and Implications

In our survey-based study, respondents were categorized as “disengaged,” “passive,” “engaged,” or “passionate” based on their answers to a series of questions. The survey also measured job satisfaction, job search behavior, and inter-firm knowledge flows. The overall worker passion score has hovered between 20 and 23% over the last three years (see Exhibit 69), indicating that the percentage of “passionate” employees in the workforce has not changed significantly. Over the same period, the percentage of “engaged” workers edged up, offsetting a decline in “disengaged” workers. While companies have not yet managed to ignite worker passion more broadly, they are at least reducing the number of employees who would most negatively impact employee culture. The level of “passive” workers has stayed constant at 31%.

We continue to focus on passionate employees—we believe this passionate segment will be best able to increase their rate of learning to keep pace with the rapid technological evolution driving today’s Big Shift.

116 For information regarding survey scope and description, please refer to the Shift Index Methodology section.
Exhibit 69: Worker Passion (2011-2009)

Exhibit 70: Worker Passion Index by Current work-life situation (2011)
Workers self-reported sense of being able to pursue their passions within their professions correlates with their behavior- and attitude-based worker passion score (see Exhibit 70). The majority of passionate workers report having found a way to connect their passion to their profession, while the remaining “passionate” workers pursue their passion outside of work through hobbies or other endeavors. “Engaged” workers demonstrated similar behavior, though significantly fewer of them found their passion through their profession. Workers classified as “passive” or “disengaged”, by contrast, either are pursuing their passions through personal hobbies or are entirely unaware of their passions.

Self-employed workers tend to be more passionate about their work. In the 2011 survey, the difference between self-employed and company-employed workers is pronounced (see Exhibit 71): 45% of self-employed workers are “passionate” (compared to 19% of company-employed workers), while only 9% of self-employed workers are “disengaged” (compared to 26% of company-employed workers). This is not surprising given the overlap between the motivations for self-employment and the drivers of passion: autonomy, meaningfulness of work and more intimate interactions in all business transactions.

When asked about whether workers had “little control over the amount that they worked,” passionate workers were twice as likely to state they very strongly disagreed or strongly disagreed with this statement, as compared to disengaged workers. These results also indicate that passionate employees feel the most sense of control about their contributions to the workplace.

To a lesser extent than for the self-employed, workers at smaller firms tend to be more passionate than workers at larger firms. The relationship between the size of the company and worker passion highlights two factors that seem to drive passion for work: autonomy and opportunities for growth. Both are provided by a less constrained work environment which is often characteristic of either self-employed or smaller company work environments. In addition, smaller companies offer more opportunities for cross-functional interactions, which encourage tacit knowledge sharing, and have fewer organizational boundaries, which inhibit knowledge sharing and innovation in thinking and work practices.

Still, large firms run the risk of driving people out of the organization if they are unable to create environments that foster knowledge sharing across the organization. However, it is unreasonable to suggest that worker passion does not exist entirely in larger enterprises, as indicated by the survey.
Exhibit 72: Worker Passion by size of firm (2011)

Source: Synovate, Deloitte analysis

Exhibit 73: Inter-Firm knowledge flow participation and passion (2011)

Source: Synovate, Deloitte analysis

2010, 2011 Deloitte Worker Passion/Inter-Firm Knowledge Flow Survey; Administered by Synovate
Chris Anderson and DIY Drones

When Wired Magazine Editor-in-Chief Chris Anderson had to find a president for his fledgling unmanned aerial vehicle business, commonly referred to as UAVs or Drones, it was not a litany of Stanford degrees, but an online video of a helicopter operated by a Wii controller that moved Jordi Muñoz’s resume to the top of the stack. Relatively untrained (Muñoz attended one year of University in Mexico before moving to San Diego with his wife), and completely untested in the world of business, it was Muñoz’s passion for Drones and prominence in amateur Drone communities that won him the job.

In 2009, Anderson and Muñoz co-founded 3D Robotics – a robot manufacturing company with factories in San Diego, California and Bangkok, Thailand. In short order, the firm had grown to 11 staffers, and in March 2011, revenues hit over one hundred and sixty thousand dollars, up from a modest five thousand their first month. Still a small player in the space, 3D Robotics is generating buzz among large clients. 3D Robotics is able to innovate so quickly in large part because of its rich participation in knowledge flows, including a 15,000-member community of enthusiasts at DIY Drones centered on the open source coding to operate UAVs.

Though Muñoz did not have the traditional credentials to lead such a fast-growing venture, his passion for the work and access to rich flows of information made him the strongest candidate. This passion has carried over into his tenure at 3D Robotics. He and Anderson share a vision of a world where drones are household entities: “Our approach,” he said in one interview, “is the personal computer.” To achieve this, Muñoz has retained the questing and connecting dispositions that helped cultivate his boyhood fascination into a deep expertise.

The partnership between Anderson and Muñoz continues, as does their rich participation in inter-firm knowledge flows. For more, see Muñoz’s blog at http://diydrones.com, the largest amateur Unmanned Aerial Vehicle community on the web.

Given this trend, larger organizations at a minimum should be mindful to avoid creating information silos and look for ways to foster cross-functional knowledge sharing. Leaders in larger firms should consider looking for ways to enable passionate workers to operate with greater autonomy and should make readily available opportunities for continued learning, including social software, published works, and both intra-firm and inter-firm knowledge flows – to enable passionate workers to continue to fuel their passion.

The way some of our “passionate” respondents describe their work environments illustrates these ideas. As one middle manager in the Media & Entertainment industry described it, his work provides him the “freedom to express creativity and the power to present ideas without feeling repressed.” An executive in the Life Sciences industry finds passion in his work from “utilizing my skills to the most. Enjoying the challenges and rewards that come with it.” Because passionate workers are more engaged in their work and eager to learn and to improve their job performance, worker passion is correlated to participation in inter-firm knowledge flows (see Exhibit 74). Inter-firm knowledge flows allow motivated employees to connect with, and learn from, other motivated and talented workers, reinforcing their sense of meaning and connectedness and providing the means for self-improvement and growth.

Driven by the twin forces of the technology infrastructure and more liberalized public policies, companies can increasingly create value through participating in “flows” of knowledge rather than from accumulating and exploiting “stocks” of knowledge. Already, the lion’s share of profits at big companies in the developed world is the result of talented workers monetizing intangible assets. Since passionate workers have a greater propensity to participate in knowledge flows, it makes sense for companies to find ways to increase the level of passion workers find in, and bring to, their jobs.

A talent development value proposition is an increasingly important for companies vying to recruit and retain top talent. Talented workers will be attracted to organizations that provide an environment where workers’ learning and
outlook will be enhanced through ongoing development and easy access to knowledge flows.

One important caveat: attracting talent and tapping employee passion is not limited to knowledge workers as we conceptualize them today. Peter Drucker initially defined a “knowledge worker” as “one who works primarily with information or one who develops and uses knowledge in the workplace.” However, employees at all levels and in all roles will increasingly participate in knowledge flows to perform their work, essentially making every worker a knowledge worker. This transformation in the workplace calls for new approaches to managing and retaining talent (further described in the Returns to Talent metric).

The competitive environment has strengthened the need for firms to create and retain passionate employees. These workers are proactive, seek continual performance improvement, inspire innovation and possess both a “questing” disposition, which drives them to seek out new sources of knowledge, and a “connecting” disposition. This connecting disposition then drives them to build relationships within the organization and outside of its walls to tap into the latest thinking and insights.

When asked about whom they identify with most, the passionate employee was most likely to respond as someone who seeks out challenges to improve performance, even in the presence of significant risks (45%). These responses indicate a willingness by the passionate employee, that they are inspired (seeing an opportunity to learn something new) or energized (seeing an opportunity for problem solving) rather than being indifferent or exhibiting negative behaviors. The disengaged employee, by contrast, was significantly less likely to react in this way, which is indicative of a much more reactive approach. The passionate employee’s questing disposition also drives higher performance as passionate workers do not shy from challenges and actively pursue opportunities to blend new ideas from across companies, industries and disciplines into their current work.

As the rate of change in the business environment increases, the passionate worker is most apt to adjust and thrive, and will foster those behaviors within their companies. They view challenges as exciting opportunities to drive themselves to a new level of performance. Employees who are not passionate tend to experience unexpected challenges as a source of stress and are increasingly likely to burnout and become a drain on the organizational vitality.

Exhibit 74: Passion and worker self-identification (2011)
Social media activity creates scalable ways to connect and tap into knowledge flows

**Introduction**

Hundreds of millions of people around the world are online and a significant portion of them are engaged in trying to enrich both personal and business relationships. As more and more people use the Internet, the ability for individuals to easily find and communicate with others around common interests, regardless of geography, continues to reshape and transform the way knowledge flows. Social media sites, the virtual communities within Internet Web sites, organize these interests and enable participants to connect and exchange information using a variety of tools: email, voice, chat, instant messages, videoconference, blogs, etc. Because it supports and organizes information sharing and rich interaction, social media is an important amplifier of knowledge flows and thus an essential metric in the Shift Index.

Society has embraced social media as a means of expression and a creative outlet, while technological advancements have allowed social media platforms to serve as catalysts for open innovation. The use of social media will continue to be driven by societal as well as technological changes. The increasing amount of time spent on social media as a percentage of time spent on the Internet reflects how the World Wide Web is evolving into a network of people as much as a network of information. This network is changing how people connect and interact with one another, blurring the lines between personal and professional, and forcing business leaders to rethink how best to engage employees and consumers.

**Observations and Implications**

Consumption of social media has exploded in the past few years. The average number of daily visitors on social networking sites doubled from 46M per month in 2007 to nearly 90M per month in 2011. Similarly, the total minutes spent by U.S. users on social networking sites grew 236%, from 25B in 2007 to 59B in 2011.

The growth in social media activity is the direct result of both the technological changes (discussed elsewhere in this report) that have made the Internet more widely accessible and changing social behaviors. Every month, more than 250 million people engage with Facebook on external Web sites and more than 2.5 million Web sites integrate with Facebook. Mobility has also had a huge impact, giving individuals the ability to check in anywhere, anytime, on social media. More broadly, social media platforms have spurred new technologies, including blogs, picture sharing, vlogs, wall postings, email, instant messaging,

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**Exhibit 75: Percentage of Internet time spent on Social Media (2007-2010)**

![Exhibit 75: Percentage of Internet time spent on Social Media (2007-2010)](image)

Source: comScore, Deloitte analysis

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118 comScore and Deloitte analysis
120 comScore and Deloitte analysis
musicsharing, crowd sourcing, and VOIP, to name a few. These technologies amplify knowledge flows by making them richer and more personalized.

A recent study by iStrategylabs indicates growth in users across all age groups. Between 2010 and 2011, the 18-24 age group showed the highest growth on social networking site, Facebook, with a 74% increase. Surprisingly, the second highest growth came from the 55+ age group, with a 59% increase in users. A separate study of penetration rates across age groups indicates that while the younger generation (below 24 years of age) built critical mass on social networking sites first, continued growth is now coming from the older age groups.

The online individual is no longer a passive bystander. A report published by Forrester Research in 2010 used a ladder to illustrate the concept of Social Technographics® (benchmarking consumers by their level of participation in social computing)— the higher the rung, the more involved the participation (see Exhibit 76). According to Forrester, U.S. consumers people are playing an increasingly active role in their social media experience as creators — writing blogs, making Web pages and updating content — as indicated by increases from 2007 to 2010 in all “rungs” except for “inactives” (those who do not participate in social media at all). The number of “inactives” decreased from 44% in 2007 to 19% in 2010 (see Exhibit 77) and we expect this trend to continue.

As social media becomes more pervasive, companies are making social media an integral part of their relationship with consumers, employees, and other stakeholders. Forrester estimated that $716M was spent in social media...
In 2009, CareOne already knew that its online community of 1.4 million people was a valuable source of information. The debt relief company wanted to explore social media channels to further develop its relationships with these customers. “Our primary goal with social media was customer retention,” said team leader Nichole Kelly. But the team soon realized that many of the online community members were prospective customers who needed help rather than existing customers and a larger opportunity was at hand. The team retooled its social media plan to reach out to these potential customers.

Kelly discovered that the personal connection generated through social media contact had a tremendous impact on the company’s core metrics. Although the social media prospects had a longer buying cycle (24-28 days versus as low as 30 minutes), there was an incredible jump in successful conversions through the sign-up process and ultimately the point of purchase. The volume of leads generated was 179% higher, and social media customers were 217% more likely to make their first payment. For one particular problem area (people who partially fill out the sign-up form then quit), social media prospects went back and completed the form 680% more often than non-social media leads. The social media prospects also made their first payment at an astonishing 732% better rate.

As the lines between networks blur and internal and external audiences interact together on social media, employees need some guidance and governance on how to appropriately participate in knowledge flows. Companies must at least prescribe appropriate protocols for sharing information. However, the true value of social media for companies lies in their ability to use social media to find new ways to interact with consumers. Collaboration marketing, for example, focuses on developing a company’s ability to attract (create incentives for people to seek you out), assist (be as helpful and engaging as possible), and affiliate (mobilize and leverage third parties).

Core Metrics Creating New Value

In 2009, CareOne already knew that its online community of 1.4 million people was a valuable source of information. The debt relief company wanted to explore social media channels to further develop its relationships with these customers. “Our primary goal with social media was customer retention,” said team leader Nichole Kelly. But the team soon realized that many of the online community members were prospective customers who needed help rather than existing customers and a larger opportunity was at hand. The team retooled its social media plan to reach out to these potential customers.

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2011 Impact Index

Markets
111 Competitive Intensity
114 Labor Productivity
117 Stock Price Volatility

Firms
120 Asset Profitability
124 ROA Performance Gap
128 Firm Topple Rate
131 Shareholder Value Gap

People
134 Consumer Power
138 Brand Disloyalty
142 Returns to Talent
145 Executive Turnover
Foundations and knowledge flows are fundamentally reshaping the economic playing field.

Trends set in motion decades ago are fundamentally altering the global landscape as a new digital infrastructure, built on the sustained exponential pace of performance improvements in computing, storage, and bandwidth, progressively transforms the business environment. The Foundation Index and the Flow Index are meant to capture this dynamic, while the Impact Index shows how and why it all matters. The Impact Index is a lagging indicator of how foundational shifts and new flows of knowledge are tangibly changing the way companies and consumers operate.

By our calculations, ROA for public companies has decreased to one-quarter of its level in 1965. While this deterioration in ROA has been particularly affected by trends in the financial sector, significant declines in ROA have occurred in the rest of the economy as well. Also, when you look at the best companies — the top 25% of earners — even they have barely held their ground. Clearly, there is a fundamental disconnect between the mindset and practices of companies and the environment in which they compete. Here’s why:

- Aided by technology, interaction costs are plummeting, and public policy has enabled freer movement by eroding the barriers that once protected incumbents. At the same time, the economy itself has “gone digital” and is increasingly service based, meaning that companies need fewer assets to effectively compete. These shifts have led to rapidly intensifying competition, which has more than doubled since 1965.
- As mentioned briefly above, this competition has taken an extreme and consistent toll on profits. By comparing net income and assets, we see that economy-wide profitability is significantly lower in 2010 than what it was in 1965.
- In addition, economic and shareholder returns are increasingly polarized. During the past 40 years, the top firms (those in the top quartile of performers) have barely held their ground, only marginally increasing their profitability and shareholder returns. The worst performers, however, have seen their percentage losses for both more than double. Today, the costs of falling behind are at their highest point in decades and the purely defensive nature of scale-based corporate strategy has never been more clear.
- At the same time, as returns were bifurcating but generally on the decline, management innovations and technology have enabled workers and companies to be more productive. As measured by the Bureau of Labor Statistics, the productivity of labor has more than doubled since 1965. This begs a fundamental question: If not captured by firms, where did this value go?
- It appears that the bulk of it has been captured by consumers and talent, who have learned to harness the power of digital infrastructure much more quickly than their institutional counterparts. Our Consumer Power Index indicates that consumers wield significant power with a 2011 score of 67 out of 100 — put simply, this means that companies have to deliver more and more value at what is often a lower price. Meanwhile, we see that the total compensation of creative class occupations is, on average, more than double that of other occupations. Moreover, the compensation gap between the creative class and the rest of the workforce has been increasing, at a 4% CAGR during the past seven years, suggesting the increasing importance companies place on talent. By participating in knowledge flows, creative talent is capturing an increasingly larger share of the economic pie.

Traditional, scale-based strategies have provided little sustained relief from these trends. Instead, companies are toppling from their leadership positions at nearly double the 1965 rate, and executives, using 20th-century strategies to address 21st-century problems, are seeing their tenures decline.

Taken together, these findings suggest a fundamental rethinking of the way we do business is in order. Success in the digital era will be defined by how well companies share knowledge — how well they leverage foundations and participate in flows. In a constantly changing, highly uncertain world, the value of what companies know today is rapidly diminishing; new measures of success must be based...
on how fast they can learn. In this sense, we must transition from scalable efficiency to scalable learning, as mentioned a number of times in this report. Our hope is that the findings above, revealed by the Impact Index, tangibly quantify the imperative for this shift.

Rather than a cause for pessimism, these findings can be viewed as an opportunity to remake the institutional architectures of today’s corporations. Companies in the early-20th century learned to exploit the benefits of scale in response to the energy, transportation, and communications infrastructures of their time. Today’s companies must develop and adapt institutional innovations of their own if they are to make the most of this era’s emerging digital infrastructure. Once these innovations are sufficiently diffused through the economy, the Impact Index will turn from an indicator of corporate value destruction to a reflection of powerful new modes of economic growth.

The Index

Today, the Impact Index score is 101, as shown in Exhibit 78. Note that this index measures the impact of the Big Shift: So as competitive pressures force down returns, as markets become more volatile, or as brand loyalty erodes, the index will increase.\textsuperscript{125}

In this sense, to decide whether a decrease in a metric (such as profitability) should increase the index, we had to make a guess as to which direction it would go — at least in the short term — in response to the Big Shift. These decisions were made in accordance with our logic (that competition will put growing pressure on returns) and long-term trends (that returns have been steadily declining since 1965). However, as we predict above, there will come a time when companies learn to harness the new digital infrastructure and generate powerful, new modes of economic growth. At that time, the way many of these metrics contribute to the index (that is, positively or negatively) will have to be reassessed.

As with the Foundation Index and the Flow Index, this index is broken down into three drivers. In this case, these drivers are designed to quantify the impact of the Big Shift on three key constituencies:

- **Markets:** The impact of technological platforms, open public policy, and knowledge flows on market-level dynamics facing corporations. This driver consists of three metrics: Stock Price Volatility, Labor Productivity, and Competitive Intensity.
- **Firms:** The impact of intensifying competition, volatility, and powerful consumers and talent on firm performance. This driver consists of four metrics: Asset Profitability, ROA Performance Gap, Firm Topple Rate, and Shareholder Value Gap.
- **People:** The impact of technology, open public policy, and knowledge flows on consumers and talent, including executives. This driver consists of four metrics: Consumer Power, Returns to Talent, Brand Disloyalty, and Executive Turnover.

Individually, these drivers tell us how the Big Shift has affected key groups over time. Collectively, as shown in Exhibit 79, they describe how rapid changes in the foundations and flows are altering the dynamics between companies, customers, and the markets in which they operate.

Right away, we can tell that the Impact Index has not grown as consistently as the Foundation Index and the Flow Index. This is to be expected: Unlike the latter two, the Impact Index is particularly susceptible to short-term cyclicality, as it is based on a number of financial measures that fluctuate over time. As such, we made an attempt to smooth the data

\textsuperscript{125} For further information on how the Impact Index is calculated, please refer to the Shift Index Methodology section.
to represent long-term trajectories more clearly relative to short-term movements.126

After doing this, we see that growth in this index is much slower than in the Foundation Index or Flow Index: It has grown at a CAGR of 1.5% since 1993. The reason for this is that, at least right now, the underlying metrics in the Impact Index do not move as fast as, say, increases in computing power. But we do expect the index to keep growing — perhaps at an even faster rate — as companies begin to adapt their institutional architectures and business practices to more effectively harness the potential of the digital infrastructure and richer knowledge flows.

Slower growth does not mean that movements in this index are of less importance. Shifts, albeit small, in the Impact Index are indicative of powerful trends, many of which were discussed in the previous section. For example, where we are today (an index value of 101) is the result of parallel growth in the impact of the Big Shift on all three constituencies: markets, firms, and people. The impact on markets, a reflection of growing Competitive Intensity, Labor Productivity, and volatility in stock prices, has gone up more than 33% since 1993, as shown in Exhibit 80. Since 1993, it has grown at roughly a 1.8% CAGR each year. As companies learn to harness the new digital infrastructure and knowledge flows to become more productive and more effectively compete, we expect this to not only continue, but also increase significantly.

The economic downturn may also have a lasting effect on these dynamics. Again, “normal” may, in fact, be a thing of the past.

The impact at the firm level — shown in Exhibit 81 — is highly telling. Despite an obsessive focus on tenets of traditional, scale-based corporate strategy — cut costs and acquire others to achieve industry leadership and to capture economies of scale — the pressures in the markets driver impact firms nearly one to one. Since 1993, the firms driver, which measures the negative impact of the Big Shift on individual companies, has grown over 20%, at a CAGR of 1.1%. The similarity to increases in market pressures, despite aggressive efforts to offset them, is striking. If companies do not catch up in their ability to harness the new digital infrastructure, they will likely see their performance continue to deteriorate (perhaps even more quickly) as competition inevitably grows steeper.

Unfortunately, we are forced to make assumptions when it comes to the impact of the Big Shift on people because our way of measuring this through a recent survey precludes us from assessing historical trends (see Exhibit 82 represents an estimate). But understanding that changes in digital technologies and practices tend to impact individuals before institutions, we can be confident that people have been impacted the most, and most consistently by the Big Shift. As technology continues to reshape the playing field and put power in the hands of consumers and talent, we expect this driver to increase.

Overall, we expect the Impact Index to increase at a growing rate over the coming years, but with much more volatility than the Foundation Index or the Flow Index. As individuals continue to outpace institutions in the value they gain from technology, the broad competitive forces degrading performance will only increase and, with them, the index, until firms finally develop the institutional architectures and business practices required to more effectively create and capture economic value.

126 For further information on data smoothing, please refer to the Shift Index Methodology section.
The charts above represent the combined movements of the underlying metrics in the index, after data adjustments and indexing to a base year of 2003. For more information on the index creation process, see the methodology section of the report.
Competitive Intensity

Competitive Intensity is increasing as the digital infrastructure and changing public policy erode the barriers to entry and movement.

Introduction

Many executives have the sense that the world is more competitive today. Indeed, consultants and academics alike have argued this same hypothesis that pervasive forces of the 21st century, such as globalization and technology, are creating unprecedented competitive pressures for established firms. Tracking Competitive Intensity is a way of measuring the falling barriers to entry and movement resulting from digital technology and public policy changes.

During the last several decades, public policy liberalization has opened up the global economy, allowing freer flow of capital across geographic and institutional lines. Businesses now find it easier to enter and exit markets, industries, and countries and workers enjoy fewer restrictions on where they can work.

Meanwhile, digital technology has removed previous barriers to the flow of information, eroding the information asymmetries that once favored sellers over buyers. Today’s consumers have a growing wealth of knowledge and choice when buying goods and services and less attachment to brands. The shift in market power from the makers of goods and services to the people who buy them increases the pressure on firms to innovate and sell in new and creative ways.

Observations and Implications

To illustrate how the HHI works, imagine an industry with high fixed costs of production. The high investment required to do business (to build and operate factories, for example) are barriers to entry that enable a small group of players to win the lion’s share of sales. According to the HHI, market power is highly concentrated in this industry and, as a consequence, it is deemed low in Competitive Intensity. Now consider the converse, in which barriers are

Exhibit 83: Economy-wide Herfindahl-Hirschman Index (HHI) (1965-2010)

Source: Compustat, Deloitte analysis
Despite a brief climb in recent years, market concentration is still less than half of what it was in 1965, suggesting that Competitive Intensity has more than doubled during that period.

![Exhibit 84: Economy-wide merger activity and HHI (1972-2010)](image)

Source: CRSP US Stock Database ©200903 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business, Deloitte analysis

Before 1995, industry concentration decreased consistently, indicating that Competitive Intensity overall was steadily increasing (see Exhibit 83).\(^{129}\) Despite a brief climb in recent years, market concentration is still less than half of what it was in 1965, suggesting that Competitive Intensity has more than doubled during that period. It is worth noting that HHI values between 0 and 0.10 denote low industry concentration and by extension high Competitive Intensity. The United States has fallen in that range throughout most of the period under analysis.

As noted above, our methodology suggests that Competitive Intensity has eased in recent years. We attribute this less to a decline in competition than to a wave of mergers and acquisitions (see Exhibit 84) that have increased industry concentration and thus HHI.\(^{130}\) Technically, this is a situation where our methodology breaks down: In a given year, HHI might "get it wrong" because of heavy mergers and acquisitions. However, over the long term, we view this merger and acquisition behavior as a response to increasing Competitive Intensity.

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129 Source: Compustat, Deloitte analysis
130 Source: Deloitte analysis based on historical data from CRSP US Stock Database ©200903 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business.
Spotify: Street Fight for Distribution Channels or Music Everywhere?

Ever since Napster began offering peer-to-peer music file sharing in 1999, the music industry has been roiled by advances in the digital infrastructure that have turned traditional business models upside down and unleashed competition from unexpected places.

Enter the newest competitor to the already crowded digital music scene: In July 2011, Spotify launched in the United States and has already made a significant impact on the music industry. Prior to their U.S. entry, Spotify had already achieved success overseas; founded in Sweden, the service reached 1 million users less than 6 months after launch in 2008. Spotify offers consumers the ability to stream songs directly, create playlists, and share music with friends. And after just a few weeks in the United States, Spotify boasted 1.4 million U.S. customers, with 175,000 paying for service, an admirable 12.5% conversion rate by consumer internet standards, where 2-4% is the prevailing conversion of free to premium products. Though growing rapidly, Spotify faces a host of direct and indirect competitors. The firm competes directly with subscription-based streaming sites, such as Rhapsody, with a catalog of over 11 million songs and 800,000 paid subscribers. There are also many more tangential competitors among internet radio sites, such as Pandora and MOG, who are more focused on music discovery than playlist creation. What differentiates Spotify from these competitors, and may make it difficult to fight back, is the degree of control that Spotify users have over their music and the social features that Spotify offers. Spotify is banking on a partnership with Facebook to encourage users to engage more with the site and change the way people share music across social platforms. While all these music sites provide slightly different services, they are battling for the same customers, hoping to convert internet users into paying music consumers.

And what about the music companies themselves — are they collaborators or competitors? Although Spotify has signed distribution agreements with all of the ‘big four’ music groups, Spotify currently pays more for music royalties than it makes in subscriptions and advertising. Of course, the firm is also dependent on these agreements to avoid copyright infringement.

Finally, a large threat for Spotify and the music industry in general, still comes from a more nefarious competitor: pirating and illegal downloads.

A Spotify spokesperson acknowledges “Our biggest competitor is piracy rather than other streaming services. Our goal is to offer a user experience that is higher quality, simpler, and altogether better than piracy.”

The rise of Spotify is a testament to the increasing Competitive Intensity felt by traditional incumbents and new entrants alike in the music industry. Just a few years ago, disruptors, such as Pandora and Rhapsody, forever changed the competitive landscape of the music industry. In today’s increasingly fast-changing marketplace, however, even major market disruptors are susceptible to being disrupted shortly thereafter. Going forward, the fight for market share will only continue as new models emerge to try to satisfy consumers’ needs.

The profound increase in Competitive Intensity since the mid-1960s shows no sign of slowing. Not only are competitive forces increasing within the country, U.S. firms increasingly face competition from firms abroad. In today’s porous economy, where competitors may come from unexpected places, differentiating friend from foe is increasingly difficult. As technological improvements disintegrate barriers to entry and promote the free flow of information, businesses must rethink traditional strategic, organizational, and operational approaches. Scalable efficiency, the primary strategy firms undertook in the 20th century, will likely have diminishing returns for firms going forward. Instead, companies seeking to remain competitive will need to consider increasing efficiency via scalable learning, empowering employees to perform their jobs better and more efficiently.


Technological and business innovation, open public policy, and fierce competition, drive long-term increases in Labor Productivity

Introduction
Robert Solow famously said, "You can see the computer age everywhere but in the productivity statistics." Often referred to as the productivity paradox, this view holds that big investments in IT have done little to increase long-term labor productivity.

A central hypothesis of the Big Shift is that digital technology, as it increasingly penetrates business and social domains, holds the potential to substantially increase productivity growth. In this view, the fact that technology has yet to make a truly significant mark on productivity may say more about traditional institutional architectures and management practices than about what is possible in the future as companies embrace the Big Shift.

Traditional approaches to productivity improvement too often focus on manipulating inputs—the denominator, or cost, side of the productivity ratio. Since companies can only reduce costs so far before reaching zero, this is ultimately a diminishing returns game. The fixation on inputs moreover overlooks a bigger opportunity: the potential to offer more value while keeping the same total cost.

By focusing on “revenue productivity,” executives can switch from wringing out ever-more elusive efficiency gains to unleashing the potential of employees by increasing the rate at which they learn, which can, in turn, lead to innovation and continuous performance improvement. There is tremendous opportunity to couple the digital infrastructure with new management approaches to create and mobilize the knowledge that workers possess, unlocking the intangible assets that can drive company profits in the digital era.

Advances in productivity, that is, the ability to produce more with the same or less input, are a significant source of potential national income.

Observations and Implications
As a whole, the U.S. economy has been able to achieve modest productivity gains since 1965 (see Exhibit 85). The upward trend suggests that in the face of steadily increasing competitive pressures, companies have been able to achieve productivity growth.

Exhibit 85: Labor Productivity (1965-2010)

Source: Compustat, Deloitte analysis
While Labor Productivity in the United States has shown a consistent upward trend, Exhibit 86 suggests that the rates of growth over the past five decades have varied. In the 2000s, Labor Productivity increased at a 2.7% CAGR, as compared with the 2.1% CAGR in the 1960s and the lowest value of 1.6% CAGR in the 1980s. Productivity growth accelerated in the late 1990s, led by rapid output in IT-intensive industries and spurred by factors, such as the rise of outsourcing (thus reducing the price of inputs.) In the 2000s, this growth trend continued, as CAGR increased from 2.1% to 2.6%. This growth was in part a continuation of 1990s trends, including the proliferation of IT advances. However, reductions in labor input also played an important role in the productivity increases of the past decade. As firms were hit with the economic downturn, many sought efficiency gains and increased their reliance on automation and outsourcing as a means to reduce costs.

Exhibit 86: Labor Productivity CAGR (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 87: U.S. Productivity Growth (1965-2010)

Source: Federal Reserve Bank of New York

Foxconn, the Chinese manufacturer of Apple devices such as the iPhone and iPad, recently announced a plan to deploy one million robots to perform basic manufacturing work.

Going forward, U.S. firms may find greater, and more sustainable, productivity growth in the rapidly advancing digital infrastructure. An effective way to realize this potential is for companies to embrace new institutional architectures, governance structures, and operational practices, and to track, for example, employee adoption of new technologies, how well employees are sharing knowledge across organizational boundaries, and the extent to which their employees are part of an ecosystem that is creating new value for customers. Scalable efficiency will likely not be enough to drive productivity growth; rather, the real gains can stem from harnessing the potential of scalable learning made possible by the digital infrastructure.

Investments in technology can also enable firms to produce more with fewer resources. Even in industries and countries where labor is abundant and cheap, new digital technology is being used to improve labor productivity by moving employees into higher value positions and reducing the number at lower levels. Foxconn, the Chinese manufacturer of Apple devices, such as the iPhone and iPad, recently announced a plan to deploy 1 million robots to perform basic manufacturing work. Foxconn CEO announced that, in addition to allowing the company to produce a greater volume of higher quality products, the shift will move the company’s workers “higher up the foodchain, beyond basic manufacturing work.”

Employees rely on SupportCentral as a tool for doing their jobs better and more efficiently. Over 100,000 experts (all full-time GE employees) have signed up to help respond to user questions and manage content, and SupportCentral has become the ubiquitous tool for sharing documents and information, keeping groups connected across departments and countries. This has many benefits for employees throughout the organization. For example, whereas before, process owners had to outsource the creation of applications to IT teams and wait for results, SupportCentral is an example of how a company made it simple for IT teams to serve as mentors — empowering process owners to develop and tweak solutions to fit their needs. According to one GE Manager, “Just in our small corner of Aviation, we are saving —$11 Million in real productivity this year.”

In thinking about productivity improvement in the Big Shift, it is imperative that companies evaluate how to best capitalize upon the potential of employees. Productivity yields can and likely will be influenced by firms’ willingness to adopt technologies that allow resources to do their jobs better and more efficiently, from using emerging technologies to minimize the number of employees needed for simple activities to creating platforms that allow employees to access information and connect with one another more easily. Empowering employees to participate in knowledge flows should, in time, allow for long-term, increasing productivity gains.

Stock Price Volatility

Digital infrastructures and public policy initiatives amplify Competitive Intensity, market uncertainty, and Stock Price Volatility

Introduction
It stands to reason that equity markets are a primary place in which the forces of long-term change would become visible. Paradoxically, perhaps, these long-term forces are playing out in the form of increased short-term volatility in stock prices.

Our analysis of this metric draws on data from the Center for Research in Security Prices (CRSP) at the University of Chicago Booth School of Business. By looking at the one-year standard deviation of daily value-weighted total returns across the entire U.S. economy, we tried to establish a proxy for market-related uncertainty as expressed through Stock Price Volatility.

Observations and Implications
Over the last 38 years, Stock Price Volatility has been steadily increasing (see Exhibit 88). Since stock prices are heavily driven by investor reaction to the news of the day and assumptions about what is to come, volatility in stock prices can be seen as a reflection of increasingly volatile events and higher uncertainty about the future. Volatility in the markets has been a topic among experts for years. Recently, Professor Robert Stambaugh of The Wharton School said that while stocks have been traditionally viewed as less volatile over the long-term due to “mean reversion,” mean reversion suggests that prices and returns eventually move back towards the mean or average, and in many respects stock prices tend to be more uncertain and more volatile over long horizons. Stambaugh went on to say that the uncertainty of the long-term trend erodes even short-term “certainties.” The prospect of 50 years of uncertainty is much more unsettling than the prospect of one to two years’ uncertainty followed by a resumption of stability. In the interview, Stambaugh noted that even “two centuries of data leaves one with enough uncertainty that as you look at the implied variance of stock returns over the longer horizons, the risk actually does rise significantly with the time horizon.”

According to our findings, the long-term trend is toward higher short-term Stock Price Volatility. That is, in any given week or month, stock prices are likely to fluctuate more

Exhibit 88: Economy-wide Stock Price Volatility (1972-2010)

Source: CRSP U.S. Stock Database ©200903 Center for Research in Security Prices (CRSP), The University of Chicago Booth School of Business, Deloitte analysis

The Stock Price Volatility metric is a measure of trends in movement of stock prices.

This metric is a proxy for measuring disruption and uncertainty.

140 Established in 1960, CRSP maintains the most complete, accurate, and easily usable securities database available. CRSP has tracked prices, dividends, and rates of return of all stocks listed and traded on the New York Stock Exchange since 1926, and in subsequent years, they have also started to track the National Association of Securities Dealers Automated Quotation System (NASDAQ) and the New York Stock Exchange (NYSE) Arca, previously known as ArcaEx, an abbreviation of Archipelago Exchange.

141 In a value-weighted portfolio or index, securities are weighted by their market capitalization. Each period the holdings of each security are adjusted so that the value invested in a security relative to the value invested in the portfolio is the same proportion as the market capitalization of the security relative to the total portfolio market capitalization.

142 Calculated (or derived) based on data from CRSP US Stock Database ©200903 Center for Research in Security Prices (CRSP), The University of Chicago Booth School of Business.

143 Stock Price Volatility is a suitable proxy for uncertainty about where the markets are headed. See Robert Stambaugh and Jeremy J. Siegel, “Why Stock-Price Volatility Should Never Be a Surprise, Even in the Long Run,” interview by Knowledge@Wharton, April 29, 2009.

144 Ibid. “Volatility does tend to even out over time and stock returns tend to fluctuate around a trend line.

The Flash Crash of 2010

It was just another day on Wall Street on May 6th 2010. The U.S. stock markets opened down that morning and trended down most of the day on worries about the debt crisis in Greece. Then, suddenly, things began to change. At 2.42 pm, the Dow Jones dropped more than 300 points for the day, the equity market began to fall rapidly, dropping more than 600 points in 5 minutes for an almost 1000-point loss on the day by 2:47 pm. Twenty minutes later, by 3:07 pm, the market had regained most of the 600-point drop, however, for a few minutes the market lost $1 trillion worth of market capitalization! Says Seth Hoenig, Head trader at Glenhill Capital Management, “We were floored and it was surreal. We have been conditioned in these past ten years to rule out nothing. I remember being in disbelief as to the magnitude of the move in such a short period of time. We were trying to decipher whether or not we were missing information or news, and the move was not reflecting some world event, perhaps with Greece or the EU.”

Market Snapshot — DJIA

<table>
<thead>
<tr>
<th>Time</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>-155.76 points</td>
</tr>
<tr>
<td>2:40 PM</td>
<td>-415.81 points</td>
</tr>
<tr>
<td>2:47 PM</td>
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<td>2:57 PM</td>
<td>-388.38 points</td>
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<tr>
<td>4:00 PM</td>
<td>-347.80 points</td>
</tr>
</tbody>
</table>

The May 6, 2010, market crash, also known as The Crash of 2:45, the 2010 Flash Crash or just simply, the Flash Crash, was a U.S. stock market crash on May 6, 2010, in which the Dow Jones Industrial Average plunged about 900 points — or about 9% — only to recover those losses within minutes. It was the second largest point swing, 1,010.14 points, and the biggest one-day point decline, 998.5 points, on an intraday basis in Dow Jones Industrial Average history.

Investigations by the U.S. Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) into the cause of the crash help shed light on how the Big Shift has generated greater Stock Price Volatility. To begin with, uncertainty concerning the debt crisis in Greece had set up a market “so fragmented and fragile that a single large trade could send stocks into a sudden spiral.” Specifically, the SEC’s and CFTC’s report highlighted the role of one mutual fund, Waddell & Reed, in precipitating the crisis. At 2.32 pm, Waddell & Reed initiated a trading algorithm that sold 75,000 E-mini futures contracts (which mimic movements in the S&P 500 stock index). Even though trades of that size were normal for Waddell & Reed, this particular algorithm executed the trade within a span of 20 minutes. Comparatively, a trade of similar size in 2010 had taken 5 hours to complete. As Waddell & Reed’s sale hit the futures market, high-frequency trading firms began picking up their contracts. Because high-frequency trading firms exit trades very swiftly, by 2:41 pm they had begun selling the contracts they had bought from Waddell & Reed, which was still trying to sell the remainder of its contracts as prices declined. The rapid sell-off then began to spill over into the market for stocks. Liquidity began drying up as automatic trading systems used by market makers began to pause when prices moved beyond certain thresholds. Collectively, the sell-off briefly erased $1 trillion in value, but recovered most of the ground before trading closed for the day.146

The “Flash Crash” of 2010 is illustrative of changes the Big Shift has brought. Foundationally, falling computing costs and the complexity of modern trading algorithms made possible the rapid sell-offs that occurred on the day, and the fluidity of capital and knowledge flows was what set the context for stock market uncertainty. Most of all, it makes apparent that our institutions and practices must adapt to the Big Shift if we are to avoid similarly disconcerting market disruptions in the future.

widely than they would have in a given week or month 20 or 30 years ago. We believe that this is attributable to several aspects of the Big Shift. First, increasing penetration of digital technology has reduced information asymmetries in markets and enabled the proliferation of complex financial trading mechanisms. Most importantly, this has exacerbated and amplified investor reactions to changes in the market, which has increased Stock Price Volatility. Second, the fluidity of capital flows across international borders due to the liberalization of public policy has contributed to the amount of speculation and volatility in markets. Third, the unwillingness or inability of many executives to give a clear sense of the long-term direction of their companies has contributed to uncertainty of long-term company performance and the resulting valuation. Finally, as investors are increasingly uncertain about the economy and companies abilities to tap into long-term changes, executives have also been either unwilling or unable to provide a clear sense of their companies’ long-term direction. Collectively, investors’ short-term doubt about company performance manifests itself in the form of greater short-term Stock Price Volatility.

Surveying today’s business landscape, perhaps investors intuitively grasp that “normal” is a thing of the past—that we have entered a world that does not stabilize as easily as it once might have.

As we hope this report makes clear, companies must soon come to terms with the Big Shift through new institutional architectures, governance structures, and operating practices. We expect these new approaches will enable firms to better navigate and potentially thrive in a less stable environment. To the extent that firms are able to adapt to the realities of the Big Shift, they might be able to restore investor confidence in their ability to create value amidst our new economic realities. While stock prices will always be influenced by market sentiments and economic forces, this might possibly ameliorate the volatility of stock price movements in the future.
Cost savings and the value of modest productivity improvement tends to get value from productivity gains are being competed away and captured by customers and talent.

**Introduction**
To measure long-term corporate performance, we calculated economy-wide Asset Profitability (ROA) for all publicly traded firms (numbering greater than 20,000) between 1965 and 2010. We use ROA as a measure of firm performance for two reasons. First, as opposed to other asset-oriented metrics, such as Return on Equity (ROE), ROA is a comprehensive measure of firm profitability and is not affected by distortions associated with a firm’s capital structure.

Second, we use ROA instead of revenue-oriented metrics, such as Return on Net Sales because ROA allows us to measure returns in comparison to a firms’ asset holdings, thus making it a more complete picture of firm performance.

**Observations and Implications**
The previous editions of the Shift Index highlighted that ROA for the U.S. economy has been in steady decline for the past 45 years. We believe that this decline in ROA

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**Exhibit 89: ROA, Selected Industries (1972-2010)**

![Graph showing ROA for selected industries from 1972 to 2010](image)

*Source: Compustat, Deloitte analysis*
has been driven by companies’ inability to adapt to the long-term trends behind the Big Shift. While this decline has been influenced by trends in the banking industry, this same declining trend in ROA has also consistently occurred across the rest of the economy. This decline is all the more noteworthy because of the increasingly favorable tax environment and improvement efforts by individual companies. The effective corporate income tax rate has declined over the past 45 years and firms have engaged in a suite of efforts, including restructuring, outsourcing, and mergers and acquisitions to improve performance. The decline in ROA is significant because it has continued in spite of these factors which we might have expected to improve ROA.

This year, our analysis confirmed that the decline in ROA is occurring consistently across almost all sectors of the economy. With the exception of aerospace and defense and health care services, all other industries in the economy exhibited a downward trend in ROA. This suggests that the fundamental forces of the Big Shift are driving down Asset Profitability across the entire economy.

Of these industries, the technology, media, and entertainment and automotive sectors have experienced the steepest declines in ROA, with ROA declining at an average of 0.15% per year over the 45-year period. By contrast, the strongest performing industry, aerospace and defense, only saw its ROA rise at an average rate of 0.02% per year over the same period. While the bottom industries are experiencing sharp declines in performance, the top industry is just barely yielding better results over time (see Exhibit 89).

As part of our continued investigation into declining ROA, we focused our attention on the role of the banking industry. There are two reasons why we were concerned with the banking industry. First, the banking sector has come to constitute a large portion of the overall economy’s asset base. And second, the banking sector has also had historically low ROA levels. Taken collectively, these facts yielded interesting results in our analysis of the declining ROA levels.

Truly reversing this will require a profound shift in thinking and a strong grasp of the forces — often overlooked — facing modern firms. In particular, executives will have to focus on capability leverage and mobilizing the resources of others to deliver more value (the numerator in the profitability ratio) rather than just focusing on cost reduction as a driver of firm profitability.

Exhibit 90: Asset Base ($, Trillions), U.S. Economy and Banking Industry (1965-2010)

Source: Compustat, Deloitte analysis
... ROA for the U.S. economy has been in steady decline for the past 45 years. We believe that this decline in ROA has been driven by companies’ inability to adapt to the long-term trends behind the Big Shift.

As we can see from Exhibit 90, the banking industry’s share of the total asset base has grown swiftly, from 30% in 1965 to 60% in 2010. Consequently, the banking industry has been an increasingly important determinant of the overall economy’s ROA. Secondly, the banking industry has had historically low levels of ROA, trending from 0.75% in 1965 and declining to 0.55% in 2010.

Collectively, these factors yielded two key insights into the economy’s decline in ROA. As we can see from Exhibit 91, the inclusion of the banking industry significantly lowers the overall economy’s ROA consistently over the past 45 years. More importantly, when the banking industry is excluded from our calculations, the overall economy’s ROA experienced a slightly steeper decline. As evidenced by the trend lines in Exhibit 91, when we consider the rest of the economy apart from the banking industry, the rate of decline in ROA is even more severe. While it is tempting to only consider the (higher) ROA exhibited in the ‘economy less banking’ chart, it is imprudent to isolate banking completely from the story of declining ROA because the banking industry has provided capital to the rest of the economy at a low cost over the past 25 years. The cost of capital has steadily declined and it has allowed companies to pursue growth at a relatively low cost. While we might be able to isolate the depressive effect of banking on overall ROA, it is imperative that we still consider it as part of the overall economy because of this power to stimulate growth throughout the entire economy.

From 2008-2010, we have seen an uptick in ROA for all but three industries (aerospace and defense, energy, and life sciences). While some may see this rise as a source for encouragement, we believe it to be the result of short-term measures, such as workforce reduction, rather than fundamental restructuring of business strategies to address the Big Shift. In short, we do not believe that these efforts to improve performance are sustainable in the long run. For greater detail concerning our analysis of the relationship between layoffs and ROA, please refer to the section “2011 Shift Index: Key Ideas.”
Retail Kings Struggle to Maintain Power

In the 1950s, department store Lord and Taylor (L&T) was a beacon for American designers and the envy of U.S. retailers. Not only was it America’s oldest department store, L&T was also a fashion leader and the crown jewel of the Associated Dry Goods Corporation, which was formed in 1916. However, by 2003, L&T’s aggressive national expansion plans had led to the closure of 38% of its store base,147 and the company had to receive several cash infusions from its parent company, private equity group, National Realty Development Corporation (NRDC), in order to make its debt payments.148 What was driving this tumultuous change in L&T’s fortunes?

L&T’s struggles were reflective of the broader change which the Big Shift has wrought on the U.S. retail industry. The company is certainly not alone in its struggles — the recent demise of California retail chain Mervyn’s, and K-Mart’s Chapter 11 bankruptcy in 2001 point to components of the Big Shift which are making it increasingly tough for companies to maintain ROA. First, competition has become increasingly intense because of technology adoption in the industry. For example, K-Mart’s demise was largely driven by its inability to compete with Wal-Mart’s low-cost structure, which was developed, in part, by the use of technology to effectively manage inventory.149 Similarly, the role of technology is reflected in L&T’s struggle to tackle online retailing, in comparison to competitors like Nordstrom’s who have combined their physical and online merchandise to successfully drive online sales.150 Second, firm performance in the retail industry has become more volatile because of the opportunities and threats posed by capital availability in the economy. While Mervyn’s decline in California was largely driven by predatory moves by private equity investors,151 capital availability has had both positive and negative effects on L&T. On one hand, the growth in Competitive Intensity in the sector has undoubtedly been driven by the availability of capital funding both big box retailers (Wal-Mart) and online retailers (Amazon), but on the other hand, L&T’s buyout by private equity group NRDC has provided it with the capital needed to revitalize its operations.

While scale drove competition in the retail industry during the earlier half of last century, performance will increasingly be determined by how well retailers can capture flows of information and capital. Information asymmetry is fading, consumers become increasingly aware of the options available to them, and the online shopping experience of e-tailers like Amazon has only improved. If traditional retailers like L&T are to remain relevant in the marketplace, they need to improve how they use flows both internally and externally — capital will have to be employed to optimize inventory management, as well as effective online retailing strategies and customer engagement.

Winning companies are barely holding on, while losers experience rapidly deteriorating performance

Introduction
Economy-wide, ROA is declining as competition intensifies and consumers and talented workers gain market power. Yet we all know averages can be deceiving. Maybe good companies are generating high returns, but the losers are losing big and dragging down ROA? What is happening at the company level?

The ROA Performance Gap is meant to shed light on what might otherwise be obscured by averages. Over time, this metric will reveal trends in how value is distributed among firms and quantify the true consequences of doing poorly or well in the Big Shift.

Observations and Implications
The ROA Performance Gap shows a bifurcation of winners and losers; this finding is by no means new. What is surprising, however, is how little winners have gained during the past 45 years. Technology has enabled firms to leverage talent in new and innovative ways and cut costs from operations on an unprecedented scale, however, even top quartile performers have failed to convert these advances into ROA gains.\(^{152}\) The ROA for the top quartile of firms has actually declined gradually over the past 45 years (see Exhibit 92), from 12.7% in 1965 to 9.9% in 2010.

These findings corroborate the research of our colleagues, Michael Raynor and Mumtaz Ahmed, in Deloitte’s Persistence Project.\(^ {153}\) While ROA for the top 1% of firms has improved, ROA in the top decile firms has only held steady over the past 45 years.\(^ {154}\) Only a very small group of companies has succeeded in improving ROA.

Exhibit 92: Economy-wide ROA by quartile (1965-2010)

\(^ {152}\) Source: Compustat, Deloitte analysis.

\(^ {153}\) Deloitte’s Persistence Project was carried out to identify the management practices that have most contributed to sustained, superior corporate performance. Findings from this research were published in a series of articles in 2010.

While ROA in the top quartile firms has declined gradually, in the bottom quartile, weak performers are deteriorating at an increasingly rapid pace. Over the same 45-year time period, average ROA for companies in the bottom quartile dropped from 1.3% to -9.9%. The volatility in ROA has also increased for the bottom quartile of companies, with the greatest downward swing coming in during the recession of 2001. Clearly, the majority of companies are averaging lower returns, and the gap between top and bottom performers is widening.

This accelerating deterioration among weak performers and lack of ROA improvement in all, but the very best performers aligns with our analysis of Firm Topple Rate. While the financial rewards for successful companies have remained the same, it is increasingly difficult for companies to remain successful and capture these returns. This competitive reality plays out at the bottom of the economic hierarchy, where the churn rate for the bottom decile of firms is falling (see Exhibit 93). In other words, not only are companies with the weakest ROA performance...
delivering ever-worse results, they are now more likely to remain at the bottom than they were 45 years ago—once in the bottom decile, companies do not move back out.

The Persistence Project research in the monograph A Random Search for Excellence provides insight into the management practices driving these trends. Looking at the relative performance of firms from 1966 to 2006, companies were most likely to end each year in the same decile in which they started. By first quantifying the likelihood of companies to achieve specific relative rankings in terms of performance and then specifying cutoffs beyond which outcomes are sufficiently unlikely to have been caused by luck alone, Raynor and Ahmed are able to isolate for the impact that firm management practices have on performance. The study concluded that only 167 out of 22,000 companies can reliably be said to have performed in the top decile because of superior management practices. Not only is it difficult for companies to generate sustained ROA performance, but companies that are actually driving superior performance are rare.

Finally, the changing relationship between assets and net income provides additional insight into the ROA performance gap. Indexing both assets and net income against 1965 levels (see Exhibit 94), we see that, economy-wide, assets and income increased at the same rate until 1980. From that point, the gap between the two began expanding, as companies added assets without a commensurate increase in profitability.

Restricting that analysis to the top quartile of companies (see Exhibit 95), we see that net income growth tracked asset growth more closely, until 1992, when the gap began widening as a result of the gradual decline in the ROA of the top firms. The picture could not be more

Exhibit 95: Top & Bottom Quartile Asset vs. Net Income Index (1965-2010)
Wal-Mart Embraces Scalable Learning

While our ROA Performance Gap metric has shown that many companies are not using scalable learning in a meaningful way, there is evidence of firms breaking the mold and creating significant value as a result. One example of this comes with Wal-Mart’s innovative supply chain partnership with the Chinese firm, Li & Fung.

Wal-Mart’s approach to building its reputation and a loyal customer base has been to focus on providing value and selection to its customers. A core driver of Wal-Mart’s approach as it expands across the nation and around the globe has been the efficiency of its supply chain. As a leader in this particular area, Wal-Mart has demonstrated a willingness to innovate and stay ahead of the curve. In January 2010, the firm announced it was entrusting Li & Fung, a Hong Kong-based company to provide sourcing services for an estimated 2 billion dollars of products. By making this strategic investment, Wal-Mart has accessed the vast ecosystem of Li & Fung’s supplier network to drive efficiency and performance improvement in their sourcing.

The Center for the Edge has studied and written on the ecosystems of Li & Fung for several years. In the publication “Performance Ecosystems,” the Center for the Edge team discusses the value of fostering existing and joining new ecosystems. Applying this concept to supply chain, firms can benefit tremendously by moving from a tightly controlled procuring environment with few strategic partners to a dynamic system of many diverse suppliers, as Wal-Mart has done with Li & Fung.158

The partnership was viewed favorably by market analysts who noted that the arrangement has the potential to help Wal-Mart lower cost, improve inventory management, and product choice, predicting that the volume of products sourced via Li & Fung will like grow substantially “as the advantages become more obvious to WMT.”159 Historically, many firms considered supply chain efficiency to be predicated on marginal cost reduction. This partnership, however, reflects Wal-Mart’s willingness to embrace external established knowledge networks and enable contributions from talent both within and outside of the organization.

While the majority of firms are yet to tap into the potential of ecosystems, the partnership between Wal-Mart and Li & Fung is a telling example of how firms can leverage knowledge flows enabled by performance ecosystems as a means to improve performance.

different for the bottom quartile firms: While assets grew only marginally over the 45 years, income fell, decreasing at an exponential rate until 2001. It remains at -32 times the 1965 level.

The ROA Performance Gap—and its underlying drivers—have far-reaching implications for executives. A recent article in the Harvard Business Review aptly describes the threat: “Just as a digital photo or a web-search algorithm can be endlessly replicated quickly and accurately by copying the underlying bits, a company’s unique business processes can now be propagated with much higher fidelity across the organization by embedding them in enterprise IT. As a result, an innovator with a better way of doing things can scale up with unprecedented speed to dominate an industry. In response, a rival can roll out further process innovations throughout its product lines and geographic markets to recapture market share. Winners can win big and fast, but not necessarily for very long.”160

To survive in this new and constantly changing environment, leaders must move beyond marginal cuts that offer diminishing returns and instead make smart long-range investments that will enable talent at every level to contribute knowledge and improve performance. The key success factor in the world of the Big Shift will be the organization’s ability to learn faster, to drive cumulative improvements in performance by working with others. While most companies struggle to maintain profitability in the Big Shift, the best among them will still find ways to inspire confidence through sustained performance at a high level.

Big companies are losing their leadership position at an increasing rate

Introduction
This Shift Index describes a climate in which the value captured by firms is deteriorating as reflected by declining asset profitability and a widening gap between winning firms and losing firms. Neither of these metrics, however, quantifies the ability of individual firms to stay in the top tier of performance, even if overall performance is declining. We know winners are worse off in terms of returns—but are they at least winning longer? Or is it increasingly difficult to develop a sustained advantage in the world of the Big Shift? The Topple Rate addresses these questions.

Of course, in a large, dynamic market such as the U.S. economy, one would expect companies to change ranks often. The metric is normalized to account for the rank changes that could be expected to occur randomly (zero indicates stability and relative ease for a firm to sustain an advantage). The resulting topple rate metric provides a strong and accurate indicator of changeability and upheaval in the economy. As the pace of change accelerates, firms should consider how to leverage scalable learning and quick response strategies in order to compete. Those that are unable to adjust to these rapid shifts are increasingly susceptible to topple.

The rate at which firms suffer a decline in ROA, relative to other firms, has trended upward since 1965 (see Exhibit 96). Between 1965 and 2010, the topple rate for all companies in the economy with more than $100M in net sales increased almost 40%, as competition exposed low performers and ate away at their returns. In recent years, the topple rate has been more volatile. Firm topples spiked as a result of the financial crisis in 2008 but returned to the long-term trend in 2010. This volatility underscores the influence of macroeconomic events and economy-wide performance in the short-term, despite an overall trend toward faster topples.

The rapid rate at which companies suffer declines in ROA ranking reflects the rise in competitive intensity. This observation has also been validated in “Survival of the Fattest,” an article by Deloitte colleagues Michael Raynor, Mumtaz Ahmed, and James Guszcza. Churn in the top

Exhibit 96: Economy-wide Firm Topple Rate (1965-2010)

Note:
0: Ranks Perfectly Stable = Perfectly Sustainable Competitive Advantage
1: Ranks Change Randomly = Complete Absence of Sustained Competitive Advantage

decile of ROA performers has increased over time (see Exhibit 97); that is, increasingly more of the companies in the top decile are new to that decile in a given year. This trend indicates that competition is increasing in the top strata of performers, making a firm’s time at the top all the more tenuous. At the same time, churn for the lowest decile (0-10th percentile) has been declining, implying that fewer firms are performing poorly enough to sink to the bottom, and those that do are experiencing long, drawn-out declines.

These findings tie closely with our findings in the Competitive Intensity metric. As discussed, the Herfindahl-Hirschmann Index (HHI) of market concentration has dropped by more than half since 1965, suggesting large increases in competitive intensity. In addition, as the world becomes more connected, foreign competitors will continue to challenge domestic firms, creating more competition for established firms. With more competition than ever before, firms have shorter windows of opportunity to respond to change in the marketplace.

“Between 1965 and 2010, the topple rate for all companies in the economy with more than $100M in net sales increased almost 40%, as competition exposed low performers and ate away at their returns.”

In the automotive industry, imports have risen as a result of consumer demand for hybrid and fuel-efficient cars in recent times. Over the past five years, the topple rate within the industry has increased by 75%. While many factors contribute to the topple rate, increased competition and a lagging response to changing customer preferences have certainly helped unseat the domestic automotive firms.

The digital infrastructure also poses an opportunity- or threat— for rapid change among firms. Foundational forces such as increased internet usage and wireless activity have

Source: Compustat, Deloitte analysis

Exhibit 97: Churn Rate in 90th-100th Decile (1967-2006)

Source: Compustat, Deloitte analysis

The Rise and Fall of Borders

In 2005, Borders was the second-largest book retailer in the world, with 1,329 locations, including outposts in Asia and the UK. In 2011, Borders declared bankruptcy and was liquidated.

Started as Borders Group in 1971 by Tom and Louis Borders during graduate school at the University of Michigan and acquired by K-Mart in 1992 to form the Borders-Waldon Group, Borders story is one of great success and rapid demise.

It is tempting to explain away Borders’ bankruptcy as death by internet age, something that was inevitable. However, the company’s 2000 annual report offers a better clue: “Our online investment will be channeled to support our in-store platform… We have targeted loss reduction as a major goal in this area.”

Borders counted on its historically loyal customer base and bricks-and-mortar success and made a strategic decision not to pursue opportunities in the emerging digital infrastructure aggressively as an independent business opportunity.

Between 2001 and 2008, Borders failed to develop its own online storefront, effectively allowing competitors to eat in to their customer base as e-commerce exploded. As the ecosystem was rapidly changing, competitor Barnes and Noble invested in e-readers and digital content, while Borders expanded retail locations, signing costly 15-20 year leases and missing the lucrative e-reader market. By May 2010 when Borders introduced its own e-reader, the Kobo, it was too late: Border’s bankruptcy filing listed $1.29 billion in debt on $1.27 billion in underlying assets.

Fundamentally changed the way customers interact with companies allowing companies to identify and respond to customer needs more quickly and effectively and with innovative solutions. Consider Apple’s introduction of the iPod in 2001. In the mid-1980s, Apple suffered a topple that left it on the brink of failure through much of the 1990s. The visionary firm, however, was able to change course to exploit the rapidly changing digital infrastructure and shape a new paradigm for delivery and consumption of media. The iPod and iTunes music store were possible because of the proliferation of internet usage and a fundamental shift in how consumers interacted with devices. While the digital infrastructure can enable firms to improve their position in the marketplace, those firms that are unable to tap into foundational forces are increasingly susceptible to market topple.

Companies face more difficulties than ever before. Competition is increasing both domestically and abroad, while brand loyalty among consumers is decreasing. The rapid changes in the digital infrastructure present opportunities, but firms have a very short time frame to capitalize on them; those that do not are likely to fall to the wayside. The quickening turnover of industry leadership underscores the need for firms to consider how to become more flexible and to increase the rate at which they learn and innovate.
Shareholder Value Gap

Shareholder returns for market “winners” increase at a modest rate; while “losers” destroy more value than ever before

Introduction
The trends discussed so far have a profound impact on financial markets. Stock prices, which are based on investors’ expectations of future returns, take a longer view than the current income statement, but often do a poor job of representing firm performance. At the same time, because boards focus on stock prices, they are uniquely positioned to quantify the value of acting on Big Shift trends or the risks of ignoring them. Thus, however erratic, the behavior of the stock market and how it treats “winners” and “losers” is an indicator of the perceived risks and opportunities related to the Big Shift trends.

Shareholder value as a measure of firm performance became popular in the 1980s, spurred by then-CEO Jack Welch of GE. In a 1981 speech entitled, “Growing fast in a slow-growth economy,” Welch touted aggressive short-term gains and beating quarterly targets as the principal strategies for GE and all other successful firms. Critics of this “short-termism” strategy argue that companies have grown too beholden to shareholders and the marketplace; this argument has largely prevailed, particularly in the wake of the 2008 financial crisis. Indeed, even Welch concedes that, “you would never tell your employees, ‘Shareholder value is our strategy.’ That’s not a strategy you can touch… increasing the value of your company in both the short and long term is an outcome of the implementation of successful strategies.”165 In the backlash against short-termism, an increasing number of companies, from Google to GE itself, no longer report quarterly earnings estimates. Practical considerations have also contributed to this shift: Lack of visibility into future earnings makes short-term projections virtually impossible, while many companies still have faith in long-term profit growth.166

Markets can be fickle in their evaluation of firms, predicting false positives or negatives based on forecasts for an unknown future. However, as a function of investors’ expectations of future performance,167 shareholder returns can serve as a suggestive proxy of public opinion over the long run for both high and low performing firms. By looking at trends in the total returns of each group over time, we can gauge how investors reward companies that beat expectations and punish those that do not. More importantly, we can measure how well these expectations truly reflect the realities of corporate performance.

The Shareholder Value Gap metric is a measure of the difference between the top-quartile and bottom-quartile of returns to shareholders, which incorporates share price appreciation and dividends.

This metric is a proxy for the increasing bifurcation of winning companies and losing companies.

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Observations and Implications

Despite volatility year-to-year, over the long term, the upper quartile of firms—the "winners"—have only very slightly managed to increase the rate at which they create value for their shareholders (see Exhibit 98).168 This is consistent with our finding that the economic performance (measured by ROA) of these companies has been relatively flat. This also supports the notion that short-termism may be just that and trends experienced in three-month increments are not guaranteed to play out over time.

Another phenomenon at play for consistently high performers is that the market has come to expect such performance from them, and fails to reward it—meeting expectations is no longer enough. As such, a firm may continue to perform well without seeing an equivalent rise in shareholder value.

At the same time, the bottom quartile—the "losers"—are losing ground. Since 1965, the bottom quartile firms' returns to shareholder have tracked their ROA performance by destroying increasing amounts of shareholder value.

Today, the cost to shareholders of holding the lowest performing firms is double what it was 40 years ago. This suggests that the financial markets perceive the bottom tier of companies to be destroying value more than before and that it will be difficult for underperformers to overcome this perception.

These trends highlight the inherent difficulty of increasing shareholder value over time, even for top-performing companies. Although firms in the bottom quartile are trending down, there is no commensurate uptick in top-tier firms. There have been, of course, superstar firms that have experienced sustained growth, but this trend has not played out on a macro level. In aggregate, there appears to be declining shareholder value, a phenomenon consistent with our ROA analysis.

168 Source: Compustat, Deloitte analysis.
New Standards for Success

Wal-Mart is incontrovertibly one of the most successful firms in America, topping the Fortune 500 list eight times in the past decade and posting revenue of almost 430 billion dollars in 2010. The firm has achieved an unprecedented scale and is the largest private employer in the world, with over 2 million employees nationwide. At the turn of the millennium, the stock was valued at over $50 per share and it has hovered around that point ever since.

Has Wal-Mart stopped growing or stumbled operationally? Hardly. Wal-Mart is the rare company that has consistently delivered excellent performance throughout its existence.

From 1975-2000, Wal-Mart’s stock price mirrored its impressive trajectory, starting from mere pennies and growing at a 38% CAGR. In 1997, Wal-Mart’s earnings surpassed 100 billion dollars, and the firm continued expanding globally, entering the European marketplace with the acquisition of the 21-unit Wertkauf hypermarket chain in Germany. As the company surpassed shareholder expectations yet again, the stock grew accordingly, as investors projected great things for the company’s future. This sustained growth and market power has placed Wal-Mart in a league of operational performance that few, if any, U.S. firms have reached in recent history.

So why, in the past decade, has Wal-Mart’s stock price not risen with its impressive growth? The answer, it seems, has to do with expectations. By 2000, the expectations of investors had finally caught up with the performance of the firm. In a time when investors have become accustomed to rapid growth and change and receive a constant stream of information adjusting their expectations, it is difficult to deliver results that will be rewarded by the market. Holding steady can seem uninteresting and just meeting expectations is no longer enough.

In a market captivated by short-term movements, the long-term polarization of returns has powerful implications for executives. Not only are current business strategies less and less effective, but investors are recognizing this in their diminished expectations regarding companies’ long-term performance. Taken with the downward trend in ROA, this is not surprising; it suggests that, rather than simply trying to tell a more compelling “story” to the investment community, the answer is more likely to involve fundamental shifts in strategies and operational performance.

A tangential—but relevant—implication of these trends is that it will likely only become more and more difficult to meet investor expectations as competition puts pressure on shareholder returns. Executives must be increasingly wary of this dynamic; as we discuss later, turnover in their ranks is increasing.

The Consumer Power metric measures the value captured by consumers based on the degree to which consumers perceive they have choices, convenient access to and information about those choices, access to customized offerings, the ability to avoid marketing efforts, and minimal switching costs.

This measure proxies the relationship and relative power between consumers and vendors.

Greater access to information and choices boost Consumer Power

Introduction

Relations between vendors and consumers are changing profoundly as product choices expand and consumers have increased access to information about these choices. Vendors once had the upper hand, but in the world of the Big Shift, consumers are gaining power back.

Consumer power stems from different sources, including increased choices, lower switching costs and easier access to product information. The transparency of information empowers customers to make more informed decisions and compare alternatives more easily. The internet and, more recently mobile applications, give consumers access to price comparisons, customer reviews, and more. In what Wal-Mart stores’ Chief Executive, Mike Duke, calls “a new era of price transparency,” stores are losing the advantage over customers as shoppers are more inclined to perform due diligence, either beforehand or in the store itself.¹⁷⁰

For customers in this newly integrated world, switching costs are low, often requiring only the click of a mouse. With remote transactions made possible by the internet and mobile browsing, consumers can buy products and services from nearly anywhere, at any time. This means that consumers are no longer limited by proximity to certain retailers and can exercise greater discretion in their purchasing decisions.

Not only do consumers have more options — and more convenient access to them — but increased communication among consumers gives rise to more power. “Crowd clout” is defined as “an online grouping of citizens/consumers for a specific cause, be it political, civic or commercial.” The aim of crowd clout can be anything from challenging politicians to putting pressure on suppliers to offer discounts.¹⁷¹ The impact of crowd clout can be seen in the abundance of forums and communities for consumers, particularly those looking to save money. On these sites, customers post coupons and coupon codes from in-store and online retailers and even discuss when certain items go on sale and strategies for obtaining greater savings.

The final element of consumer power is the ability to avoid marketing messages. Technology has armed consumers with more control over what they see and what they can easily avoid. For example, the increasing popularity of digital video recorders and online streaming of content allows viewers to control their exposure to advertisements and other marketing material.

Exhibit 99: Consumer Power (2011)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There are a lot more choices now in this category than there used to be</td>
<td>3% 3% 7% 26% 20% 20% 21% 41%</td>
<td></td>
</tr>
<tr>
<td>2. I have convenient access to choices in this category</td>
<td>16% 12% 12% 20% 16% 12% 12% 24%</td>
<td></td>
</tr>
<tr>
<td>3. There is a lot of information about brands in this category</td>
<td>3% 3% 5% 21% 19% 22% 27% 49%</td>
<td></td>
</tr>
<tr>
<td>4. It is easy for me to avoid marketing efforts</td>
<td>7% 5% 10% 26% 16% 17% 18% 35%</td>
<td></td>
</tr>
<tr>
<td>5. I have access to customized offerings in this category</td>
<td>9% 7% 9% 27% 17% 16% 15% 31%</td>
<td></td>
</tr>
<tr>
<td>6. There is not much cost associated with switching away from this brand</td>
<td>4% 3% 5% 20% 21% 23% 24% 47%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Synovate, Deloitte analysis


Observations and Implications

The overall Consumer Power score has been relatively high, growing from 65 in 2008, when the survey began, to 67.5 in 2011. The true value of this measure, however, is in analyzing the trends for individual categories.

Across all consumer categories, almost 50% of respondents strongly agreed that they had more choices than before and also had more information about those choices (see Exhibits 99 and 100). Access to choices and customized offerings were the lowest contributors to overall Consumer Power. However, as social media and other online outlets reflect more and more of our interests and preferences, we expect customized offerings to become more sophisticated and applicable. Firms, such as American Express, for example, are starting to offer customized discounts to customers who allow them access to relationships, “Liked” pages, and interests on Facebook. Similarly, location-specific offers from sites, such as Groupon and Living Social, have become exceptionally popular this year, reflecting a rapid shift toward more customized offerings. The digital infrastructure will continue to drive consumer power, increasing not only the number of choices, but also access to and information about these choices.

As interesting as the overall numbers are, the absolute and relative responses to each consumer category provide deeper insight into changes in competitive pressures and consumer preferences. The data shows high consumer power (a score greater than 60) in most categories with the exception of Newspapers, a category in which options are limited. While there are many alternative digital options for news, those who still prefer paper are usually limited to a few local options and just as few national options.

Exhibit 100: Consumer Power by category (2011)

<table>
<thead>
<tr>
<th>Consumer Category</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search Engine</td>
<td>71.6</td>
<td>68.7</td>
<td>70.9</td>
</tr>
<tr>
<td>Computer</td>
<td>71.7</td>
<td>68.6</td>
<td>68.0</td>
</tr>
<tr>
<td>Home Entertainment</td>
<td>70.1</td>
<td>68.1</td>
<td>69.1</td>
</tr>
<tr>
<td>Restaurant</td>
<td>71.4</td>
<td>68.0</td>
<td>69.7</td>
</tr>
<tr>
<td>Insurance (Home/Auto)</td>
<td>70.4</td>
<td>67.3</td>
<td>68.4</td>
</tr>
<tr>
<td>Athletic Shoe</td>
<td>69.4</td>
<td>67.2</td>
<td>66.8</td>
</tr>
<tr>
<td>Hotel</td>
<td>72.4</td>
<td>67.1</td>
<td>68.8</td>
</tr>
<tr>
<td>Broadcast TV News</td>
<td>69.4</td>
<td>66.8</td>
<td>70.2</td>
</tr>
<tr>
<td>Banking</td>
<td>69.4</td>
<td>66.6</td>
<td>70.1</td>
</tr>
<tr>
<td>Snack Chip</td>
<td>68.4</td>
<td>66.6</td>
<td>70.7</td>
</tr>
<tr>
<td>Gaming System</td>
<td>67.1</td>
<td>65.6</td>
<td>62.5</td>
</tr>
<tr>
<td>Wireless Carrier</td>
<td>69.4</td>
<td>65.6</td>
<td>65.6</td>
</tr>
<tr>
<td>Household Cleaner</td>
<td>66.8</td>
<td>65.3</td>
<td>65.9</td>
</tr>
<tr>
<td>Pain Reliever</td>
<td>69.3</td>
<td>65.1</td>
<td>69.0</td>
</tr>
<tr>
<td>Investment</td>
<td>67.3</td>
<td>64.8</td>
<td>65.8</td>
</tr>
<tr>
<td>Department Store</td>
<td>65.9</td>
<td>64.7</td>
<td>66.3</td>
</tr>
<tr>
<td>Magazine</td>
<td>70.9</td>
<td>64.5</td>
<td>68.8</td>
</tr>
<tr>
<td>Soft Drink</td>
<td>66.2</td>
<td>64.4</td>
<td>69.5</td>
</tr>
<tr>
<td>Automobile Manufacturer</td>
<td>68.4</td>
<td>64.4</td>
<td>67.3</td>
</tr>
<tr>
<td>Airline</td>
<td>65.0</td>
<td>63.2</td>
<td>65.4</td>
</tr>
<tr>
<td>Grocery Store</td>
<td>68.1</td>
<td>62.8</td>
<td>65.5</td>
</tr>
<tr>
<td>Mass Retailer</td>
<td>65.4</td>
<td>62.0</td>
<td>65.9</td>
</tr>
<tr>
<td>Gas Station</td>
<td>61.7</td>
<td>61.3</td>
<td>61.6</td>
</tr>
<tr>
<td>Shipping</td>
<td>62.1</td>
<td>59.1</td>
<td>61.3</td>
</tr>
<tr>
<td>Cable/Satellite TV</td>
<td>60.9</td>
<td>59.1</td>
<td>63.1</td>
</tr>
<tr>
<td>Newspaper</td>
<td>56.3</td>
<td>54.0</td>
<td>54.0</td>
</tr>
</tbody>
</table>

Source: Synovate, Deloitte analysis

In most categories, perceived Consumer Power increased this year over previous years. Hotels, wireless carriers and computers had the biggest increases in Consumer Power. The 5% increase in Consumer Power in the hotel industry was driven by greater choice as well as more information about options. The travel industry, and in particular the hotel industry, has been fundamentally altered by the growing digital infrastructure. Consumers can easily search for hotels online or via smartphone applications and can easily access detailed information and find more options than ever before.

With regard to wireless carriers, consumers feel that options, convenient access, and information have all improved. As different tiers of service become available (e.g. prepaid wireless service), customers have a greater variety of options. This increase in options has also come with more information to help customers make decisions that best fit their needs.

The year-over-year changes are interesting as well, although we are more interested in the long-term trajectory. External forces can cause year-to-year fluctuations in many categories; the financial crisis clearly had a negative impact which is only now dissipating. Between 2009 and 2010, survey respondents indicated that their perception of Consumer Power in most categories did not change or actually decreased. Compared with 2010, consumers in 2011 cited lower switching costs as a key driver of increased Consumer Power. We believe a long-term trend will emerge showing greater Consumer Power, as this survey incorporates the coming years.

While most industries experienced an increase in Consumer Power, soft drinks, cable/satellite TV, and snack chips have shown the largest decline since 2009. For cable/satellite TV, consumers cited a dearth of accessible options as the primary detractor. Many consumers are limited to one or two local providers of cable TV, making it difficult to exert power in this particular industry. This may not reflect the full story. Consumers today increasingly receive their news and entertainment via other mediums, primarily the internet. While consumers have found ways to circumvent the constraints in this category, the Consumer Power score itself does not reflect access to these other options.

References:
175 For more information, see the Wireless Subscriptions metric.
Lack of convenient access to choices or customized offers contributed to a 3% drop in the Consumer Power score for soft drinks and a similar drop for snack chips. In these low-cost, brand-loyal categories, consumers feel relatively constrained to their favorite brand. While consumers have many options, it is inconvenient (or unsavory) to switch to a less-preferred brand. Similarly, the commoditized nature of these goods means that consumers have limited ability to customize to their specific tastes.

The trend toward greater consumer power has significant implications for executives. In particular, consumer power provides a foundation, and an outlet, for Brand Disloyalty, especially if vendors are slow to respond to evolving customer needs and behaviors. The proliferation of the digital infrastructure has allowed customers to push back on vendors in different ways. With more complete and transparent information, customers have greater control over not only how they shop (in store or online), but also what they pay. With this power, consumers can switch between brands more readily and explore all purchase options. Indeed, as switching costs decline, it becomes apparent that, in many categories, consumers feel that sticking with a particular brand is no longer particularly enticing.

With more complete and transparent information, customers have greater control over not only how they shop (in store or online) but also what they pay.

De-emphasizing traditional marketing efforts may help companies capture the attention of consumers, but that may not be enough. In the marketing world, consumer demands are creating a shift in the way companies engage with them, one in which companies will no longer succeed by trying to isolate consumers and limit their choices. They will need to look instead for ways to help consumers make the most of their newfound power; for instance, helping them connect to the information they need and to other vendors that might help them. This suggests that companies must rethink the role of solely providing content. By giving customers complete and honest information, as well transparent access to alternative solutions that may better serve their needs, companies can build trust with their customers that will provide companies with long-term returns and increased loyalty.
Brand Disloyalty is increasing among consumers, particularly the younger generation.

Introduction
Brand loyalty is on the decline. Consumers today are inundated with more brands than ever before. The average supermarket in 2010 carried 38,719 stock-keeping units (SKUs), a drastic increase over prior decades. Consumers also now have access to information from more trusted sources to evaluate brands and their purchase choices no longer rely solely on advertising claims.

While established authorities, such as J.D. Power and Associates and Consumer Reports still influence consumers, a plethora of consumer-driven Web sites are gaining power. This increased availability of information has also changed the landscape of trust. The 2011 Edelman’s Trust Barometer Report found that in the United States, consumer trust has declined; in 2011, 46% of those surveyed trusted business versus 59% in 2008. As a result, consumers increasingly seek alternate sources of product information, rather than buying into branding and marketing pushed from the company. The loss of brand cachet and changing notion of brand in the Big Shift will challenge companies that have crafted their strategies and operations around building and reinforcing brand.

Observations and Implications
Brand Disloyalty is inversely related to age: Younger consumers are less loyal to brands than older consumers (see Exhibit 101). Younger consumers, born in the internet era, generally rely less on brand names as an indicator of product reliability, turning instead to the internet for product and service information, user reviews and feedback, as well as substitutes. Older consumers have historically relied on “tried and true” brand names and consumer product assessment agencies in the absence of other forms of reliable, published information.

The overall Brand Disloyalty score for 2011 is 60.8, indicating a relatively high Brand Disloyalty across all categories, however, this metric is most valuable for analyzing the trend in individual categories.
### Exhibit 102: Brand Disloyalty by category (2011)

<table>
<thead>
<tr>
<th>Consumer Category</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airline</td>
<td>75.9</td>
<td>75.3</td>
<td>69.9</td>
</tr>
<tr>
<td>Hotel</td>
<td>72.6</td>
<td>68.3</td>
<td>70.1</td>
</tr>
<tr>
<td>Department Store</td>
<td>68.7</td>
<td>67.4</td>
<td>65.9</td>
</tr>
<tr>
<td>Home Entertainment</td>
<td>70.2</td>
<td>67.2</td>
<td>69.0</td>
</tr>
<tr>
<td>Grocery Store</td>
<td>68.4</td>
<td>65.3</td>
<td>63.6</td>
</tr>
<tr>
<td>Mass Retailer</td>
<td>69.4</td>
<td>65.0</td>
<td>68.0</td>
</tr>
<tr>
<td>Gas Station</td>
<td>63.9</td>
<td>64.0</td>
<td>59.5</td>
</tr>
<tr>
<td>Shipping</td>
<td>66.1</td>
<td>63.6</td>
<td>60.0</td>
</tr>
<tr>
<td>Athletic Shoe</td>
<td>61.9</td>
<td>62.3</td>
<td>57.2</td>
</tr>
<tr>
<td>Computer</td>
<td>67.8</td>
<td>62.0</td>
<td>61.7</td>
</tr>
<tr>
<td>Cable/Satellite TV</td>
<td>63.9</td>
<td>61.4</td>
<td>61.4</td>
</tr>
<tr>
<td>Restaurant</td>
<td>63.4</td>
<td>61.0</td>
<td>58.5</td>
</tr>
<tr>
<td>Automobile Manufacturer</td>
<td>65.3</td>
<td>59.5</td>
<td>62.7</td>
</tr>
<tr>
<td>Gaming System</td>
<td>58.3</td>
<td>59.5</td>
<td>55.3</td>
</tr>
<tr>
<td>Wireless Carrier</td>
<td>62.2</td>
<td>59.0</td>
<td>56.5</td>
</tr>
<tr>
<td>Household Cleaner</td>
<td>59.7</td>
<td>55.2</td>
<td>54.5</td>
</tr>
<tr>
<td>Search Engine</td>
<td>52.8</td>
<td>54.2</td>
<td>53.4</td>
</tr>
<tr>
<td>Insurance (Home/Auto)</td>
<td>60.4</td>
<td>54.1</td>
<td>57.8</td>
</tr>
<tr>
<td>Pain Reliever</td>
<td>56.0</td>
<td>53.9</td>
<td>51.4</td>
</tr>
<tr>
<td>Snack Chip</td>
<td>56.8</td>
<td>52.8</td>
<td>51.5</td>
</tr>
<tr>
<td>Broadcast TV News</td>
<td>50.6</td>
<td>52.1</td>
<td>49.4</td>
</tr>
<tr>
<td>Banking</td>
<td>52.2</td>
<td>50.9</td>
<td>54.6</td>
</tr>
<tr>
<td>Magazine</td>
<td>53.6</td>
<td>49.7</td>
<td>45.2</td>
</tr>
<tr>
<td>Investment</td>
<td>60.6</td>
<td>49.0</td>
<td>53.3</td>
</tr>
<tr>
<td>Soft Drink</td>
<td>45.0</td>
<td>44.1</td>
<td>40.9</td>
</tr>
<tr>
<td>Newspaper</td>
<td>45.2</td>
<td>41.0</td>
<td>42.3</td>
</tr>
</tbody>
</table>

Source: Synovate, Deloitte analysis

### Exhibit 103: Consumer Power and Brand Disloyalty (2011)

<table>
<thead>
<tr>
<th>Consumer Category</th>
<th>Consumer Power</th>
<th>Brand Disloyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home entertainment</td>
<td>70.1</td>
<td>70.2</td>
</tr>
<tr>
<td>Hotel</td>
<td>72.4</td>
<td>72.6</td>
</tr>
<tr>
<td>Search Engine</td>
<td>71.6</td>
<td>52.8</td>
</tr>
<tr>
<td>Magazine</td>
<td>70.9</td>
<td>53.6</td>
</tr>
<tr>
<td>Mass Retailer</td>
<td>65.4</td>
<td>69.4</td>
</tr>
<tr>
<td>Airline</td>
<td>65.0</td>
<td>75.9</td>
</tr>
<tr>
<td>Newspaper</td>
<td>65.4</td>
<td>69.4</td>
</tr>
</tbody>
</table>

Among the categories included in the survey, disloyalty was highest in hotels, airlines, and home entertainment. Scores were lower (indicating greater brand loyalty) in the soft drink, newspaper, and broadcast TV news categories. Consumers seemed to be less loyal to brands in higher cost occasional purchase categories than with low-cost purchases. Consumers were most likely to agree with the statement (I would) “compare prices of this brand to other brands” for hotels, airlines, and home entertainment and least likely to agree for soft drinks, newspapers, and broadcast TV news. While this price sensitivity is not absolute (computers, for example, have a relatively low Brand Disloyalty score despite a high price tag), the economic climate has contributed to increasing consumer wariness for large expenditures, hence greater Brand Disloyalty in high-cost categories.

Comparing Brand Disloyalty and Consumer Power scores for some categories offers additional insights (see Exhibit 103). In general, one might expect a positive correlation between disloyalty and consumer power (consumers’ ability to learn about and access other purchase options). While in some categories, gains in consumer power have been matched by decreasing loyalty to brands, it does not hold true in all categories.

The travel industry, in particular, has been impacted by greater Brand Disloyalty, with both the hotel and airline categories scoring high Brand Disloyalty in 2011. Despite a reported 52% of travelers using travel loyalty programs, disloyalty for both airlines and hotels has increased since 2008. According to a 2011 forecast by travel site, Tripadvisor, only 39% of travelers are loyal to a hotel brand, down from 59% a year ago. Although consumers are disloyal in both categories, the perceived Consumer Power differs between the two.

Consumer Power is high for hotels, driven primarily by the accessibility of information and many different interchangeable options. When shopping for flights, however, consumers have relatively fewer choices and customized offerings despite being able to compare flight options easily.

In the home entertainment category, consumers have both high power and high disloyalty. An increase in quality across the board has made home entertainment products harder to differentiate. With a narrowing gap between high- and low-end brands and a wealth of information available to potential customers, consumers have less incentive to choose a brand based on a previously trustworthy name. Accessibility of pricing and information is the greatest contributor to consumer power in this category.

Categories that enjoy greater brand loyalty tend to be those with low relative cost and high perceived brand differentiation. In 2011, the soft drink industry had the lowest Brand Disloyalty score. A telling example of brand loyalty in soft drink’s is the backlash experienced by the iconic brand, Coca-Cola, in 1985 when they attempted to introduce “New Coke,” a reformulation and rebranding of their classic product. After the poor reception by the American public, Coca-Cola reintroduced their original formula under the apt descriptor, “Coca-Cola Classic.” Coca-Cola’s experience illustrates how, in brand-loyal categories, brands resonate deeply, and a consistent brand experience is key; customers align with a brand early and do not wish to deviate from their preferred brand experience.
Newspapers and broadcast TV news also have relatively low disloyalty scores, however, for the changing media industry, these low scores only tell part of the story. Consumers have typically been constrained to limited, location-based options for newspapers and broadcast TV news and have tended to display "stickiness" to their choices, resulting in relatively low disloyalty. More and more, however, consumers are overcoming these constraints by using the digital infrastructure to access news sources. According to a Pew Project study, over 40% of Americans consume the majority of their news online; among 18- to 29-year olds, 65% cited the internet as their primary source of news. Because the Brand Disloyalty metric focuses on competition and brand dilution within a category, it says nothing about the broader movement away from print to digital media—low disloyalty offers little help for a category that is shrinking.

Some categories have low disloyalty despite high consumer power. In particular, customers for magazines and search engines report having many options in these categories yet maintain strong brand preferences. Whether consumer loyalty will withstand the proliferation of choices, especially as more personalized choices become available, remains to be seen. In the case of magazines, there may be other forces at work that go uncaptured by the metric. While consumers who enjoy magazines in print may remain loyal to a brand, the rise of digital options poses significant competition for print magazines as a whole.

The trend toward Brand Disloyalty has significant implications for companies. Not only are consumers more price-sensitive, brands do not carry the clout they did just a generation ago. With more transparent information regarding the contents, quality, and price of products, consumers are able to make more informed decisions. Their perceptions about alternatives are also changing. For established brands, it signals an increasingly competitive environment. For new brands, it offers an opportunity to capture market share faster with fewer marketing dollars. For marketers, one implication may be that the notion of the brand needs to change. The core brand promise may need to focus less on the features of a product or service and more on establishing trust that the provider can configure products and services to meet individual needs. Companies should consider integrating consumers' voices more fully into the product life cycle — from determining which products and services are most valued to building grassroots, trusted validation of products and services — using the power of the digital infrastructure to build scalable trust-based relationships.

Younger consumers, born in the internet era, generally rely less on brand names as an indicator of product reliability, turning instead to the internet for product and service information, user reviews and feedback, as well as substitutes.


188 Customers, on average, strongly agreed with the statement “I have a strong preference for the brand I use” in both the Search Engine and Magazine categories.
Returns to Talent

Talented workers garner higher compensation and market power as their value and career options expand

Introduction

As tangible assets play a smaller role in generating revenues and profits for U.S. companies, the so-called “creative” workers are increasingly important.189 These workers garner higher returns than other workforce classes and wield growing power relative to the firms that employ them.

As defined by Richard Florida, the creative class is made up of workers whose job is to create meaningful new forms, and whose work is knowledge intensive or whose work is broadly relevant and transferable.190 Florida categorized the Bureau of Labor Statistic’s occupational classifications191 into five classes: super-creative core, creative, working, service, and agriculture. For our analysis, we aggregated the five classes into the creative class and the other workforce class.192 The Returns to Talent metric reflects the annual mean total compensation within these classes.

As power shifts from companies to the creative class workers, compensation and stability alone are not sufficient to attract and retain creative talent. Companies also increasingly must react to the fast-moving and unpredictable circumstances that characterize the Big Shift. In this era of unprecedented innovation and disruption, new, interim, organizational forms are emerging.193 These distributed “creation networks,” together with the geographic concentrations of talent we call “spikes,”194 are where creative class workers connect to amplify and accelerate their learning and performance.

Observations and Implications

For the last seven years, the compensation gap between the creative class and the rest of the workforce has widened across the U.S. labor market (see Exhibit 104). The gap has increased at a 4% annual growth rate during this time.

Creative class occupations, on average, are now valued 120% higher (receiving approximately $53,125 more in total compensation) than other workforce occupations. Within the creative class, high growth in total returns for the “creative” occupational grouping — including management, health care, sales, law and business and financial operations. The Creative Class is composed of the super-creative core occupations in science and engineering, education, arts, entertainment and sports, and creative occupations which which include management, health care, sales, law and business and financial operations. The Other Workforce Class is composed of working occupations such as construction, maintenance and transportation; service occupations like food service, personal and administrative support; and agriculture industry occupations including farming, fishing and forestry.

189 Intangible assets in 2010 represented 20% of assets in the US economy, compared with 1% of the economy in 1965.196 (Compustat and Deloitte Analysis)

190 Florida, Rise of the Creative Class.


192 The Creative Class is composed of the super-creative core occupations in science and engineering, education, arts, entertainment and sports, and creative occupations which which include management, health care, sales, law and business and financial operations. The Other Workforce Class is composed of working occupations such as construction, maintenance and transportation; service occupations like food service, personal and administrative support; and agriculture industry occupations including farming, fishing and forestry.

193 Hagel and Brown, “Creation Nets.”

194 For more information, see the Migration to Creative Cities metric.

**Exhibit 104: Creative Class compensation gap (2003-2010)**

and financial — has contributed significantly to the compensation gap (see Exhibit 105). Within the rest of the workforce, the “working” occupational grouping received the highest compensation (note, agriculture in the Occupational Employment Statistics data does not include farms).

The growth in Returns to Talent is related to other indicators, such as GDP. The positive correlation with GDP growth signals that creative market participants benefit from, and may contribute to, economic growth.\(^{195}\) In fact, the creative class (including the super-creative core) only accounts for 44% of the the total U.S. workforce’s headcount, but earns 65% of the workforce’s total compensation, or $3 trillion dollars. This compares with the $1.7 trillion earned by the remaining 56% of all workers who come from the working, service, and agriculture classes.\(^{196}\)

The results are clear: The creative class is capturing a larger share of the economic pie.

As talented employees come at an increasingly higher cost, executives should consider rethinking their firms’ primary activities to get better value from those employees. Today’s firm is often an ill-fitting bundle of three different types of businesses: infrastructure management, product innovation and commercialization, and customer relationships. As long as they remain bundled together, the differing economics, skill sets, and cultures required to succeed in each make it difficult to provide creative class workers with the opportunities they need to best develop their talent. Prospective employees today are interested not only in the growth of the firm, but also opportunities for individual career advancement and personal growth.

As companies become more focused, they are better able to participate in (and eventually orchestrate) distributed, interfirm organizational forms—such as open source initiatives—that are mobilizing tens (and even hundreds) of thousands of participants in flexible, diversely specialized, and customizable configurations. These massive networks function less through conventional command-and-

195 For more information, see the Migration to Creative Cities metric.
control, make-to-stock, and “push”-minded approaches than through the laws of attraction and influence that characterize “pull” systems. They enable workers and firms to mobilize resources on an as-needed basis, encouraging (rather than stifling) the tinkering and experimentation that facilitate learning and talent development. Because they can react quickly to fast-moving, unpredictable circumstances, these “creation networks” are well suited for the Big Shift.199

Firms should also consider how to harness the forces that have enabled Silicon Valley and other “spikes” to attract talent from around the world. Roughly half of the start-ups in Silicon Valley were founded by foreign-born talent.200 Public policy should reflect the importance of immigrant talent if the United States as a whole is to emulate the Silicon Valley model. Even more promising, a focus on talent development can transcend national interests. No matter how talented U.S. citizens are, they will develop their talents more rapidly if they have opportunities to interact with other talented people from around the world. If we are serious about developing the talent of our own people, we must find rich and creative ways to access and connect with talent wherever it resides.

In this era of unprecedented innovation and disruption, new, interfirm, organizational forms are emerging. These distributed “creation networks,” together with the geographic concentrations of talent we call “spikes” are where creative class workers connect to amplify and accelerate their learning and performance.

Executive Turnover

Executive Turnover is increasing as performance pressures rise

Introduction

Given the increasing competitive pressures and declining ROA that have characterized the U.S. economy since 1965, it probably is not surprising that executives lose their jobs, or leave their jobs, more frequently in response to the Big Shift.

In many ways, executives epitomize the difficulties facing all levels in the workforce as labor markets globalize. A faster-moving, less predictable world has raised the degree of difficulty for senior management jobs, even while remunerating them more highly. Executive Turnover may reflect the performance pressures and uncertainty, as well as the perceived opportunities, all workers’ experience.

Observations and Implications

Although over the long term, executives are leaving their jobs at increasing rates as shown in Exhibit 106, the rate at which executives resign from, retire, or involuntarily leave their positions has fluctuated with corporate and market performance since 2002 (when the database began tracking attrition). A separate study found that, from 1995 to 2006, annual CEO turnover increased 59%, and the subset of performance-related turnover increased 318%. Globally, only half of outgoing CEOs left office voluntarily during this time.201

Turnover, it turns out, fluctuates with the economy. During periods of prosperity, such as from 2005 to 2007, Executive Turnover increased steadily, perhaps representing the wide range of other opportunities available to executives who leave voluntarily. During a downturn, this supply of new job opportunities dries up, limiting the allure of leaving, and lowering the turnover rate. Furthermore, during a deep recession a board may be reluctant to change the company’s top leaders because of the uncertainty and risk involved in finding new talent — and because of the risk that it might signal pessimism or distress to investors and other stakeholders.

The 2009 data supports this analysis as Executive Turnover continued to slide, reaching a five-year low. Both companies and executives exhibited a propensity to “stay the course” and avoid additional instability in an uncertain environment.

The Executive Turnover metric measures executive attrition rates, voluntary or involuntary, based on the number of executive management changes (VP- to board of director-level) at public companies. This metric is a proxy for the unpredictable, dynamic pressures on the market participants with the most responsibility.

Exhibit 106: Executive Turnover Index (1993-2010)


Wanted: Executive Talent

Two years ago, if you were making six figures a year, the probability of finding a new job and moving forward in your career was slim. The news from the Association of Executive Search Consultants (AESC) was grim: Poor economic conditions and shelved plans for executive replacement suggested that the best course of action for an employed executive was no action, regardless of her current job.

Now, with improvements in the economy, headhunters are calling again. Following a precipitous 32.5% decline in senior executive recruiting in 2009, the industry grew by an average of 28.5% in 2010 and is on track to do well in 2011, according to the AESC. The U.S. market is experiencing a “sustained resurgence,” according to AESC President, Peter Felix. The 2011 Outlook, released in January 2011 by AESC, showed a peak in industry confidence since its low point at the end of 2008.

While the pick-up in executive search marks increased opportunities for top executives, hiring companies can afford to be specific about their requirements. According to Colleen Aylward, president of executive search firm, Devon James Associates, “Employers are hiring niche authorities, plug-and-play specialists—those who have fixed the same problem many times in different ways.” Furthermore, hired executives are under tremendous pressure to prove themselves from day one. Rising Competitive Intensity, highly engaged boards of directors and demanding investors have put executives under close scrutiny: “The brutal reality is that executives have less time than ever to prove their worth,” says Businessweek.

The renewed demand for executive search services in 2011 could signal an increase in voluntary executive churn. However, as performance pressures mount on firms, CEOs must produce better results, faster, to keep board members and investors satisfied.

From 1995 to 2006, annual CEO turnover increased 59% and the subset of performance-related turnover increased 318%.

If the economy were to continue to improve, as it did in the first two quarters of 2011, this trend would reverse. CEO, CFO, and overall Executive Turnover have started to increase again. With the economy improving, we expect Executive Turnover to rise as boards act on deferred leadership changes, executives seek new opportunities, and companies adjust their organizational skill sets to meet the changing needs of the new economy.

Analysis conducted by Liberum Research on Executive Turnover between 2005 and 2011 shows a strong correlation across attrition at the CEO, CFO, and executive level. Newly hired executives often poach talent from their previous organizations or change the existing leadership structure in order to build out their executive team. Similarly, either poor corporate performance or an improving economy may lead the board of directors to significantly reshuffle the existing leadership and bring new talent into an organization.

These trends are not limited to the executive team. Change or instability at the executive level often spurs employee attrition across the organization. While involuntary attrition peaks during difficult economic periods, voluntary attrition is highest during periods of strong growth when more opportunities become available and companies compete for talent. For instance, the recent boom in social media and internet companies in Silicon Valley has increased the competition for specific talent.

There are a number of factors that drive Executive Turnover. In times of prosperity, executives are more likely to be lured away from their current employment by another opportunity. However, as more and more pressure mounts on firms, involuntary turnover has risen as well. And at times, the media attention regarding a CEO’s departure makes it difficult to discern whether the decision was voluntary or not. Ultimately, we believe that churn in the executive ranks will increase, driven both by opportunity for executives as well as increased pressure on firms to shift course and increase performance.
Shift Index Methodology

Shift Index Overview
The Deloitte Center for the Edge developed the Shift Index to measure long-term changes to the business landscape. The Shift Index measures the magnitude and rate of change of today’s turbulent world by focusing on long-term trends, such as advances in digital infrastructure and the increasing significance of knowledge flows.

The 2011 release of the Shift Index not only focuses on the U.S. economy, but also includes data gathering and analysis at the industry level. The Center for the Edge published a report in the fourth quarter 2009 exploring in greater detail how the Big Shift is affecting various U.S. industries.

Subsequent releases of the Shift Index, in 2011 and beyond, will broaden the index to a global scope and provide a diagnostic tool to assess performance of individual companies relative to a set of firm-level metrics. Exhibit 107 details these development phases.

Our research applied a combination of established and original analytical approaches to pull together four decades of data, both preexisting and new. More than a dozen vendors and data sources were engaged, four surveys were developed and deployed, and five proprietary methodologies were created to compile 25 metrics into three indices representing 15 industries. Architects of current “gold standard” indices were consulted throughout the development process.

In compiling the Index, the Center identified and evaluated more metrics than could possibly be included. In some cases, the Center obtained metrics directly from vendors. In other cases, the Center leveraged existing studies and reproduced methodologies to construct metrics. Still others the Center constructed on its own.

Many of the metrics included in the Shift Index are proxies used to assess the concepts key to the Big Shift logic. For example, our Inter-Firm Knowledge Flow survey is an attempt to use a proxy to estimate total knowledge flows across firms. For the list of Shift Index metrics, please refer to Exhibit 108.

To assemble the final list of 25 Shift Index metrics, we carefully analyzed more than 70 potential metrics, using a process detailed in Exhibit 109.

This process evaluated fit between potential metrics and the conceptual logic of the Big Shift. To measure geographic spikiness, for example, we started by evaluating U.S. urbanization and then measured the percentage of total population in metropolitan areas, the percentage of population in the top 10 largest cities, and the overall population density. Realizing that urbanization might

Exhibit 107: Shift Index waves

Source: Deloitte
Exhibit 108: The Shift Index metrics

**Foundation Index**
- **Technology performance**
  - Computing
  - Digital storage
  - Bandwidth
- **Infrastructure penetration**
  - Internet users
  - Wireless subscriptions
- **Public policy**
  - Economic freedom

**Flow Index**
- **Virtual flows**
  - Inter-firm knowledge flows
  - Wireless activity
  - Internet activity
- **Physical flows**
  - Migration of people to creative cities
  - Travel volume
  - Movement of capital
- **Flow amplifiers**
  - Worker passion
  - Social media activity

**Impact Index**
- **Markets**
  - Competitive intensity
  - Labor productivity
  - Stock price volatility
- **Firms**
  - Asset profitability
  - ROA performance gap
  - Firm topple rate
  - Shareholder value gap
- **People**
  - Consumer power
  - Brand disloyalty
  - Returns to talent
  - Executive turnover

Source: Deloitte

Exhibit 109: Shift Index metric selection process

**Big Shift logic**

~70 Proxies considered

Data quality and availability

25 Metrics selected

Source: Deloitte
not be an ideal measure to assess pull forces that certain geographic centers, such as Silicon Valley and Washington, D.C. possess over other cities, we elected to apply Richard Florida’s study of creative cities. The creative cities identified by Florida are the epicenters of diversity, talent, and tolerance. Thus, they represented places where people migrate to benefit from cognitive diversity and sharing of tacit knowledge. As the Big Shift takes further hold, we anticipate increased migration to the most creative cities, as compared to the least creative ones. Selecting the Migration of People to Creative Cities metric as a proxy for geographic spikiness seemed more appropriate and consistent with the logic of the Big Shift than using any general measure of U.S. urbanization.

Data quality and availability was another factor evaluated when selecting metrics. Proxies with outdated data or ones that are no longer maintained were discarded. For example, total factor productivity was a potential proxy for productivity improvements, but available data sources lacked industry-level information and had three-year data lags. These limitations led us to include Labor Productivity rather than total factor productivity in the Impact Index.

For a representative list of metrics considered for the Shift Index, please refer to Exhibit 110.

### Exhibit 110: Shift Index Proxies Considered but Not Selected

<table>
<thead>
<tr>
<th>Component Index Driver</th>
<th>Proxies Considered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundation Index</strong></td>
<td></td>
</tr>
<tr>
<td>Technology Performance</td>
<td>• Market spending on hardware, software, and IT services (U.S.$ per person)</td>
</tr>
<tr>
<td></td>
<td>• Broadband connections (xDSL, ISDN PRI, FWA, cable, and FTTx) per person</td>
</tr>
<tr>
<td>Infrastructure Penetration</td>
<td>• Telecommunication equipment exports and imports (U.S.$)</td>
</tr>
<tr>
<td></td>
<td>• Percentage of automatic phone lines compared to the percentage of digital phone lines</td>
</tr>
<tr>
<td></td>
<td>• Number of fixed telephone line subscribers per 100 inhabitants</td>
</tr>
<tr>
<td></td>
<td>• Number of mobile cellular telephone subscribers per 100 inhabitants</td>
</tr>
<tr>
<td></td>
<td>• Total fixed and cellular telephone subscribers per 100 inhabitants</td>
</tr>
<tr>
<td></td>
<td>• Number of people within mobile cellular network coverage as a percentage of total population</td>
</tr>
<tr>
<td></td>
<td>• Total number of PCs</td>
</tr>
<tr>
<td></td>
<td>• Percentage of homes with a PC</td>
</tr>
<tr>
<td></td>
<td>• Internet users per 100 inhabitants</td>
</tr>
<tr>
<td></td>
<td>• Total Internet subscribers (fixed broadband) per 100 inhabitants</td>
</tr>
<tr>
<td><strong>Public Policy</strong></td>
<td>• Number of regulations per industry</td>
</tr>
<tr>
<td></td>
<td>• Number of new regulations per year</td>
</tr>
<tr>
<td><strong>Flow Index</strong></td>
<td></td>
</tr>
<tr>
<td>Virtual Flows</td>
<td>• Number of joint ventures</td>
</tr>
<tr>
<td></td>
<td>• Number of co-branded products</td>
</tr>
<tr>
<td></td>
<td>• Patent citations</td>
</tr>
<tr>
<td></td>
<td>• Percentage of time spent interacting with external business partners</td>
</tr>
<tr>
<td></td>
<td>• Patent distribution</td>
</tr>
<tr>
<td></td>
<td>• Open innovation participation</td>
</tr>
<tr>
<td></td>
<td>• Bibliometric analysis —academic paper citations</td>
</tr>
<tr>
<td></td>
<td>• People movement/immigration</td>
</tr>
<tr>
<td></td>
<td>• International Internet bandwidth (Mbps)</td>
</tr>
<tr>
<td></td>
<td>• International Internet bandwidth per inhabitant (bit/s)</td>
</tr>
<tr>
<td>Component Index Driver</td>
<td>Proxies Considered</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>
| **Physical Flows**     | • Percentage of total population in metropolitan areas  
                        | • Percentage of population in top 10 largest cities  
                        | • Population density  
| **Flow Amplifiers**    | • Total number of people participating in online communities  
                        | • Total number of open sourced products  
                        | • Total number of social networking sites  
                        | • Total unique users engaged in social networking sites  
| **Impact Index**       | • Total factor productivity  
                        | • Average time to complete a set of employee tasks  
                        | • Firm distribution (startup vs. incumbent)  
                        | • Number of new firms created  
                        | • Number of days stock price has changed more than three Standard Deviations from average of yearly returns  
| **Markets**            | • Profit elasticity  
                        | • Profit margin (earnings before interest, taxes, depreciation and amortization/revenue)  
                        | • Economic margin  
                        | • ROIC  
                        | • Shareholder value creation  
| **Firms**              | • Rank shuffling by Interbrand Survey score  
                        | • Minimum wage as percentage of value added per worker  
                        | • Hiring patterns for top management team  
                        | • Average compensation of senior executives  
                        | • Median age (in years) of patents cited  

Source: Deloitte
### Shift Index Metrics Overview

The following set of tables provides detailed descriptions of each metric used to compile the Shift Index, including metric definition, high-level calculations, and primary data sources.

#### Foundation Index

<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology Performance</strong></td>
<td></td>
</tr>
<tr>
<td>Computing</td>
<td><strong>Definition:</strong> Computing measures the vendor cost associated with putting 1 million transistors on a semiconductor. The metric provides visibility into cost/performance associated with the computational power at the core of the Big Shift.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> The metric was derived from Moore’s Law, which furnishes insight into the basic computing performance curve. Initial insights were confirmed by direct observations of the number of transistors vendors are able to put on the most powerful commercially available semiconductors, an analysis of wholesale pricing for individual chips and as a breakdown component of servers, and an assessment of vendor margins to determine cost as a component of wholesale price.</td>
</tr>
<tr>
<td></td>
<td><strong>Data Source:</strong> The data were obtained from a number of publicly available sources of information about semiconductor performance as defined by millions of transistors per semiconductor, including vendors, wholesale distributors of semiconductors, and leading technology research vendors.</td>
</tr>
<tr>
<td>Digital Storage</td>
<td><strong>Definition:</strong> Digital Storage measures the vendor cost associated with producing 1 GB of digital storage. The metric provides visibility into the cost/performance curve associated with digital storage allowing for the computational power at the core of the Big Shift.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> The metric is described by Kryder’s Law, which is derived from Moore’s Law. Kryder’s Law provides insight into the basic cost/performance curve that governs digital storage. Initial insights were confirmed by direct observations of the wholesale pricing for 1 GB of memory and an assessment of vendor margins to determine cost as a component of wholesale price.</td>
</tr>
<tr>
<td></td>
<td><strong>Data Sources:</strong> The data were obtained from a number of publicly available sources of cost information, including vendors, wholesale distributors of digital storage, and leading technology research vendors.</td>
</tr>
</tbody>
</table>
### Bandwidth

**Definition:**
The 2009 Shift Index measure for bandwidth captured the vendor cost associated with producing GbE-Fiber as deployed in data centers. In 2010, we chose to transition the bandwidth metric from GbE (1,000 Mbps) to 10 GbE (10 GB) based on increasing market penetration of 10 GbE and the resulting cost reduction as manufacturing volumes increase. Regardless of the measure used, this metric provides visibility into the cost/performance curve associated with network bandwidth, one of the key components of the new digital infrastructure.

**Calculations:**
Because technology performance in the Shift Index is designed to measure the impact of innovation and bandwidth, which is the result of a complex array of technologies that extend from the enterprise data center to the last mile into residential homes, this metric focuses on GbE—Fiber in the data center as the best commercially available example of bandwidth innovation. Initial insights were confirmed by direct observations of the wholesale pricing for GbE-Fiber and an assessment of vendor margins to determine cost as a component of wholesale price.

**Data Sources:**
The data were obtained from a number of publicly available sources of cost information, including vendors, wholesale distributors of network equipment in the data center, and leading technology research vendors.

### Internet Users

**Definition:**
The Internet Users metric measures the number of “active” Internet users in the United States as a percentage of total U.S. population. “Active” users are defined as those who access Internet at least daily. The Internet Users metric is a proxy for the core technology adoptions.

**Calculations:**
Active Internet user data were obtained directly from a report published by comScore. comScore conducts monthly enumeration phone surveys to collect data on the Internet usage and user demographics. Each month, comScore utilizes data from the most recent wave of the surveys and from the 11 preceding waves to estimate the proportion of households in the United States with at least one member using the Internet and the average number of Internet users in these households. comScore then takes the product of these two estimates and compares it with the census-based estimate of the total number of households in the United States to assess total Internet penetration.

**Data Sources:**
The data were obtained from comScore’s Media metrics report.
<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
</table>
| Wireless Subscriptions | **Definition:** The Wireless Subscriptions metric estimates the total number of active Wireless Subscriptions as a percentage of the U.S. population. The Wireless Subscriptions metric is a proxy for core technology adoption.  
**Calculations:** CTIA’s semiannual wireless industry survey (traditionally known as the CTIA “data survey”) gathers industry-wide information from Commercial Mobile Radio Service (CMRS) providers operating commercial systems in the United States. Only companies with operational systems and licenses to operate facilities-based systems are surveyed. The survey prompts respondents to answer the following question: “Indicate the number of subscriber units operating on your switch, which produce revenue. Include suspended subscribers that have not been disconnected. This number should not include subscribers that produce no revenue, such as demonstration phones and some employee phones.” The CTIA survey requests the information on the number of revenue-generating wireless service subscribers and summarizes the result in the CTIA Wireless Subscriber Usage report. Since the metric measures Wireless Subscriptions and not wireless subscribers, it is possible for the total number to exceed the overall U.S. population, as one person can have multiple Wireless Subscriptions.  
**Data Sources:** The data were obtained from the CTIA Wireless Subscriber Usage report. |

| Public Policy | Economic Freedom  | **Definition:** The Economic Freedom metric measures how free a country is across 10 component freedoms: business, trade, fiscal, government size, monetary, investment, financial, property, labor, and, finally, freedom from corruption. The Economic Freedom metric is a proxy for openness of public policy and the degree of economic liberalization, which are both fundamental to either enabling or restricting Big Shift forces.  
**Calculations:** Each freedom component was assigned a score from 0 to 100, where 100 represents maximum freedom. The 10 scores were then averaged to gauge overall economic freedom.  
**Data Source:** The data were obtained from the 2010 Index of Economic Freedom by The Heritage Foundation and Dow Jones & Company, Inc., http://www.heritage.org/Index. |
Flow Index

<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
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</thead>
<tbody>
<tr>
<td>Virtual Flows</td>
<td></td>
</tr>
<tr>
<td>Inter-Firm Knowledge Flows</td>
<td>Definition: The Inter-Firm Knowledge Flows metric is a proxy for knowledge flows across firms. Success in a world disrupted by the Big Shift will require individuals and firms to participate in knowledge flows that extend beyond the four walls of the firm.</td>
</tr>
</tbody>
</table>
| Calculations:           | We explored the types and volume of interfirm knowledge flows in the United States through a national survey of 3,108 respondents. The survey was administered online in April 2010. The results are based on a representative (95% confidence level) sample of approximately 200 (±5.8%) respondents in 15 industries, including 50 respondents (±11.7%) tagged as senior management, 75 (±9.5%) as middle management, and 75 (±9.5%) as frontline workers. In the survey, we tested the participation and volume of participation in eight types of knowledge flows:
<p>| 1) In which of the following activities do you participate: |
| • Use social media to connect with other professionals (e.g., blogs, Twitter, and LinkedIn) |
| • Subscribe to Google alerts |
| • Attend conferences |
| • Attend Web-casts |
| • Share professional information and advice over the telephone |
| • Arrange lunch meetings with other professionals to exchange ideas and advice |
| • Participate in community organizations |
| • Participate in professional organizations |
| 2) How often do you participate in each of the above professional activities? |
| • Daily |
| • Several times a week |
| • Weekly |
| • A few times a month |
| • Monthly |
| • Once every few months |
| • Once a year |
| • Less often than once a year |
| The knowledge flow activities were normalized by the maximum possible participation for each activity (e.g., daily for social media and weekly for Web-casts). |
| Thus, an Inter-Firm Knowledge Flow value was calculated for each individual based on his or her participation in knowledge flows. The average of these flows is the index value for the Inter-Firm Knowledge Flow value metric. |
| Data Sources: Data were obtained from the proprietary Deloitte survey and analysis. |</p>
<table>
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<tr>
<th>Metric</th>
<th>Methodology</th>
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<tr>
<td><strong>Wireless Activity</strong></td>
<td><strong>Definition:</strong> The Wireless Activity metric measures the total number of wireless minutes and total number of SMS messages in the United States per year. The metric is a proxy for connectivity and knowledge flows.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> CTIA’s semiannual wireless industry survey develops industry-wide information drawn from CMRS providers operating commercial systems in the United States. Only companies with operational systems and licenses to operate facilities-based systems are surveyed. Wireless minutes are estimated from the CTIA survey, which measures the total minutes used by subscribers. The CTIA survey asks wireless carriers to report the total number of billable calls, billable minutes (both local and roaming), and total SMS volume on the respondent’s network. Note that for the 2009 index, we used a December-December calendar year to measure wireless minutes and the six months ending in December for SMS volume. Due to data availability issues, this was changed for the 2010 report: now, wireless minutes are measured from June-June and SMS volume from January-June as opposed from June-December. While this shift did impact the index in 2010, as it effectively gave these metrics less time to “grow” before being measured again, it is not indicative of a slowdown in wireless activity. Also, since this was a one-time change, it will not impact the index in 2011.</td>
</tr>
<tr>
<td></td>
<td><strong>Data Sources:</strong> The data were obtained from the CTIA Wireless Subscriber Usage report.</td>
</tr>
<tr>
<td><strong>Internet Activity</strong></td>
<td><strong>Definition:</strong> The Internet Activity metric measures Internet traffic for the 20 highest capacity U.S. domestic Internet routes in gigabits/second. The metric is a proxy for connectivity and knowledge flows.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> Internet volume data were obtained through TeleGeography, which determines Internet capacity and traffic data through confidential surveys, informal discussions, and follow-up interviews with network engineering and planning staff of major Internet backbone providers.</td>
</tr>
<tr>
<td></td>
<td><strong>Data Sources:</strong> The data were obtained from TeleGeography’s Global Internet Geography report.</td>
</tr>
<tr>
<td>Metric</td>
<td>Methodology</td>
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<td>---------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Physical Flows</td>
<td></td>
</tr>
</tbody>
</table>
| Migration of People to Creative Cities      | **Definition:** The Migration of People to Creative Cities metric measures the increase in population in cities ranked as most creative as compared to the increase in population in cities ranked as least creative. The metric serves as a proxy for physical flow of people towards centers of creativity and innovation in order to access knowledge flows more effectively and intimately.  
**Calculations:** As one of the proxies for physical knowledge flows expressed through face-to-face interactions and serendipitous connections, we were measuring the growth in population, as provided by the U.S. Census Bureau, within creative cities, as defined by Richard Florida.  
The most and least creative cities are defined by Richard Florida in his book *The Rise of the Creative Class*. Each city with more than one million people in population is ranked by its creative index score. Florida determined the creative index score by adding three equally weighted components: technology, talent, and tolerance. U.S. Census Bureau data were used to determine the population of the cities defined by Florida as most and least creative. We defined the metric as a gap between the two groups’ population.  
<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
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</thead>
</table>
| **Travel Volume**   | **Definition:** The Travel Volume metric is defined as the volume of passenger travel. The metric serves as a proxy for physical flows of people and indicates levels of face-to-face interactions, which are more likely to drive the most valuable knowledge flows—those that result in new knowledge creation rather than simple knowledge transfer.  
**Calculations:** The Transportation Services Index (TSI) published by the Bureau of Transportation Statistics, the statistical agency of the U.S. Department of Transportation (DOT) is used to assess the volume of passenger travel. The passenger TSI measures the movement and month-to-month changes in the output of services provided by the for-hire passenger transportation industries. The seasonally adjusted index consists of data from passenger air transportation, local mass transit, and intercity passenger rail. Note that to keep pace with ongoing methodology adjustments by the BTS, we update the full historical data set each year the Shift Index is calculated.  
**Data Sources:** U.S. Department of Transportation, Research and Innovation Technology Administration, Bureau of Transportation Statistics Transportation Services Index; http://www.bts.gov/xml/tsi/src/index.xml. |
| **Movement of Capital** | **Definition:** The Movement of Capital metric measures the value of U.S. FDI inflows and outflows. The metric serves as a proxy for capital flows between the edge and the core. Edges are peripheral areas of geographies, demographic generations, and technologies where growth and innovation tend to concentrate. The core is where the money is today.  
**Calculations:** Current dollar FDI inflows into the United States and outflows from the United States were summed. Absolute values were used to capture the total amount of flows regardless of the direction. The result was normalized by the size of the economy by dividing FDI flows by the U.S. GDP. This normalization will allow for comparability as we extend our index internationally. FDI stocks were excluded from the calculations as they do not directly represent the flows of capital.  
**Data Source:** The data were obtained from the United Nations Conference on Trade and Development (UNCTAD) FDI database (http://stats.unctad.org/FDI/TableViewer/tableView.aspx?ReportId=1254). Previous years’ estimates for FDI flows were replaced with actuals when available. Also, note that due to ongoing changes in the way FDI flows are measured by the UNCTAD, we update the full historical data set each year. |
<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
</table>
| Worker Passion | **Definition:** The Worker Passion metric measures how passionate U.S. workers are about their jobs. Passionate workers are fully engaged in their work and their interactions and strive for excellence in everything they do. Therefore, worker passion acts as an amplifier to the knowledge flows, thereby accelerating the growth of the Flow Index.  
**Calculations:** Our exploration of worker passion was designed around a national survey with 3,108 respondents. The survey was administered online in April 2010. The results are based on a representative (95% confidence level) sample of approximately 200 (±5.8%) respondents in 15 industries, including 50 respondents (±11.7%) tagged as senior management, 75 (±9.5%) as middle management, and 75 (±9.5%) as frontline workers. In the survey, we tested different attitudes and behavior around worker passion—excitement about work, fulfillment from work, and willingness to work extra hours—using the following six statements/questions:  
1) I talk to my friends about what I like about my job.  
2) I am generally excited to go to work each day.  
3) I usually find myself working extra hours, even though I don’t have to.  
4) My job gives me the potential to do my best.  
5) To what extent do you love your job? (7-point scale from a lot to not at all)  
6) Which of the following statements best describes your current situation?  
   • I’m currently in my dream job at my dream company.  
   • I’m currently in my dream job, but I’d rather be at a different company.  
   • I’m not currently in my dream job, but I’m happy with my company.  
   • I’m not currently in my dream job, and I’m not happy at my company.  
A response was classified as a “top two” response if it was a 7 or 6 on the 7-point scales or a 1 or 2 on the last question. The respondents were then classified as “disengaged,” “passive,” “engaged,” and “passionate” based on the number of “top two” responses:  
   • Passionate: 5-6 of the statements  
   • Engaged: 3-4 of the statements  
   • Passive: 1-2 of the statements  
   • Disengaged: None of the statements  
The index value for Worker Passion is the percentage of “passionate” respondents to the number of total respondents.  
**Data Sources:** Data were obtained from the proprietary Deloitte survey and analysis. |
**Social Media Activity**

**Definition:**
Social Media Activity is a measure of how many minutes Internet users spend on social media Web sites relative to the total minutes they spend on the Internet. The metric is a proxy for two- and multiple-way communication, which amplifies knowledge flows by offering the ability to collaborate.

**Calculations:**
comScore provides industry-leading Internet audience measurement that reports details of online media usage; visitor demographics; and online buying power for home, work, and university audiences across local U.S. markets and across the globe. Using proprietary data collection technology and cutting-edge methodology, comScore is able to capture great volumes of extremely granular data about online consumer behavior. comScore deploys passive, non-invasive measurement in its collection technologies, projecting the data to the universe of persons online. For the purposes of collecting data for our analysis, comScore defines social media as a virtual community within Internet Web sites and applications to help connect people interested in a subject.

**Data Sources:**
The data were obtained from comScore’s Media Metrics report.
## Impact Index

<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Markets</strong></td>
<td></td>
</tr>
<tr>
<td>Competitive</td>
<td><strong>Definition:</strong> The Competitive Intensity metric is a measure of market</td>
</tr>
<tr>
<td>Intensity</td>
<td>concentration and serves as a rough proxy for how aggressively firms</td>
</tr>
<tr>
<td></td>
<td>interact.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> The metric is based on the HHI, a methodology used in</td>
</tr>
<tr>
<td></td>
<td>competitive and antitrust law to assess the impact of large mergers and</td>
</tr>
<tr>
<td></td>
<td>acquisitions on the concentration of market power. Underlying the metric is</td>
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<td></td>
<td>the notion that markets where power is more widely dispersed are more</td>
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<tr>
<td></td>
<td>competitive. This logic is consistent with the Big Shift, which predicts</td>
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<tr>
<td></td>
<td>that industries will initially fragment as the traditional benefits of scale</td>
</tr>
<tr>
<td></td>
<td>decline with barriers to entry. As strategic restructuring occurs, and</td>
</tr>
<tr>
<td></td>
<td>companies begin to focus more tightly on a core business type, certain firms</td>
</tr>
<tr>
<td></td>
<td>will likely once again begin to exploit powerful economies of scale and</td>
</tr>
<tr>
<td></td>
<td>scope, but in a much more focused manner.</td>
</tr>
<tr>
<td></td>
<td><strong>Data Source:</strong> The metric was calculated by Deloitte, using data provided</td>
</tr>
<tr>
<td></td>
<td>by Standard &amp; Poor’s Compustat on over 20,000 publicly traded U.S. firms</td>
</tr>
<tr>
<td></td>
<td>(and foreign companies trading in American Depository Receipts). It is</td>
</tr>
<tr>
<td></td>
<td>available annually and by industry sector through 1965.</td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td><strong>Definition:</strong> The Labor Productivity metric is a measure of economic</td>
</tr>
<tr>
<td>Productivity</td>
<td>efficiency that shows how effectively economic inputs are converted into</td>
</tr>
<tr>
<td></td>
<td>output. The metric is a proxy for the value creation resulting from the Big</td>
</tr>
<tr>
<td></td>
<td>Shift and enriched knowledge flows.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculations:</strong> Productivity data were downloaded directly from the Bureau</td>
</tr>
<tr>
<td></td>
<td>The Bureau of Labor Statistics does not compute productivity data by the</td>
</tr>
<tr>
<td></td>
<td>exact sectors analyzed in the Shift Index. Therefore, Labor Productivity by</td>
</tr>
<tr>
<td></td>
<td>industry was derived using data published by the Bureau. Bureau data were</td>
</tr>
<tr>
<td></td>
<td>aggregated by five, four, and sometimes three-digit North American Industry</td>
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<tr>
<td></td>
<td>Classification System (NAICS) codes using Bureau methodology to map to the</td>
</tr>
<tr>
<td></td>
<td>Shift Index sectors.</td>
</tr>
<tr>
<td></td>
<td>Sector Labor Productivity figures were calculated as a ratio of the output</td>
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<tr>
<td></td>
<td>of goods and services to the labor hours devoted to the production of that</td>
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<tr>
<td></td>
<td>output. A sector output index was calculated using the Tornqvist formula (the</td>
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<tr>
<td></td>
<td>weighted aggregate of the growth rates of the various industries between</td>
</tr>
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<td>two periods, with weights based on the industry shares in the sector value of</td>
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<td></td>
<td>production). The input was calculated as a direct aggregation of all industry</td>
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<tr>
<td></td>
<td>employee hours in the sector. Note that due to ongoing methodology and data</td>
</tr>
<tr>
<td></td>
<td>revisions by the Bureau of Labor Statistics, we update and replace the entire</td>
</tr>
<tr>
<td></td>
<td>Labor Productivity data set each year.</td>
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<tr>
<td></td>
<td>Note for the 2011 Shift Index release, labor productivity and related cost</td>
</tr>
<tr>
<td></td>
<td>measures for 2010 for mining, utility, manufacturing, and selected service</td>
</tr>
<tr>
<td></td>
<td>industries were not available and will not be released by the Bureau of</td>
</tr>
<tr>
<td></td>
<td><strong>Data Sources:</strong> The metric was based on the Bureau of Labor Statistics</td>
</tr>
<tr>
<td></td>
<td>data. Major sector data are available annually beginning in 1947, and</td>
</tr>
<tr>
<td></td>
<td>detailed industry data on a NAICS basis are available annually beginning in</td>
</tr>
<tr>
<td></td>
<td>1987.</td>
</tr>
</tbody>
</table>
**Shift Index Methodology**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
</table>
| Stock Price Volatility | **Definition:** The Stock Price Volatility metric is a measure of trends in movement of stock prices. The metric is a proxy for measuring disruption and uncertainty.  
  **Calculations:** Standard deviation is a statistical measurement of the volatility of a series. Our data provider, Center for Research in Security Prices (CRSP) at the University of Chicago Booth School of Business, provides annual standard deviations of daily returns for any given portfolio of stocks. Rather than using an equal-weighted approach, we used value-weighting. According to CRSP: “In a value-weighted portfolio or index, securities are weighted by their market capitalization. Each period the holdings of each security are adjusted so that the value invested in a security relative to the value invested in the portfolio is the same proportion as the market capitalization of the security relative to the total portfolio market capitalization” (http://www.crsp.com/support/glossary.html).  
  **Data Sources:** Established in 1960, CRSP maintains the most complete, accurate, and user-friendly securities database available. CRSP has tracked prices, dividends, and rates of return of all stocks listed and traded on the New York Stock Exchange since 1926, and in subsequent years, it has also started to track the NASDAQ and the NYSE Arca. http://www.crsp.com/documentation/product/stkind/calculations/standard_deviation.html |

<table>
<thead>
<tr>
<th>Firms</th>
<th></th>
</tr>
</thead>
</table>
| Asset Profitability  | **Definition:** Asset Profitability (ROA) is a widely used measure of corporate performance and a strong proxy for the value captured by firms relative to their size.  
  **Calculations:** In the Shift Index, Asset Profitability is an aggregate measure of the net income after extraordinary items generated by the economy (defined as all publicly traded firms in our database) divided by the net assets, which includes all current assets, net property, plants, and equipment, and other non-current assets. Net income in this case was calculated after taxes, interest payments, and depreciation charges.  
  **Data Sources:** The metric was calculated by Deloitte, using data provided by Standard & Poor’s Compustat on over 20,000 publicly traded U.S. firms (and foreign companies trading in American Depository Receipts). It is available annually and by industry sector through 1965. |
## Methodology

<table>
<thead>
<tr>
<th>Metric</th>
<th>Methodology</th>
</tr>
</thead>
</table>
| ROA Performance Gap | **Definition:** The ROA Performance Gap tracks the bifurcation of returns flowing to the top and bottom quartiles of performers and is a proxy for firm performance.  
**Calculation:** This metric consists of the percentage difference in ROA between these groups and is a measure of how value flows to or from “winners” and “losers” in an increasingly competitive environment.  
**Data Sources:** The metric is based on an extensive database provided by Standard & Poor’s Compustat. It was calculated by Deloitte. The metric is available annually and by industry sector through 1965. |

| Firm Topple Rate | **Definition:** The Firm Topple Rate measures the rate at which companies switch ranks, as defined by their ROA performance. It is a proxy for dynamism and upheaval and represents how difficult or easy it is to develop a sustained competitive advantage in the world of the Big Shift.  
**Calculations:** To calculate this metric, we used a proprietary methodology developed within Oxford’s Said Business School and the University of Cologne that measures the rate at which firms jump ranks normalized by the expected rank changes under randomness. A topple rate close to zero denotes that ranks are perfectly stable and that it is relatively easy to sustain a competitive advantage, whereas a value near one means that ranks change randomly, and that doing so is uncommon and incredibly difficult.  
We applied this methodology to firms with more than $100 million in annual net sales and averaged the results from our 15 industry sectors to reach an economy-wide figure.  
**Data Sources:** This metric is based on data from Standard & Poor’s Compustat. It was calculated annually and by industry sector through 1965. |
### Shareholder Value Gap

**Definition:**
The Shareholder Value Gap metric is defined in terms of stock returns and it aims to quantify how hard it is for companies to generate sustained returns to shareholders. It is another assessment of the bifurcation of “winners” and “losers.”

**Calculations:**
The calculation uses the weighted-average TRS percentage for both the top and bottom quartiles of firms in our database, in terms of their individual TRS percentages, to define the gap. Total returns are annualized rates of return reflecting price appreciation plus reinvestment of monthly dividends and the compounding effect of dividends paid on reinvested dividends.

**Data Sources:**
The metric is based on Standard & Poor’s Compustat data and is available annually and by industry sector through 1965.

### People

**Consumer Power**

**Definition:**
The Consumer Power metric measures the value captured by consumers. In a world disrupted by the Big Shift, consumers continue to wrestle more power from companies.

**Calculations:**
A survey was administered online in April 2010 to a sample of 2,000 U.S. adults (at least 18 years old) who use a consumer category in question and can name a favorite brand in that category. The sample demographics were nationally balanced to the U.S. census. A total of 4,292 responses were gathered as consumers were allowed to respond to surveys on multiple consumer categories. A total of 26 consumer categories were tested with approximately 180 (±6.2%, 95% confidence level) responses per category.

We studied a shift in Consumer Power by gathering 4,292 responses across 26 consumer categories to a set of six statements measuring different aspects, attributes, and behaviors involving consumer power:

- There are a lot more choices now in the (consumer category) than there used to be.
- I have convenient access to choices in the (consumer category).
- There is a lot of information about brands in the (consumer category).
- It is easy for me to avoid marketing efforts.
- I have access to customized offerings in the (consumer category).
- There isn’t much cost associated with switching away from this brand.

Each participant was asked to respond to these statements on a 7-point scale, ranging from 7=completely agree to 1=completely disagree. An average score was calculated for each respondent and then converted to a 0—100 scale.

The index value for the Consumer Power metric is the average Consumer Power score of all respondents.

**Data Sources:**
Data were obtained from the proprietary Deloitte survey and analysis.
**Metric** | **Methodology**
---|---
Brand Disloyalty | **Definition:**
The Brand Disloyalty metric is another measure of value captured by consumers. As a result of increased Consumer Power and a generational shift in reliance on brands, the Brand Disloyalty measure is an indicator of consumer gain stemming from the Big Shift.

**Calculations:**
A survey was administered online in April 2010 to a sample of 2,000 U.S. adults (at least 18 years old) who use a consumer category in question and can name a favorite brands in that category. The sample demographics were nationally balanced to the U.S. census. A total of 4,292 responses were gathered as consumers were allowed to respond to surveys on multiple consumer categories. A total of 26 consumer categories were tested with approximately 180 (±6.2%, 95% confidence level) responses per category.

We studied a shift in Brand Disloyalty by gathering 4,292 responses across 26 consumer categories to a set of six statements measuring different aspects, attributes, and behaviors involving brand disloyalty:
- I would consider switching to a different brand.
- I compare prices for this brand with other brands.
- I seek out information about other brands.
- I ask friends about the brands they use.
- I switch to the brand with the lowest price.
- I pay attention to advertising from other brands.

Each participant was asked to respond to these statements on a 7-point scale, ranging from 7=completely agree to 1=completely disagree. An average score was calculated for each respondent and then converted to a 0—100 scale. The index value for the Brand Disloyalty metric is the average Brand Disloyalty score of all respondents.

**Data Sources:**
Data were obtained from the proprietary Deloitte survey and analysis.
# Shift Index Methodology

## Metric: Returns to Talent

**Definition:**
The Returns to Talent metric examines fully loaded compensation between the most and least creative professions. The metric is a proxy for the value captured by talent.

**Calculations:**
The most and least creative occupations were leveraged from Florida's study. A fully loaded salary (cash, bonuses, and benefits) was calculated for each group and the differences were measured.

**Data Sources:**
The most and least creative occupations were obtained from Florida’s book *The Rise of the Creative Class*. Fully loaded salary information was gathered from the Bureau of Labor Statistics data leveraging the Occupational Employment Statistics (OES) Department and Employer Cost for Employee Compensation information (ECEC). The analysis was performed by Deloitte.

ECEC: [http://www.bls.gov/ect/home.htm](http://www.bls.gov/ect/home.htm)

## Metric: Executive Turnover

**Definition:**
The Executive Turnover metric measures executive attrition rates. It is a proxy for tracking the highly unpredictable, dynamic pressures on the market participants with the most responsibility—executives.

**Calculations:**
The data were obtained from the Liberum Research (Wall Street Transcript) Management Change database and measures the number of executive management changes (from a board of director through vice president level) in public companies. For the purposes of this analysis, we summed the number of executives who resigned from, retired, or were fired from their jobs and then normalized that one number, each year from 2005 to 2009, against the number of total management occupational jobs reported by the Bureau of Labor Statistics (Occupation Employment Statistics) for each of those years. Liberum Research’s Management Change Database is an online SQL database. Each business day, experts examine numerous business wire services, government regulatory filings (e.g., SEC Form 8K filings), business periodicals, newspapers, RSS feeds, corporate and business-related blogs, and specified search alerts for executive management changes. Once an appropriate change is found, Liberum’s staff inputs the related management change information into the management change database. Below are the overall management changes tracked by Liberum:

- I—Internal move, no way to differentiate if the move is lateral, a promotion, or a demotion
- J—Joining, hired from the outside
- L—Leaving, SEC Form 8K or press release contains information that states individual has left the firm; no indication of a resignation, retirement, or firing
- P—Promotion, moved up the corporate ladder
- R—Resigned/retired
- T—Terminated

**Data Sources:**
Liberum Research (a division of Wall Street Transcript); [http://www.twst.com/iberum.html](http://www.twst.com/iberum.html)
Index Creation Methodology

After a rigorous data collection process, we made several adjustments to the data to create the final Shift Index. To ensure that each metric has an appropriate impact on the overall index and to focus on secular, long-term trends, we performed five steps:

Classifying metrics
A key challenge in assembling the index is being able to combine metrics of different magnitudes, trends, and volatility in a sensible way. The first step in this process involves carefully evaluating each metric with respect to historical trends, future projections, and qualitative research and classifying it as either “secular non-exponential,” meaning any non-exponential metric with a defined or assumed long-term trend, or “exponential,” which pertains to metrics, such as Computing and Wireless Activity. With these classifications, we then apply one of two smoothing/transformation methodologies to make the metrics statistically comparable.

Smoothing metric trends and volatility
Metrics that are classified as exponential present a particular challenge, in that their rapid growth can overwhelm slower moving metrics in the index. At the same time, accurately representing trends in the underlying data is critical, especially those related to technology and knowledge flows, whose exponentiality is at the core of the Big Shift. Our solution to these concerns is exactly the middle ground: We dampen exponential metrics, but not so much as to make them linear. To do this, we use a Box-Cox Transformation (a commonly accepted technique for normalizing exponential functions), which uses a transformation coefficient to effectively reduce their growth rate. All exponential metrics are transformed using the same coefficient in order to preserve the relative differences between them.

For secular non-exponential metrics, we engage in a different kind of dampening: Smoothing out volatility to focus the index on long-term trends. This is of particular concern in the Impact Index, which contains a number of metrics that are highly volatile in the short term, but over the long run show defined trends. Stock Price Volatility, for example, swings wildly, but is also trending upward over time; the latter is what we want the Impact Index to represent. On the other hand, Labor Productivity moves very little, so any large fluctuations are critically important to include. Essentially, the degree to which we want to smooth secular non-exponential metrics depends on how volatile they typically are.

To make this assessment, we calculate something called a “deviation score” for each metric of this type, which represents how much (on average) it deviates from its long-term trend line. This score sets the “threshold” for how much volatility we allow through to the final index.

We do this by revising the raw values to represent a combination of (a) the value predicted in a given year by linear regression and (b) the difference between the raw value and the predicted one (e.g., volatility). The former is always given a weight of one, but the latter is dynamic: This is where the deviation score comes in. The higher the deviation score, the less weight is given to this difference. Before indexing, the contribution of Movement of Capital (which is highly volatile and, by extension, has a high-deviation score) to the index in a given year is 100% of the predicted value and a small percentage of the deviation around that mean. By the same token, Labor Productivity, which fluctuates much less, contributes a very large percentage of that deviation in addition to 100% of its predicted value.

Because our next step is to index these values to a base year (2003) — which will be discussed in the next section — this artificial inflation or deflation has no impact on the index and instead serves only to minimize or preserve volatility in the underlying data.

Normalizing rates of change
After smoothing exponential and non-exponential metrics to make them comparable and to represent long-term trends, we normalize each metric by indexing it to 2003. This process refocuses the Shift Index from magnitudes to rates of change, which is in the end what we are trying to measure.

By choosing 2003 as a base year, we can easily evaluate rates of change in the past five years. In addition, historical
data are available for nearly all 25 metrics by 2003, limiting the need for estimation to backtest the index. However, those metrics that did not have historical data starting in 2003 (e.g., our four proprietary survey metrics, Internet Activity, and Social Media Activity) are indexed to 2008. This last difference in indexing treatment accounts for the less-than-100 value of the Flow Index in 2003.

Weighting metrics to reflect the logic

The final step before calculating the Foundation Index, Flow Index, and Impact Index is properly weighting each metric to ensure each driver (key concept) contributes equally to the index. This process is detailed in Exhibit 111, but to clarify, the Foundation Index contains three drivers: Technology Performance, Infrastructure Penetration, and Public Policy. Each of these contains different numbers of metrics, but overall they represent three core concepts about what forces are driving foundational shifts. As such, we want to give equal weights to each concept, regardless of how many metrics it contains. To do this, each metric is assigned a weight based on the number of metrics in its respective driver (Technology Performance contains three metrics, so one-third) times one-third again, representing the fact that Technology Performance accounts for an equal share of the Foundation Index.

In addition to preserving the logic, what this system allows us to do is add and subtract metrics in future years without needing to materially restructure the index. Additionally, when the Shift Index is released on a global scale, it provides room to choose geographically relevant metrics and proxies while maintaining comparability with the U.S. index.

Exhibit 111: Shift Index weighting methodology

<table>
<thead>
<tr>
<th>Technology performance</th>
<th>Infrastructure penetration</th>
<th>Public policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing =&gt; 1/9 times value</td>
<td>Internet users =&gt; 1/6 times value</td>
<td>Economic freedom =&gt; 1/3 times value</td>
</tr>
<tr>
<td>Digital storage =&gt; 1/9 times value</td>
<td>Wireless subscriptions =&gt; 1/6 times value</td>
<td></td>
</tr>
<tr>
<td>Bandwidth =&gt; 1/9 times value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Deloitte
Other tools: Correlation model
To explore conceptually plausible relationships in and among various Shift Index metrics, as well as with macroeconomic indicators, we also conduct a simple quantitative exercise to identify the strength of these relationships and the subsequent correlations or degrees of linear dependence. The formula and function we use to calculate the correlation coefficient for a sample uses the covariance of the samples and the standard deviations of each sample. To obtain the most accurate results, we only note quantitative correlation relationships between data sets with a time series of at least three years and an identifiable linear trend.

To be clear, this approach and our assertions do not imply causality. Two data sets might be related and have a strong correlation, but could be independently related to another variable or not conceptually related at all. We invite others to join with us and engage in further exploration and rigorous analyses where interesting insights might be developed further.

Correlations greater than 0.60 (signifying an increasing linear relationship) or less than -0.60 (signifying a decreasing linear relationship) are considered to be significant and worthy of applying conceptual logic and/or further exploration.

For example, the results of this basic analysis show a significant positive correlation between the Heritage Foundation’s business freedom and GDP (0.69) and between the Heritage Foundation’s business freedom and Competitive Intensity (0.88). Because business freedom is defined as the “ability to start, operate, and close businesses that represents the overall burden of regulations and regularity efficiency,” it seems plausible that as business freedom increases, there is greater opportunity to create economic value, for the regulatory environment encourages growth while at the same time creating a more competitive environment due to lower barriers to entry and participation.
Appendix

172  Aerospace & Defense
176  Automotive
180  Banking & Securities
184  Consumer Products
188  Energy
192  Health Care
196  Insurance
200  Life Sciences
204  Media & Entertainment
208  Process & Industrial Products
212  Retail
216  Technology
220  Telecommunications
Exhibit 1: Competitive Intensity, Aerospace & Defense (1965-2010)

Source: Compustat, Deloitte analysis


Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 3: Asset Profitability, Aerospace & Defense (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 4: Asset Profitability Top Quartile and Bottom Quartile, Aerospace & Defense (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 7: Percentage participation in Inter-Firm knowledge flows, Aerospace & Defense (2011)

Source: Synovate, Deloitte Analysis


Source: Synovate, Deloitte Analysis
Exhibit 9: Competitive Intensity, Automotive (1965-2010)

Source: Compustat, Deloitte analysis

<table>
<thead>
<tr>
<th>HHI Value</th>
<th>Industry Concentration</th>
<th>Competitive Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; .01</td>
<td>Highly Un-concentrated</td>
<td>Very High</td>
</tr>
<tr>
<td>0 - .10</td>
<td>Un-concentrated</td>
<td>High</td>
</tr>
<tr>
<td>0.10 - 0.18</td>
<td>Moderate Concentration</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.18 - 1</td>
<td>High Concentration</td>
<td>Low</td>
</tr>
</tbody>
</table>

Exhibit 10: Labor Productivity, Automotive (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 11: Asset Profitability, Automotive (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 12: Asset Profitability Top Quartile and Bottom Quartile, Automotive (1965-2010)

Source: Compustat, Deloitte analysis

Source: Compustat, Deloitte analysis

Exhibit 14: Returns to Talent, Automotive (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s *The Rise of the Creative Class*, Deloitte analysis
Exhibit 15: Percentage participation in Inter-Firm knowledge flows, Automotive (2011)

Source: Synovate, Deloitte analysis

Exhibit 16: Worker Passion, Automotive (2010)

Source: Synovate, Deloitte analysis
Exhibit 17: Competitive Intensity, Banking & Securities (1965-2010)

<table>
<thead>
<tr>
<th>HHI Value</th>
<th>Industry Concentration</th>
<th>Competitive Intensity</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0 - 0.10</td>
<td>Un-concentrated</td>
<td>High</td>
</tr>
<tr>
<td>0.10 - 0.18</td>
<td>Moderate Concentration</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.18 - 1</td>
<td>High Concentration</td>
<td>Low</td>
</tr>
</tbody>
</table>

Exhibit 18: Labor Productivity, Banking & Securities (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 19: Asset Profitability of Sub-Sectors, Banking & Securities (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 20: Asset Profitability Top Quartile and Bottom Quartile, Banking & Securities (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 21: Firm Topple of Sub-Sectors, Banking & Securities (1972-2010)

Source: Compustat, Deloitte analysis

Exhibit 22: Returns to Talent, Banking & Securities (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s The Rise of the Creative Class, Deloitte analysis
Exhibit 23: Percentage participation in Inter-Firm knowledge flows, Banking & Securities (2011)

Source: Synovate, Deloitte analysis

Exhibit 24: Worker Passion, Banking & Securities (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 25: Competitive Intensity, Consumer Products (1965-2010)

<table>
<thead>
<tr>
<th>HHI Value</th>
<th>Industry Concentration</th>
<th>Competitive Intensity</th>
</tr>
</thead>
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</tr>
<tr>
<td>0.10 - 0.18</td>
<td>Moderate Concentration</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.18 - 1</td>
<td>High Concentration</td>
<td>Low</td>
</tr>
</tbody>
</table>

Exhibit 26: Labor Productivity, Consumer Products (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 27: Asset Profitability, Consumer Products (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 28: Asset Profitability Top Quartile and Bottom Quartile, Consumer Products (1965-2010)

Source: Compustat, Deloitte analysis

Source: Compustat, Deloitte analysis

Exhibit 30: Returns to Talent, Consumer Products (2003-2010)

Source: U.S. Census Bureau, Richard Florida's The Rise of the Creative Class, Deloitte analysis
Exhibit 31: Percentage participation in Inter-Firm knowledge flows, Consumer Products (2011)

<table>
<thead>
<tr>
<th>Participation Type</th>
<th>Consumer Products</th>
<th>Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email Alerts</td>
<td>31%</td>
<td>19%</td>
</tr>
<tr>
<td>Community Organizations</td>
<td>33%</td>
<td>18%</td>
</tr>
<tr>
<td>Lunch Meetings</td>
<td>33%</td>
<td>23%</td>
</tr>
<tr>
<td>Web-Casts</td>
<td>39%</td>
<td>35%</td>
</tr>
<tr>
<td>Professional Organizations</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>Telephone</td>
<td>36%</td>
<td>30%</td>
</tr>
<tr>
<td>Social Media</td>
<td>43%</td>
<td>46%</td>
</tr>
<tr>
<td>Conferences</td>
<td>43%</td>
<td>50%</td>
</tr>
</tbody>
</table>

*Source: Synovate, Deloitte analysis*

Exhibit 32: Worker Passion, Consumer Products (2010), 2011

<table>
<thead>
<tr>
<th>Passion Category</th>
<th>2010</th>
<th>2011</th>
<th>Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disengaged</td>
<td>25%</td>
<td>24%</td>
<td>21%</td>
</tr>
<tr>
<td>Passive</td>
<td>31%</td>
<td>31%</td>
<td>24%</td>
</tr>
<tr>
<td>Engaged</td>
<td>31%</td>
<td>23%</td>
<td>21%</td>
</tr>
<tr>
<td>Passionate</td>
<td>24%</td>
<td>23%</td>
<td>21%</td>
</tr>
</tbody>
</table>

*Source: Synovate, Deloitte analysis*
Exhibit 33: Competitive Intensity, Energy (1965-2010)

<table>
<thead>
<tr>
<th>HHI Value</th>
<th>Industry Concentration</th>
<th>Competitive Intensity</th>
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</tr>
</tbody>
</table>

Source: Compustat, Deloitte analysis

Exhibit 34: Labor Productivity, Consumer Products (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 35: Asset Profitability, Energy (1965-2010)

Exhibit 36: Asset Profitability Top Quartile and Bottom Quartile, Energy (1965-2010)

Source: Compustat, Deloitte analysis

Source: Compustat, Deloitte analysis

Exhibit 38: Returns to Talent, Energy (2003-2010)

Source: US Census Bureau, Richard Florida’s “The Rise of the Creative Class”, Deloitte Analysis
Exhibit 39: Percentage participation in Inter-Firm knowledge flows, Energy (2011)

Source: Compustat, Deloitte analysis


Source: Compustat, Deloitte analysis
Exhibit 41: Competitive Intensity, Health Care Services (1972-2010)

<table>
<thead>
<tr>
<th>HHI Value</th>
<th>Industry Concentration</th>
<th>Competitive Intensity</th>
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</tr>
</tbody>
</table>

Source: Compustat, Deloitte analysis

Exhibit 42: Labor Productivity, Health Care Services (1994-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 43: Asset Profitability of Sub-Sectors, Health Care Services (1972-2010)

Exhibit 44: Asset Profitability Top Quartile and Bottom Quartile, Health Care Services (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 45: Firm Topple of Sub-Sectors, Health Care Services (1983-2010)

Source: Compustat, Deloitte analysis

Exhibit 46: Returns to Talent, Health Care Services (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s *The Rise of the Creative Class*, Deloitte analysis
Exhibit 47: Percentage participation in Inter-Firm knowledge flows, Health Care Services (2011)

Source: Synovate, Deloitte analysis

Exhibit 48: Worker Passion, Health Care Services (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 49: Competitive Intensity, Insurance (1965-2010)

Herfindahl Index

Source: Compustat, Deloitte analysis

<table>
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<tr>
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<td>Moderate</td>
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</tbody>
</table>

Exhibit 50: Asset Profitability of Sub-Sectors, Insurance (1972-2010)

Herfindahl Index

Source: Compustat, Deloitte analysis
Exhibit 51: Asset Profitability Top Quartile and Bottom Quartile, Insurance (1965-2010)

Exhibit 52: Firm Topple of Sub-Sectors, Insurance (1973-2010)

*Source: Compustat, Deloitte analysis*
Exhibit 53: Returns to Talent, Insurance (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s “The Rise of the Creative Class”, Deloitte analysis

Exhibit 54: Percentage participation in Inter-Firm knowledge flows, Insurance (2011)

Source: Synovate, Deloitte analysis

Percentage of employees, by Passion category:

- Disengaged: 25% (2010), 24% (2011)
- Passive: 31% (2010), 31% (2011)
- Engaged: 21% (2010), 24% (2011)
- Passionate: 23% (2010), 21% (2011)

Source: Synovate, Deloitte analysis
Exhibit 56: Competitive Intensity, Life Sciences (1965-2010)

<table>
<thead>
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Source: Compustat, Deloitte analysis

Exhibit 57: Labor Productivity, Life Sciences (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 58: Asset Profitability, Life Sciences (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 59: Asset Profitability Top Quartile and Bottom Quartile, Life Sciences (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 60: Firm Topple, Life Sciences (1966-2010)

Exhibit 61: Returns to Talent, Life Sciences (2003-2010)
Exhibit 62: Percentage participation in Inter-Firm knowledge flows, Life Sciences (2011)

Source: Synovate, Deloitte analysis

Exhibit 63: Worker Passion, Life Sciences (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 64: Competitive Intensity, Media & Entertainment (1965-2010)

Exhibit 65: Labor Productivity, Media & Entertainment (1987-2010)

Source: Compustat, Deloitte analysis

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 66: Asset Profitability, Media & Entertainment (1965-2010)

Exhibit 67: Asset Profitability Top Quartile and Bottom Quartile, Media & Entertainment (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 68: Firm Topple, Media & Entertainment (1966-2010)

Source: Compustat, Deloitte analysis

Exhibit 69: Returns to Talent, Media & Entertainment (2003-2010)

Source: U.S. Census Bureau, Richard Florida's *The Rise of the Creative Class*, Deloitte analysis
Exhibit 70: Percentage participation in Inter-Firm knowledge flows, Media & Entertainment (2011)

Source: Synovate, Deloitte analysis

Exhibit 71: Worker Passion, Media & Entertainment (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 72: Competitive Intensity, Process & Industrial Products (1965-2010)

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Source: Compustat, Deloitte analysis


Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 74: Asset Profitability, Process & Industrial Products (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 75: Asset Profitability Top Quartile and Bottom Quartile, Process & Industrial Products (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 76: Firm Topple, Process & Industrial Products (1966-2010)

Exhibit 77: Returns to Talent, Process & Industrial Products (2003-2010)

Source: Compustat, Deloitte analysis

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 78: Percentage participation in Inter-Firm knowledge flows, Process & Industrial Products (2011)

Source: Compustat, Deloitte analysis


Source: Compustat, Deloitte analysis
Exhibit 80: Competitive Intensity, Retail (1965-2010)

<table>
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</tbody>
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Source: Compustat, Deloitte analysis

Exhibit 81: Labor Productivity, Retail (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 82: Asset Profitability, Retail (1965-2010)

Exhibit 83: Asset Profitability Top Quartile and Bottom Quartile, Retail (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 84: Firm Topple, Retail (1966-2010)

Source: Compustat, Deloitte analysis

Exhibit 85: Returns to Talent, Retail (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s The Rise of the Creative Class, Deloitte analysis
Exhibit 86: Percentage participation in Inter-Firm knowledge flows, Retail (2011)

Source: Synovate, Deloitte analysis

Exhibit 87: Worker Passion, Retail (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 88: Competitive Intensity, Technology (1965-2010)

<table>
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Source: Compustat, Deloitte analysis

Exhibit 89: Labor Productivity, Technology (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 90: Asset Profitability, Technology (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 91: Asset Profitability Top Quartile and Bottom Quartile, Technology (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 92: Firm Topple, Technology (1966-2010)

Source: Compustat, Deloitte analysis

Exhibit 93: Returns to Talent, Technology (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s The Rise of the Creative Class, Deloitte analysis
Exhibit 94: Percentage participation in Inter-Firm knowledge flows, Technology (2011)

Source: Synovate, Deloitte analysis

Exhibit 95: Worker Passion, Technology (2010, 2011)

Source: Synovate, Deloitte analysis
Exhibit 96: Competitive Intensity, Telecommunications (1965-2010)

Source: Compustat, Deloitte analysis

<table>
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</tr>
<tr>
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</tbody>
</table>

Exhibit 97: Labor Productivity, Telecommunications (1987-2010)

Source: Bureau of Labor Statistics, Deloitte analysis
Exhibit 98: Asset Profitability, Telecommunications (1965-2010)

Source: Compustat, Deloitte analysis

Exhibit 99: Asset Profitability Top Quartile and Bottom Quartile, Telecommunications (1965-2010)

Source: Compustat, Deloitte analysis
Exhibit 100: Firm Topple, Telecommunications (1966-2010)

Source: Compustat, Deloitte analysis

Exhibit 101: Returns to Talent, Telecommunications (2003-2010)

Source: U.S. Census Bureau, Richard Florida’s The Rise of the Creative Class, Deloitte analysis
Exhibit 102: Percentage participation in Inter-Firm knowledge flows, Telecommunications (2011)

Source: Synovate, Deloitte analysis

Exhibit 103: Worker Passion, Telecommunications (2010, 2011)

Source: Synovate, Deloitte analysis
Acknowledgements

Now in its third year, the Shift Index is the product of collaborative effort and support from many talented and dedicated people. While it is impossible to mention them all, we wish to express our profound gratitude to the many people who have made valuable contributions. At the same time, the authors take full responsibility for any errors or omissions in the Shift Index itself.

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• Maggie Wooll
• Josh Smith
• Emily Koteff Moreano
• Jodi Gray
• Diana Fox-Hopkins
• Karen Wiltsie
• Andrew Luedke
• Nelson Kunkel

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• Teresa Briggs
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• Karen Mazer
• Mike Canning
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• Dave Couture
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- Arian Hassani, Hope Street Group
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The Center for The Edge focuses on the boundary, or edge, of the global business environment where strategic opportunity is the highest.

The Deloitte Center for the Edge conducts original research and develops substantive points of view for new corporate growth. The Silicon Valley-based Center helps senior executives make sense of and profit from emerging opportunities on the edge of business and technology. Center leaders believe that what is created on the edge of the competitive landscape—in terms of technology, geography, demographics, markets—inevitably strikes at the very heart of a business. The Center for the Edge’s mission is to identify and explore emerging opportunities related to big shifts that are not yet on the senior management agenda, but ought to be. While Center leaders are focused on long-term trends and opportunities, they are equally focused on implications for near-term action, the day-to-day environment of executives.

Below the surface of current events, buried amid the latest headlines and competitive moves, executives are beginning to see the outlines of a new business landscape. Performance pressures are mounting. The old ways of doing things are generating diminishing returns. Companies are having harder time making money—and increasingly, their very survival is challenged. Executives must learn ways not only to do their jobs differently, but also to do them better. That, in part, requires understanding the broader changes to the operating environment:

• What is really driving intensifying competitive pressures?
• What long-term opportunities are available?
• What needs to be done today to change course?

Decoding the deep structure of this economic shift will allow executives to thrive in the face of intensifying competition and growing economic pressure. The good news is that the actions needed to address near-term economic conditions are also the best long-term measures to take advantage of the opportunities these challenges create. For more information about the Center’s unique perspective on these challenges, visit www.deloitte.com/centerforedge.

John Hagel (Co-chairman) has nearly 30 years’ experience as a management consultant, author, speaker, and entrepreneur and has helped companies improve their performance by effectively applying IT to reshape business strategies. In addition to holding significant positions at leading consulting firms and companies throughout his career, Hagel is the author of a series of best-selling business books, including *Net Gain*, *Net Worth*, *Out of the Box*, *The Only Sustainable Edge*, and, most recently, *The Power of Pull*.

John Seely Brown (JSB) (Independent Co-chairman) is a prolific writer, speaker, and educator. In addition to his work with the Center for the Edge, JSB is Adviser to the Provost and a visiting scholar at the University of Southern California. This position followed a lengthy tenure at Xerox Corporation, where he served as chief scientist and director of the Xerox Palo Alto Research Center. JSB has published more than 100 papers in scientific journals and authored or co-authored seven books, including *The Social Life of Information*, *The Only Sustainable Edge*, *The Power of Pull*, and *A New Culture of Learning*.

Duleesha Kulasooriya (Research Lead) leads research at the Center for the Edge. Prior to joining the Center, Duleesha was part of Deloitte’s Strategy & Operations practice. His eight years in consulting were focused on corporate strategy and customer and market strategy and also included projects related to performance improvement, process redesign, and change management. Duleesha led the teams of Edge Fellows to design and publish the inaugural Shift Index in 2009 and has also led research streams on social software, performance ecosystems, and institutional innovation.
The Shift Index focuses attention on both long-term challenges and opportunities facing executives and policy makers. Foundational shifts are significantly intensifying competition, leading to growing performance pressures extending well beyond the current economic downturn. As the Index reveals companies to date have generally found it very difficult to respond effectively to these performance pressures. On the other hand, the same foundational changes create new opportunities to accelerate performance improvement. The key is to find ways to participate more effectively in richer and more diverse knowledge flows. Adapting our institutions and our practices to the long-term shifts around us will be the key in turning challenge into opportunity.

The 2011 Shift Index report is both a stand-alone summary of the findings to date and an update for those who have read prior editions of the report. In this year’s report we also explore several themes that have influenced our thinking on the Big Shift. As with prior years, we look in greater detail at the questions and challenges behind the cognitive dissonance that has greeted our observations. Additionally, we add our perspective to the public discourse around the hot-button topic of unemployment, presenting our findings from the perspective of firms, an often neglected player in this discussion. Third, we discuss the shifting power dynamics between firms and individuals, and how the ‘connected individual’ is gaining power by tapping into knowledge flows.

These topics and our twenty-five metrics put a number of key questions on the leadership agenda: Are companies organized to effectively generate and participate in a broader range of knowledge flows, especially those that go beyond the boundaries of the firm? How can they best create and capture value from such flows? How can they ignite and tap into the passions of their workforce to achieve sustainable performance improvement? And most importantly, how do they measure their progress navigating the Big Shift in the business landscape? We hope that the Shift Index will help executives answer those questions — in these difficult times and beyond.

www.deloitte.com/shiftindex