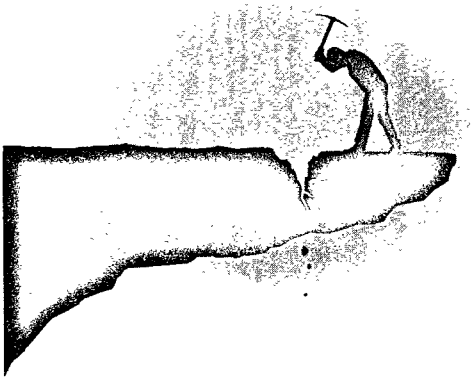
THE UPSIDE *of* INEQUALITY

How Good Intentions Undermine the Middle Class



EDWARD CONARD

PORTFOLIO / PENGUIN

For my wife and daughter,
my mother, who died this year,
and my sister, who kept her alive.

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THE CAUSES OF GROWING INEQUALITY

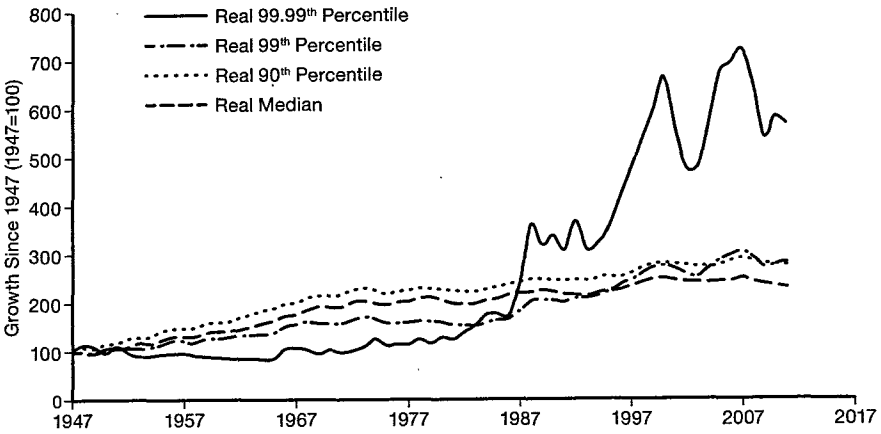
It seems as though you can't pick up a newspaper today without reading an article blaming the 1 percent for the stagnant wages of the middle class.[1] If people aren't accusing the 1 percent of using crony capitalism to steal what they haven't earned, then they are accusing them of inventing technology that hollows out the middle class or stifles the advancement of the underprivileged by underfunding education.[2]

In 2003 renowned economists Thomas Piketty and Emmanuel Saez burst into the public's consciousness with convincing evidence that income inequality had increased dramatically, especially in the United States, and that middle- and working-class incomes had stagnated. Their work showed that income inequality had increased not so much because of an increase in the earnings of the top 10 percent of Americans or the top 5 percent or even the top 1 percent, but chiefly among the top 1 hundredth (0.01) of 1 percent.

Demagogues and politicians favoring income redistribution were quick to link the success of the 0.1 percent to the alleged stagnant wages of the middle class. They insisted that the rich were succeeding at the expense of the rest of America. They seized on this linkage to demand higher taxes on the rich for greater income redistribution.

In his 2013 book *Capital in the Twenty-First Century,* for example, Piketty insisted the rich "by and large have the power to set their own

Figure 1-1: Growth in Incomes by Level of Income



Source: The World Wealth and Income Database, Picketty, Saez et al., 2012, *via* "Visualizing Income Inequality in the U.S." Hirschman, 2013

remuneration, in some cases without limit and in many cases without any clear relation to their individual productivity," using nepotism, corruption, and corporate politics, or by conspiring with "hierarchical superiors."[3] According to Piketty, the 1 percent were merely the beneficiaries of gradually eroding social norms that previously held their pay in check. Success, he claimed, was earned at the expense of the middle class. The alleged growth of CEO pay from thirty times the median wage in 1980 to over three hundred times by 2007 for the largest companies is held out as prima facie evidence.[4]

The financial crisis of 2008 only fueled the flames of anger toward the wealthy. Banks were accused of predatory lending, the sale of fraudulent securities, and ultimately for recklessly causing the "Great Recession." The 1 percent were held responsible.

The list of allegations and complaints against the most successful Americans continued unabated. The technology they create supposedly hollows out middle- and working-class jobs. They own and manage companies that lay off employees and hire offshore workers. They are accused of failing to provide appropriate funding for education and other benefits that may alleviate poverty and increase income mobility or allow for infrastructure investments that may spark faster economic growth.

At first glance, these accusations seem reasonable. The growth of middle-class and working-class incomes has slowed. Crony capitalism does exist. Automation and offshoring seem to have reduced the number of high-paying factory jobs. Companies like Apple, Google, and Facebook scarcely seem to employ any Americans, especially not middle- and working-class Americans. Academic test scores are not improving. And it seems impossible to break the generational cycle of poverty.

Yet despite these facts, the growth of the U.S. economy has accelerated relative to other high-wage economies with more equally distributed incomes—the opposite of what one would expect if crony capitalism or other unfair means of income distribution had increased in the United States on a scale necessary to account for rising income inequality. U.S. employment grew twice as fast as employment in Germany and France since 1980.[5] This growth has created a home for 40 million foreign-born adults, their 20 million native-born adult children, and the 20 million children of these 60 million adults.[6]*

And America has achieved this employment growth at median household incomes that are 15 to 30 percent higher than other high-wage economies, such as Germany, France, and Japan.[7]

Careful scrutiny of the evidence reveals U.S. median household incomes have grown as fast as, or faster than, other high-wage economies.[8] Piketty and Saez's use of tax returns instead of household income ignores the fact that an increasing number of workers live alone instead of in families with more than one worker and that an increasing portion of workers' pay is now provided as untaxed health and retirement benefits, which are difficult to measure. Middle-class tax rates have also fallen as government services have grown.

At the same time, workforce participation has fallen as Americans have grown more prosperous. Social Security and Medicare, for example, now allow older workers to retire instead of working. It's misleading to count them as households without earned income. And the demographics of the workforce have shifted toward lesser-skilled Hispanic immigrants who logically earn less than more highly skilled

*I have rounded numbers throughout this book. Time periods were taken from sources available at the time of writing (2015). The years 1979 or 1980 are often used as an initial period because of the comparability of the U.S. Census data.

Americans on average. When these factors are properly considered, real wages have grown more robustly than they appear to have. And there has been no hollowing out of the middle class whatsoever. Belief that wages have stagnated nevertheless persists.

The notion that the growing success of America's 0.1 percent is the cause of slower middle- and working-class wage growth is mistaken. Entirely independent forces drive the two phenomena.

As the economy grows, it values innovation more. As such, successful innovators who achieve economy-wide success, like Steve Jobs or Bill Gates, grow richer than innovators have in the past. It's simple multiplication. And they grow richer relative to doctors, schoolteachers, bus drivers, and other median-income employees whose pay is limited by the number of people, or customers, they can serve.

At the same time, information technology has opened a window of new investment opportunities and increased the productivity of the most productive workers.

Moreover, in today's knowledge-based economy, companies can scale to economy-wide success with little need for capital. Successful innovators need not share their success with investors. Successful individuals like Google's Larry Page and Facebook's Mark Zuckerberg look like corporations of a bygone capital-intensive era.

Without much need for capital, start-ups become all-or-nothing lotteries. The chance for enormous payoffs attracts a larger number of more talented gamblers. More gamblers produce more outsized winners, and more innovation, too—whether the risk-adjusted returns are good, on average, or not.

Their success has compounding benefits. It provides American workers with more valuable on-the-job training, at companies like Google and Facebook, than they can get in other high-wage, slower-growing manufacturing-based economies. It creates synergistic communities of experts, like Silicon Valley. And it puts equity into the hands of successful risk-takers who use their equity and expertise to underwrite further risk-taking that produces more innovation, faster growth, and compounding benefits. Higher and more certain payoffs coupled with the growing success of others motives increased risk-taking.

No surprise, the U.S. economy has produced a disproportionate share of innovation. As a result, the nation has more income inequal-

ity but also faster employment growth at higher median incomes than other high-wage economies. Rising income inequality is the by-product of an economy that has deployed its talent and wealth more effectively than that of other economies—and not from the rich stealing from the middle and working classes.

In truth, the outsized success of America's 1 percent has been *the* chief source of growth exerting upward pressure on domestic employment and wages. The success of America's 1 percent is an asset, not a liability.

In the face of the evidence, it's no surprise that even Paul Krugman, a leading liberal economist, admits, "I'm actually a skeptic on the inequality-is-bad-for-performance proposition. . . . The evidence . . . is weaker than I'd like."[9]

At the same time, a near-unlimited supply of low-skilled, low-wage workers—both offshore and immigrant—has put downward pressure on lesser-skilled wages relative to higher-skilled wages. The U.S. economy's ongoing shift from capital-intensive manufacturing to knowledge-intensive services increased the demand for properly trained talent and reduced the need for capital. Normally, the increased availability of capital would make it easier to raise the productivity and wages of lower-skilled workers. But competition from an abundance of low-wage offshore workers combined with the productivity gains it demands from domestic producers with higher-wage workers leaves a smaller and smaller share of less-skilled workers employed in highly productive capital-intensive manufacturing jobs.

Today U.S. growth demands properly trained talent and a capacity and willingness to take the risks needed to produce innovation. A shortage of properly trained talent and of the economy's capacity and willingness to take risk limit the entrepreneurial risk-taking, investment, and supervision needed to expand higher-wage, lower-skilled American employment opportunities. As a result, an influx of low-skilled immigrant workers has increased lower-wage work. In turn, the availability of low-wage immigrant workers puts downward pressure on low-skilled wages.

It's true that trade with low-wage economies lowers the cost of goods more than the wages of domestic lower-skilled labor. Were that not the case, it would be cheaper to produce goods domestically, rather than import them. But middle- and working-class workers bear

100 percent of the burden of lower wages for only a portion of the benefits of lower-priced goods. The rich, retirees, and the non-working poor also enjoy the benefits of lower-priced goods but without suffering the cost of lower wages. So while international trade benefits everyone on average, because the costs are shared disproportionately, it slows middle- and working-class wage growth relative to the growth of everyone else's income.

Growing income inequality is a real phenomenon, but a misdiagnosis of its causes and consequences leads to policies that slow growth and damage an already slow-growing economy. If the public mistakenly blames the success of the 1 percent for the stagnant wages of the middle class, while leaving the true sources of slow-growing wages—trade, trade deficits, and immigration—unaddressed, a dangerous feedback loop is likely to ensue. Raising taxes on success will reduce risk-taking and innovation. This will slow growth and reduce middle-class wages, and, in turn, increase the demand for redistribution.

Politicians who rely on middle- and working-class votes may relish this dynamic. Some may even advance the misunderstandings necessary for the problem to endure. Unfortunately, they either don't realize or don't care if they're cooking the goose that lays the golden egg.

Lower marginal tax rates would increase the payoff for successful risk-taking needed to produce innovation. Higher payoffs would motivate increased risk-taking. And increased risk-taking would have gradually compounding effects on America's ability to produce innovation—more people motivated to acquire and use the proper training, more valuable on-the-job training, growing communities of experts, and equity in the pockets of knowledgeable investors. These capabilities would magnify the value and likelihood of success. In turn, this would motivate prudent risk-taking and accelerate growth just as it has in America relative to other high-wage economies.

But unless we cut government spending, which seems highly unlikely, lower taxes would blow a huge hole in the deficit in the interim. And lower marginal tax rates would increase income inequality.

A more practical solution increases the pool of properly trained talent. America is full of high-scoring talent unwilling to endure the training and take the risks necessary to grow the economy. Their reluctance sets the price for success.

America could take a number of steps to increase its pool of properly trained talent. It could reduce subsidies to students and colleges studying curricula that do little to increase employment—psychology, history, and English, for example. There is an enormous mismatch between what high-scoring students study and what employers value. As the rest of the world trains its talent and grows increasingly competitive, America can no longer afford to waste a large share of its talent.

America needs to replace the current ethos, which discourages students from learning practical skills, with one that insists that talented people have a moral obligation to put their talents to full use serving their fellow man—whether serving them as customers or philanthropically. America could also nurture high-scoring students from low-socioeconomic families, as large numbers of these students are failing to graduate from college.

But training the next generation of students more effectively will have little effect on growth for decades, and then only with a slow compounding effect that won't fully saturate the workforce for decades after that. And like all good intentions, it is unlikely to be implemented.

In the interim, America should recruit properly trained talent from the rest of the world through more logical immigration policies. It could also recruit employers with a lower marginal corporate tax rate, perhaps by offsetting lost tax revenues with a higher tax rate on capital gains or other taxes. These steps would not only have more immediate effects but may also reduce income inequality.

In the absence of substantial changes, retiring baby boomers threaten to eat our economy alive with their unquenchable demand for retirement benefits. And China looms as a growing existential threat to national security. Neither threat appears to be solvable on its own. Embracing ultra-high-skilled immigration is America's best shot at avoiding permanent damage from these otherwise unsolvable problems.

Unless we fully understand the economics underlying growing income inequality—both the accelerating growth in the payoffs for success and the slowing growth of middle- and working-class pay—we will not understand the corresponding consequences of alternative policy changes. Without these understandings, we are likely to damage the economy rather than accelerate employment and wage growth.

So let's begin by examining the economics underlying the growing

success of the 0.1 percent before turning to slowing middle-class wage growth. Then we can scrutinize alternative explanations for the facts as we find them in the second part of the book, before considering alternative proposals for change and making recommendations in the last part.

A Larger Economy Values Innovation More

While a number of economic factors drive the growing success of the 0.1 percent, this group grows richer for no other reason than the economy is growing larger. As the economy grows larger, the pool of customers grows larger. Today successful innovators, business leaders, and entertainers can serve more customers than they could have fifty years ago. As a result, the payback for economy-wide success is bigger than it used to be. An entertainer like Taylor Swift, for example, can reach a much larger market for her music than the Beatles could have in the 1960s.

Few people recognize the extent of the growth of the world economy. In 1964 the entire world economy was only as large as China's economy is today![10] That growth has had a big impact on the success of the most successful workers.

Over the same period, the incomes of doctors, schoolteachers, plumbers, and other tradesmen remain limited by the number of customers they can serve. The size of the economy doesn't change that. All other things being equal, economy-wide success, like Taylor Swift's success, will grow larger relative to the income of typical workers. This increases income inequality.

The pay of entertainers and other successful entrepreneurs grows larger relative to the pay of the typical workers, not because these innovators charge customers more. If anything, they are charging customers less and less. They earn more because they have more customers.

Taylor Swift's growing success doesn't come at the expense of her fans. They aren't paying more for her music; they are paying less. And they wouldn't buy her music if they didn't believe it was worth more than it cost, so buying her music creates value both for Swift and for her customers. Music is more valuable today because it makes more people happy.

For the same reason, the size of the largest companies has grown

relative to the median pay of workers. The pay of CEOs has grown as companies have grown larger and more valuable. It's illogical for a CEO managing five employees to earn the same pay as one managing fifty thousand employees. As companies grow larger and more valuable, CEO pay has logically risen relative to the pay of the average employee. The ratio of CEO-to-employee pay may be clever rhetoric, but it's illogical economics.

It is no surprise, then, to find that as the world's population has grown, income inequality has grown around the world.[11] A more prosperous world values and rewards innovations—a new song or movie, a new technology, or a new insight—more highly than a less prosperous world. That's a good thing. The growing income of the 1 percent is the result of simple multiplication, not a deduction from the pockets of the less successful.

Were it the case that the world was becoming a less competitive "winner take all" economy, as economist Robert Frank postulates, or an increasingly concentrated "superstar economy" with relatively fewer "box office" successes, as economist Sherwin Rosen contends, we would expect the success of the 1 percent to be growing even faster than the success of the most successful corporations.[12] That hasn't been the case. Instead we find that the growth in pay of the highest-paid workers, as large as it is, lags behind the growth of the S&P 500 index. From 1979 to 2007, the S&P 500 index grew 500 percent after tax while the incomes of the top 1 percent have grown only 275 percent.[13] The economy has not grown less competitive, as Frank and Rosen claim. The world is simply growing larger, and that makes success more valuable.

Information Technology Disproportionally Benefits the Most Productive Workers

The rise of information technology has increased income inequality in other ways as well. Information technology—computers, software, smartphones, and the Internet—not only has increased the productivity of trained talent, making their labor worth more, but it also has opened a window of new investment opportunities. A surge in the

demand for properly trained workers has driven up their wages relative to lesser-skilled workers.

As technology augments the abilities of already productive workers, it increases the demand for workers who are trained in the use of technology. Assisted by computers, managers and entrepreneurs are now more effective than they have ever been before. They now have more accurate and comprehensive information to make decisions and more computing power to run "what if" planning scenarios. These tools increase their ability to serve customers more effectively and to find and commercialize new innovations that are beneficial to everyone. As a result, workers trained to use these tools have grown more productive.

Had computers merely increased the productivity of properly trained talent without also opening an even larger window of investment opportunities, higher productivity would have increased the supply of high-skilled workers relative to demand. High-skilled wages would have declined.

Fortunately, that did not happen. Information technology opened up more opportunities for employment than productivity gains expanded the capacity of high-skilled workers. Because demand for properly trained workers has exceeded supply, their wages have risen, albeit far more slowly than the payoff for successful innovation.

Information technology has given properly trained talent greater ability to add value. It has also opened a window of new investment opportunities. And at the same time, the world has grown more prosperous. A more prosperous world logically values innovation more. Given the circumstances, we should expect income inequality to rise.

Information Technology Reduces the Need for Capital

A shift from a manufacturing economy to an information economy has also increased income inequality. Success in the modern information-intensive economy often requires substantially less capital than the manufacturing-based economy. Information technology scales to economy-wide success without much need for capital. Successful innovators often have less need to share the value they have created with

investors. With less need to share their success with investors, successful innovators, such as Bill Gates, Steve Jobs, and Sergey Brin, have grown richer than they would have had they needed to rely on investors. As a result, successful founders often look like large corporations of old. Their outsized success contributes to rising income inequality.

Successful IT start-ups no longer need large networks of buildings filled with expensive, long-lasting equipment and inventory to serve customers. Today's start-ups can often find, communicate with, and distribute information-intensive products and services to customers globally with minimal additional costs. In fact, today's successful start-ups often generate more cash than they consume.

With little need for capital investment, successful innovations like Google and Facebook can scale fully without much need for investors. Successful start-ups are often cash flow positive from the get-go. Today when entrepreneurs are successful, they often sell stock to the public only to establish its price so that founders can sell a small portion of their holdings.

Bigger payoffs from lottery-like success combined with less need for capital also motivates a greater number of talented individuals to take entrepreneurial risks. On average, if more people gamble, there will be more outsized winners even if the expected returns to gambling are poor. More lottery winners increase income inequality.

Compounding Success Benefits the Most Productive Workers

As the success of American innovators increases, that success itself has compounding effects that increase the pay and productivity of the highest-paid Americans. We see these effects when we compare America's growth with that of other countries.

In America, cutting-edge companies like Microsoft, Google, and Facebook give their employees valuable on-the-job training that increases their productivity. Together these well-trained employees create communities of experts, such as in Silicon Valley. Access to communities of experts further enhances productivity of properly trained workers. This expertise permeates into the larger economy as

well-trained employees take jobs elsewhere, supervise others, and teach them what they have learned—what economists call "spillover effects."

Successful innovation also puts money into the hands of experts with better understandings of related investment opportunities than that of investors more broadly. Investment expertise reduces investment risk. Successful investments that find and commercialize more innovation enhance productivity further.

A better-trained workforce, larger communities of experts, and more knowledgeable investors increase the expected payoff for risk-taking—both the value and likelihood of achieving success. Like any game of chance, the higher the value and certainty for risk-taking, the more people will take risk. More risk-taking accelerates innovation and growth.

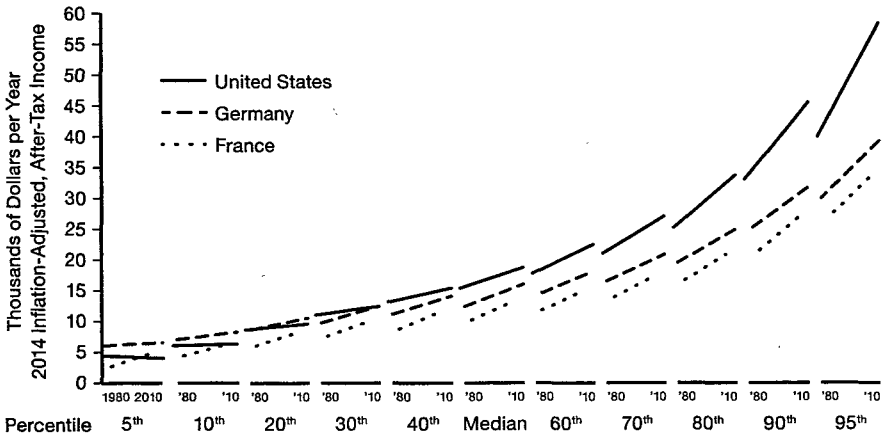
As well, the growing success of successful risk-takers raises the bar for success by diminishing the success of others. In large part, success is relative. Loss of status motivates talented workers to get trained properly, work harder, and take more risks.

Together these effects combine into a self-reinforcing feedback loop that gradually builds upon itself to create differentiated capabilities that accelerate growth. These capabilities include not only better-trained experts and investors but also more motivated entrepreneurs and investors who are more willing to take the risks necessary to produce innovation.

The failure of the rest of the world to spark the feedback loop that builds these institutional capabilities limits the productivity of other countries' most productive workers and prevents them from contributing their fair share of innovation in a world driven by information technology. A shortage of properly trained and productivity-enhanced talent in the rest of the world leaves low-hanging fruit for American innovators to pick. This further increases the value and pay of high-skilled American workers.

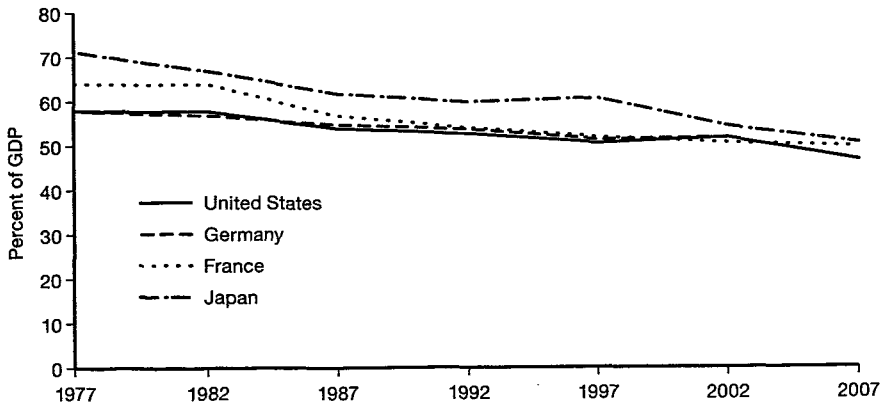
The compounding effects of these dynamics show in the pay of the highest-paid Americans relative to their counterparts elsewhere (see Figure 1-2, "Effect of Productivity on Wages"). Americans earn more because customers value their work more. Higher pay for properly trained talent and more success producing innovation increase income inequality.

Figure 1-2: Effect of Productivity on Wages



Source: "Luxembourg Income Study," via *New York Times*, 2014

Figure 1-3: 99 Percent's Share of GDP over Time



Source: "Income Distribution, Aggregate Demand and Current Account: A Sectoral Perspective," Behringer & van Treeck, 2013

The increased pay of the highest-paid workers is coming not at the expense of the rest of the workforce but from returns captured by investors. In both the United States and Germany, the bottom 99 percent of citizens earned 49 percent of GDP in 2007, despite America's top 1 percent earning 18 percent of all income earned by labor, versus the German top 1 percent earning only 12 percent of labor's income (see Figure 1-3, "99 Percent's Share of GDP over Time"). Relative to Germany, the additional share of GDP earned by America's 1 percent

comes entirely from the investors' share of GDP, and not the share earned by the 99 percent.[14] The same is true, albeit to slightly lesser degrees, in comparisons with France and Japan.[15] Again, this split increases the pay of the highest-paid Americans without diminishing the pay of the other 99 percent.

A Greater Share of Resources Devoted to Innovation Increases Inequality

Given its unique advantages, unlike other high-wage economies in which capital costs as a share of GDP are growing faster than in the United States, America is investing brainpower in lieu of capital. As America devotes a greater share of its resources to producing innovation, it will produce a greater number of outsized successes. In turn, this increases inequality.

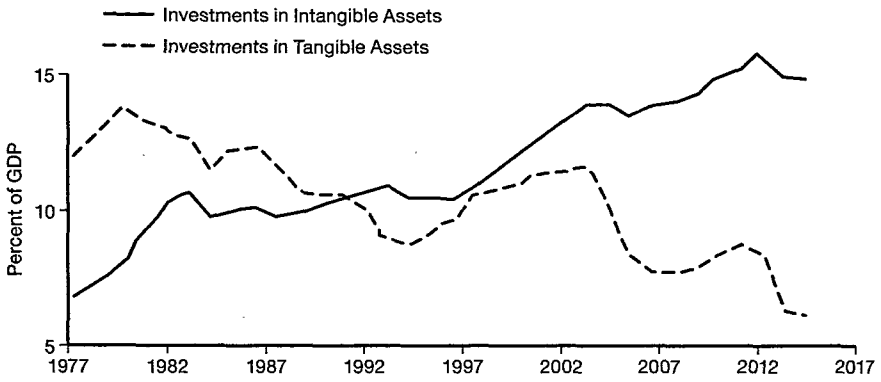
America's antiquated manufacturing-based accounting system masks the extent of these investments. Today accounting largely expenses people-related investments as an intermediate cost of production, rather than recognizing them as capital goods that increase GDP, the way it recognizes investments in plant and equipment. Unrecognized investment leads to an understatement of investment, GDP, and productivity.*

Conservative measurements that take people-related investments into account, such as those employed in a 2006 study published by the Federal Reserve Board entitled "Intangible Capital and Economic Growth,"[16] show significant increases in people-related investments. According to the study's estimates, intangible investments rose from about 7 percent of non-farm-business output in the late 1970s to 10 percent in the early 1990s to about 14 percent today. Intangible investments rose dramatically in the 1990s when productivity accelerated (see Figure 1-4, "U.S. Investment in Intangibles as a Percentage of GDP").

Given America's heavy investment in knowledge-intensive intangible assets, it hardly seems coincidental that total factor productivity—productivity growth from innovation and know-how rather than from

* This mismeasurement grew so untenable that in 2013 the U.S. Bureau of Economic Analysis took its first steps to account properly for intangible investment.

Figure 1-4: U.S. Investment in Intangibles as a Percentage of GDP



Source: "Intangible Capital and Growth," Corrado et al., 2012, via *BusinessWeek*

greater capital investment or education per worker—surged from a growth rate of 0.5 percent per year from 1974 to 1995 to 1.75 percent a year from 1995 to the economic peak preceding the financial crisis.

America's increased productivity growth relative to other high-wage economies stems from increased investment in intangibles—*not* magic. Nor should it come as a surprise that intangible investment rates in Germany and France, where productivity growth has been slower, were only 60 to 70 percent of those in the United States when measured as a percent of GDP in 2006. The less advanced economies of Italy and Spain invested at half that rate. Only the United Kingdom, which has grown as fast as the United States over the last two decades, albeit from a lower base of productivity and prosperity, has invested in intangibles at a rate comparable to that of the United States.[17]

It's true that productivity growth has recently waned and that investment declined significantly in the aftermath of the financial crisis.[18] But since the recession, Internet-related investment has come roaring back. One only need go to Silicon Valley to witness the phenomenon. The place is on fire. Google, Facebook, Amazon, and Apple have increased investment to $60 billion per year in 2014 from less than $10 billion in 2000.[19] Together with venture capital's $50 billion per year of funding, tech-related investment has eclipsed the 2000s' extraordinarily high $100-billion-per-year inflation-adjusted investment levels.[20]

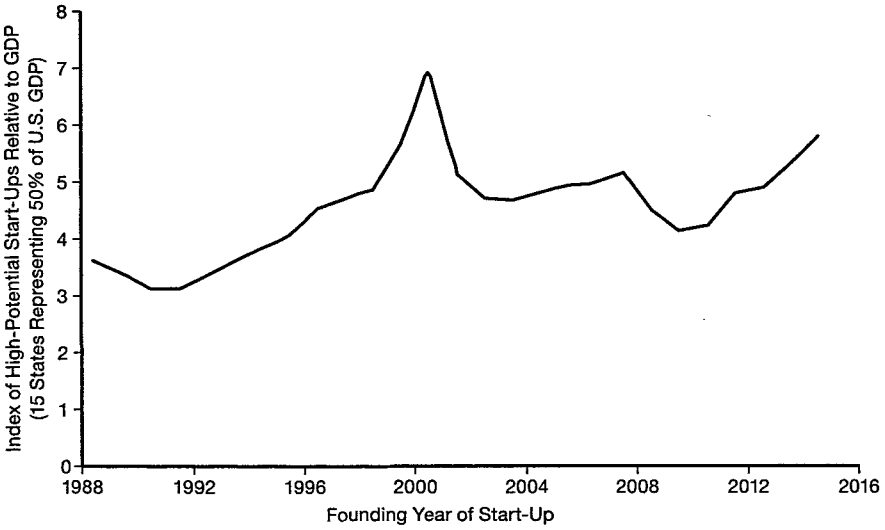
Skeptics of America's dynamism often point to the declining number of start-ups.[21] But the reality is more complex than a superficial count of start-ups indicates. The consolidation of the retail and restaurant sectors by national chains like Walmart and Darden (the owner of Olive Garden) distorts the data of the U.S. economy, decreasing the number of mom-and-pop entrepreneurial start-ups. Mom-and-pop retail start-ups largely take market share from one another, rather than growing the economy. Taken as a whole, they do little to increase employment.

Start-ups that grow large increase employment, and those companies are predominantly high-tech start-ups.[22] Successful high-tech start-ups require a subset of entrepreneurial risk-takers—ones that are both very smart and uniquely trained.

While it's true that high-tech start-ups spiked briefly in 2000, there has been a gradual upward trend in the rate of high-quality start-ups since the early 1990s. In fact, 2014 represents the second-highest level of activity since the short-lived spike of 2000 (see Figure 1-5, "High-Potential U.S. Start-Ups").[23] And in the San Francisco Bay Area—the hub of high-tech start-ups—high-quality start-up activity is substantially higher than it was at the peak in 2000.[24] This hardly represents evidence that high-quality start-ups are waning—quite the opposite.

Others point to the recent slowdown in productivity as evidence of waning investment in innovation.[25] But a slowdown in productivity growth can occur for a variety of reasons, independent of the amount of effort devoted to innovation. Add-on innovation in the wake of breakthroughs like the Internet, e-mail, personal computers, and smartphones initially accelerates productivity and then eventually slows as opportunities to pick low-hanging fruit are exhausted—"fished out" in economic parlance. Meanwhile, breakthroughs come intermittently and unexpectedly. Increased regulation can sap management's attention and subsequently slow productivity growth. Dodd-Frank and the Affordable Care Act swamped the economy with regulation. A reduction in the rate of further gains from education and capital investment slows productivity growth independent of innovation. And investment and risk-taking clearly retreated in the aftermath of the financial crisis, as evidenced by a 40 percent to

Figure 1-5: High-Potential U.S. Start-Ups



Source: "The State of American Entrepreneurship," Guzman and Stern, 2016

50 percent reduction in accumulated business investment from 2007 to 2013 relative to historical norms.[26]

Because productivity growth ebbs and flows independent of the resources expended, productivity growth relative to other high-wage economies is a truer measure of America's ability to produce innovation. By all measures, effort (the amount of resources devoted to innovation) and outputs (productivity growth relative to other high-wage economies) of U.S. investment to produce innovation appear to be both substantially higher and more successful.

There are also reasons to believe productivity growth is higher than it appears to be. The Boskin Commission and decades of follow-up work by Northwestern University's Robert Gordon, for example, also find understatement of productivity growth. This understatement largely stems from the U.S. Consumer Price Index's failure to fully account for the value of replacing old goods with more valuable innovations—for example, by replacing landline-based telephones with smartphones. Properly accounting for these productivity gains boosts GDP growth upwards of 1 percent per year, which is substantial since GDP grows only 2 to 3 percent a year.[27]

Goldman Sachs economists Jan Hatzius and Kris Dawsey reach the following conclusion about slowing versus unmeasured productivity growth:

> Measured productivity growth has slowed sharply in recent years. . . . But is the weakness for real? We have our doubts. Profit margins have risen to record levels, inflation has mostly surprised on the downside, overall equity prices have surged, and technology stocks have performed even better than the broader market. None of this feels like a major IT-led productivity slowdown. One potential explanation that reconciles these observations is that structural changes in the U.S. economy may have resulted in a statistical understatement of real GDP growth. There are several possible areas of concern, but the rapid growth of software and digital content—where quality-adjusted prices and real output are much harder to measure than in most other sectors—seems particularly important.[28]

Despite the recent slowdown in productivity growth, it's not hard to imagine vast improvements in Internet-search capabilities, computing capabilities converging on consciousness, and genetic engineering that transform the human race in the long run. Historically we have seen nothing but surprisingly large improvements in our standards of living. So it's hard to see us nearing a "fished out" pool of opportunities.

If the economy *does* reach a point of significantly diminishing returns to information-intensive innovation, and investment slows, income inequality will likely narrow considerably. But is that a good thing?

The short-term ebb and flow of productivity growth should not blind us to the long-term historic trend. The economy has devoted a greater share of resources to innovation. Today the U.S. economy invests by hiring smart people to improve the future—to invent applications for iPhones and to capitalize on the information collected by Google. It no longer builds plants and equipment. Because of this shift, income inequality has grown.

Consistent with this shift in investment from traditional investment

in capital goods, like plant and equipment, to innovation with widely dispersed lottery-like returns, a 2015 study by the McKinsey Global Institute shows that "since 2000, the average variance in returns on capital for North American firms has been more than 60 percent higher than the levels that prevailed from 1965 to 1980."[29] The study finds that "this trend toward greater variability in corporate performance is playing out at the sector level. . . . The margin gap between the top quintile firms (by profit margin) and median firms in idea-intensive industries has widened by 20 percent in the past decade, more than in any other group of industries. In return on invested capital, the gap between top performers and the median has grown by 25 percent."[30]

In contrast, to information-intensive investments, the study reports:

> While idea-intensive firms run away with the profits, companies in capital-intensive industries are feeling a growing squeeze. The average after-tax profit margin in industries producing capital goods is roughly half the average of IT firms. . . . In addition, the margin spread between capital-intensive firms at the fifth and 95th percentile of profitability is much smaller than the spread in idea-intensive industries. . . . In these [capital-intensive] industries, it is much harder for winning firms to pull away from the pack.[31]

While competition between traditional companies is narrowing the gap between winners and the rest of the pack, innovation in information technology is widening the distribution of returns and subsequently increasing income inequality.

Whether innovation becomes harder to find—and there is evidence that it is becoming harder to produce—it doesn't mean that the payoffs for success or the amount of U.S. resources devoted to innovative activities will correspondingly dwindle, at least not in the short run.[32] Growing global markets, relatively diminished competition from the rest of the world, less required upfront investment, and less opportunity in other endeavors can all offset a reduction in the probability of success from innovation. As the U.S. economy devotes more resources to these lottery-like investments, income inequality will grow at the highest end of the wage scale.

Increased Risk-Taking Increases Inequality Even If the Returns Are Subpar

Even though a handful of fortunate innovators are making outsized returns, it does not mean that on average innovation's profitability has increased and that entrepreneurial risk-takers, investors, and properly trained talent are merely benefiting from outsized risk-adjusted returns. Nor is it necessary for average returns to increase for inequality to rise. As more resources are devoted to finding and commercializing innovation, overall return on investment is likely to decline.[33] Even if returns are declining in general, the shift toward innovation's more widely distributed lottery-like returns—and away from traditional investments—can increase outsized success. Scrutinizing only the successful 1 percent (or 0.1 percent, or 0.01 percent) ignores the true cost of success, namely the cost of failure. Ignoring the cost of failure creates a distorted view of the value of success.

A more accurate measure of return on investment incorporates both the value of success and the cost of failure. This measure is the "expected value" of success—the value of success multiplied by the likelihood of success.

A ninetieth-percentile earner used to be a doctor, lawyer, or corporate executive with a lifetime of near-certain employment.[34] In the twenty-first century, a top graduate is likely to be working in a high-tech start-up with a remote prospect of success and facing a lifetime of disruptive career changes that will likely end badly late in his career—as an obsolete fifty-year-old without great prospects for high-wage employment. It's true that one in one hundred may get very lucky, but given the uncertainties those one hundred face, are they really better off than their parents were?

It's disingenuous to measure growth in the pay for the one lucky success while ignoring the fate of the other ninety-nine who didn't succeed. A more accurate measure of pay includes not only the small number of successes but also the larger pool of workers from which they are drawn. It's disingenuous to consider the 0.1 percent in isolation. Instead we also need to include the large pool of very talented failures—failures critical for finding that one lucky success. The group

of failures will likely earn less than their similarly skilled peers—the ones who became doctors and lawyers instead of failed Internet entrepreneurs.

There are numerous reasons to believe the overall returns to investment that produce innovation may be subpar. Proprietary ideas have been notoriously hard to guard. Economists have typically described ideas as non-excludible goods. Unlike physical goods, which only their owners can use, ideas are available for anyone to use but for know-how and legal restrictions, such as patents. Non-exclusivity makes it harder to use ideas to create sustainable competitive advantages critical to generating above-average returns. While it's true that networks of users give companies like Google and Facebook competitive advantages from economies of scale, most ideas afford no such opportunity. Non-exclusivity makes competition more capable than it otherwise may be.

As well, we don't see cash-rich technology companies like Google, Facebook, Apple, and Microsoft stretching to invest their cash in product development despite these companies possessing deep and far-ranging expertise and superior capability to commercialize viable innovation. Quite the opposite: we see these companies hoarding cash and buying back their shares. That's odd behavior if the returns are superior.

It's a misnomer to suggest high-tech companies are accumulating offshore cash simply to avoid taxes. They can and do use intermediaries—namely, banks—to borrow offshore cash and buy back their shares domestically to distribute cash to shareholders. They hold cash regardless.

In part, the investment opportunities may be so broad that tech companies with valuable franchises can't afford to pursue every possible opportunity and threat to their business. Instead they may hoard cash to maximize their market value so they can outbid competitors to buy unexpected emerging technologies that threaten their existing business if necessary. The threat of technological disruption may be too high for companies with valuable franchises, like Google, to close off their options by using all their cash, whether for investment or distributions to shareholders. If companies are hoarding cash to protect themselves from emerging technologies, it indicates that the risk of loss from unexpected disruptive innovation is high.

It's also possible that entrepreneurialism has grown so prevalent that companies like Google and Facebook—with limited upside to their market value—can no longer attract the most productive innovators. That would be consistent with the opening of a broad window of investment opportunities, albeit opportunities that disrupt existing businesses.

In those circumstances, large companies may not be able compete successfully by relying exclusively on internal resources for product development. Surely, a multifaceted approach is better than relying on a one-dimensional strategy.

It's also possible that clever employees may be learning to scour their work environments more thoroughly for good ideas and abscond with them. Frankly, it may be unprofitable to produce innovation systematically without first randomly stumbling upon a good idea.

Entrepreneurial employees may be able to circumvent laws that protect corporate assets by passing good ideas to friends. If employees steal a significant number of good ideas, internal development will be less profitable.

The gradually accelerating turnover in the Fortune 500 is consistent with a growing risk of technological disruption. "In the 1920s and 1930s the turnover rate in the S&P 90 averaged about 1.5% per year. A new member of the S&P 90 at that time could expect to remain on the list, on average, for more than sixty-five years. . . . In 1998, the turnover rate in the S&P 500 was closer to 10%, implying an average lifetime on the list of ten years, not sixty-five!"[35] Surprisingly, "of the five hundred companies originally making up the S&P 500 in 1957, only seventy-four remained on the list through 1997. And of these seventy-four, only twelve outperformed the S&P 500 index itself over the 1957–1998 period."[36]

The changing fortunes in technology are even more tumultuous. The fifteen largest technology companies in 2000, at the peak of the Internet bubble, have lost 60 percent of their market value—$1.35 trillion as of December 2015. Nortel, a $200 billion company in 2000, is bankrupt today. On the same date, EMC's market value was a quarter the size. Cisco's was a third the size. Intel's market value was 40 percent smaller as of December 2015. Only one, Microsoft, had a higher market capitalization.[37]

While these apparent juggernauts were declining in value, fifteen companies with combined market capitalization less than $10 billion in 2000 are now worth over $2 trillion today. Apple's market value, a has-been in 2000, has grown from $6 billion to over $650 billion today.[38] With turnover like that, the values of established franchises are surely less than they would be otherwise, no matter the valuations financial markets currently place on them.

As hard as it may be for established companies to produce innovation profitably, it is surely even harder for independent start-ups and investors who lack the full breadth of expertise and capabilities necessary to commercialize viable innovations. Given the plethora of start-up-related risks, assets that reduce risk, such as teams of properly trained talent, proven supervision, an infrastructure for commercializing innovations, and synergies with existing businesses, are more valuable than they otherwise would be. Without them, stand-alone start-ups funded by independent investors are likely to be riskier and less profitable.

And unlike bets on exogenously driven growth—population growth, education-driven productivity growth, rural migration to more productive cities, two decades of pent-up demand first from the Great Depression and then the Second World War, and the growth of mass production and related capital investment—where every investor more or less has the same access to insights whether they truly have any insight or not, investing in technology increasingly requires technology-specific expertise and insight. Every fundraiser designs his or her start-up's investment sales pitch to sound like a miraculous cure for cancer. Outside investors must acquire the necessary knowledge to avoid systematically investing in unworthy opportunities. Over and over again, one should expect investors to spend money evaluating new opportunities only to discover the investments are not worth making. Costly due diligence reduces investment returns and makes investing more expensive than it appears to be.

As such, Joe Stiglitz questions whether rich households invest directly in young start-ups that are critical to innovation and growth.[39] He fails to see that rich households need not invest directly in start-ups to motivate high-tech entrepreneurialism.

Silicon Valley is full of entrepreneurs looking to create companies

that will be highly valued by public market investors—chiefly wealthy households that either buy equity in successful start-ups directly through initial public offerings or through their ownership in other highly valued, public high-tech companies like Google and Facebook—*if* they are successful start-ups.

That's not to say returns to innovation are poor. No one knows. But without the benefits of exogenous growth, given the near certainty of widespread failure, and with competition from the growing amount of investments in intangibles like research and development, it would not be surprising to find below-average returns even though outsized success is rising. Income inequality may nevertheless rise as the dispersion of returns widens even though the increased risk necessary to produce a handful of outsized successes and the high failure rates needed to produce those returns may not represent the walk in the park they appear to be.

Loss of Status Drives Irrational Risk-Taking

As poor as the risk-adjusted returns on start-ups may be for investors who can diversify their risk by investing in many start-ups, they are surely much worse for individual entrepreneurs. Unlike investors who enjoy average returns by investing in many projects, founders and their teams risk everything on a single start-up. As such, they bear undiversified project-specific risks that investors avoid through diversification. Most will end up with little to show for their work. At the very least, they are putting the latter half of their careers and their retirement at risk.

In part, individuals may be joining start-ups because of a lack of good opportunities elsewhere. Waning investment opportunities from other exogenous sources of growth may have accelerated the shift to innovation-driven growth. In large part, necessity is the mother of invention. An increasing lack of both alternative investment and employment opportunities increases the willingness of talented workers to take entrepreneurial risks.

People also seem attracted to playing lotteries. In the lead-up to 2000, for example, when Internet payoffs exploded, young business students forsook high-paying, high-status careers to pursue far-fetched

Internet start-ups. In the lead-up to 2007, talented workers similarly flocked to risky hedge funds despite the near impossibility of beating average market returns in an effort to win big. The same thing is happening today in Silicon Valley—an explosion of unlikely-to-succeed start-ups fueled by talent seeking outsized payoffs.

Rising payoffs for state lotteries also lure an increasing number of people into taking irrational risks. Gambling increases, despite the fact that the expected payoff—the size of the payoff multiplied by the chances of success—remains poor. State lotteries collect far more money than they pay out. As a result, participants lose money on average.

Gamblers seem to systematically overestimate their capacities, underestimate the risks, and value a two-dollar payoff *more* than twice as much as a one-dollar payoff contrary to the economic theory of diminishing marginal utility. That theory posits a second car is less valuable to its owner than the first, the third is less valuable than the second, and so forth.

So it ought to follow that an additional dollar is similarly less valuable as one's wealth grows. But money confers status, notoriety, and other things people desire beyond just the goods they consume. Or, at least, if people without money believe it confers these things, then the opportunity to own money may offset, at least partially, the increasingly declining value of wealth as payoffs grow larger.

Perhaps more important, status seekers lose status when others succeed. As a result, the most talented students no longer want to be doctors and lawyers. They go to business school and join start-ups despite the long odds of success. Loss of status drives them to take ill-advised risks in an effort to regain their lost status as potential lottery winners.

No surprise, microeconomic experiments that randomly distributed relatively large rewards to poor Kenyan villagers found that "the bigger the handouts to others in their village, the greater the dissatisfaction of the non-recipients."[40] According to *The Economist,* a study published in the *Journal of Public Economics* in 2005 found that "we tend to look exclusively at those better off than us. . . . When the lot of others improves, we react negatively, but when our own lot improves, we shift our reference group to those who are still better off."[41]

Fortunately for the rest of us—the chief beneficiaries of entrepreneurial risk-taking that produces innovation—the outsized success of

a handful of entrepreneurs made talented workers feel a loss of status. Those workers ramped up high-tech entrepreneurial risk-taking despite the risks.

Conclusion

A frenzy of highly skilled entrepreneurial risk-taking is benefiting the U.S. economy. The U.S. economy continues to produce billion-dollar unicorns—venture-backed privately owned start-ups with billion-dollar valuations—at a substantially faster pace than Europe and with valuations that are substantially larger.[42] From January 2014 to March 2016 alone,* the number of U.S. unicorns has grown from 32 to 88, despite 18 companies exiting the list after going public, with a combined value growing from $75 billion to over $300 billion.[43] Over the same period, European unicorns have grown from 2 to 16 (less two public offerings), with $9 billion of combined value increasing to $35 billion.[44] During a time when large European start-ups created $26 billion of addition value, the United States created $225 billion of additional value—almost ten times as much!

While it's true that American consumers will benefit from a cure for cancer even if it's discovered by a Chinese company, American workers benefit *more* when the successful innovators are also American. At the very least, company's founders, investors, and workforce disproportionately spend their gains in the United States, which pumps up the demand for goods and services made by lesser-skilled Americans.[45]

Since 1980, the U.S. economy has increased employment nearly 50 percent—more than twice the growth of that of Germany and France, and more than three times the growth of Japan, while providing median after-tax incomes for American families that are 15 to 30 percent higher than those of Europe and Japan. This is an unheard-of difference in performance.

And that difference in growth would have been greater still were it not for the disproportionate benefit of U.S. innovation, which accelerated the rest of the world's growth.

* As of the time of this writing.

Successful American innovators also increase tax revenues as rich Americans pay a disproportionate share of taxes.[46] Increased tax revenues provide more government services and benefits to lesser-skilled Americans. And a larger U.S. economy is also better able to defend itself militarily. It would be shortsighted to leave these opportunities to other economies to discover and commercialize when they are available to America even though they increase income inequality.

As other sources of growth have waned, information technology fortunately opened a large window of new investment opportunities. More so than the rest of the world, the U.S. economy capitalized on these opportunities.

IT increased the productivity of the most productive workers. With investment opportunities growing faster than productivity gains, the pay of the most productive workers grew.

A positive feedback loop ensued that further increased the productivity of the most productive worker. Better-trained workers and investors increased the likelihood and payoff for successful innovation. Like any game of chance, better odds increase the risk-taking needed to produce innovation.

A larger economy also increased the value of innovation. And unlike capital-intensive manufacturing, IT reduced the need for capital investment to scale to economy-wide success. These factors magnified the value of success and the pool of eager and talented risk-takers.

More risk-taking increases the number of fortunate successes even if the returns to risk-taking don't improve significantly. Success diminishes the status of others. Loss of status drives many status seekers to regain their lost status by taking ill-advised risks. More risk-taking produces innovation that is beneficial to all of us.

Despite the success of America's economy, demagogues have demonized the success of America's 1 percent as a liability that hollows out the middle class, lowers wages, and damages the fabric of American society.[47] But were it not for the successes of America's most successful workers, U.S. employment growth would have slowed further, as employment growth did in Europe and Japan.

The outsized success of America's 0.1 percent is the true source of its growing income inequality. Growing income inequality is a by-product of the success of the U.S. economy. This success has been

shared broadly by the rest of the economy. If anything, America should try to entrench and expand its position as a hub of innovation by encouraging its best and brightest students to get the kind of training demanded by customers, and to take the risks necessary to produce more innovation.

Chapter 2

THE REASONS FOR SLOWING WAGE GROWTH

The soaring wages of the highest-paid workers is a by-product of America's differential success in the age of information. Given this success, we might have expected middle- and working-class wages to have grown more. Instead their growth slowed.

Advocates of income redistribution have been quick to blame the success of the 1 percent for this slowing wage growth. Their arguments, however—that success is unearned, technology hollows out the middle class, and poor-quality education unnecessarily holds back students—are suspect. More likely, trade, immigration, and manufacturing productivity gains, which have hollowed out manufacturing employment, have flooded the economy with a near-unlimited supply of lesser-skilled workers. This increased supply in combination with resources that constrain growth—namely, properly trained talent and the economy's capacity and willingness to take risk—hold back wage growth.

In an economy constrained only by labor, trade and immigration grow the economy without reducing wages—no different than population growth. Additional workers increase demand. Increased demand spurs investors to invest more capital. With the same amount of capital invested per worker—namely, plant and equipment—workforce productivity and wages remain constant.

If capital were constrained, however, more workers would reduce the amount of capital invested per worker. Less capital invested per worker would reduce productivity and wages.

In a knowledge-intensive economy, capital doesn't constrain growth. Properly trained talent and the economy's capacity and willingness to take risks constrain growth.

The increased availability of capital in a knowledge-intensive economy spurs investment in the industries of low-wage economies, where, unlike services, manufactured products can be shipped around the world to compete with products made with high-wage labor. The high saving rate of the Chinese and German economies adds to the availability of capital.

The increased availability of capital also spurs domestic high-wage manufacturers to increase productivity where it is economical to compete with low-wage offshore manufacturers. The combination of the two—offshore sourcing and domestic productivity growth—reduces the demand for high-wage, lesser-skilled manufacturing workers.

It's true that when consumers and investors spend their savings from buying lower-cost offshore goods on domestic goods and services, it increases the demand for domestic labor. But displaced high-wage, blue-collar workers depend both on entrepreneurs and other investors to take the risks necessary to create new jobs for them and on properly trained talent to engineer and supervise work as productive as their previous capital-intensive manufacturing jobs—no easy tasks. Properly trained talent and the economy's capacity and willingness to take risk, however, are constrained resources in the knowledge-intensive economy. If resources are constrained, trade with low-wage economies will put downward pressure on low-skilled wages.

If trade with low-wage economies didn't lower the cost of goods more than the wages of domestic lower-skilled labor, it would be cheaper to produce the goods with domestic labor. So trade makes everyone better off on average. Lesser-skilled workers, however, suffer the entire burden of lower wages but capture only a portion of the benefits from lower-priced offshore goods. Much of the benefit is captured by the rich, retirees, and the non-working poor, who enjoy lower-priced goods but without the cost of lower wages. As a result, trade lowers the relative incomes of the middle and working classes.

An influx of low-skilled immigrants only adds to the strain on constrained resources. If risk-takers and properly trained talent fail to create jobs for low-skilled immigrants that are as productive as the jobs of the lesser-skilled, native-born workers on average, lower-wage immigrants working in less productive jobs will bid down wages, further lowering the relative incomes of the middle and working classes.

It's true that if low-skilled immigrants contributed proportionally to constrained resources, an influx would not reduce wages. But surely they do not contribute proportionally to these resources.

At the same time, information technology opens a window of attractive investment opportunities that competes with displaced workers for the attention of properly trained talent and the economy's willingness and capacity to take risk. Successful IT start-ups like Google and Facebook tend not to employ low-skilled workers directly. Instead, attractive investment opportunities raise the pay of properly trained talent and successful risk-takers, and their increased demand employs lesser-skilled workers in other lines of works—waiters and landscapers, for example. But an influx of low-skilled immigration spreads a given increase in the demand of properly trained talent and successful risk-takers over a greater number of lesser-skilled workers who compete with one another to satisfy that demand. Again, this lowers the relative incomes of the middle and working classes.

As more and more lower-skilled workers compete to satisfy a given increase in the demand of properly trained talent and successful risk-takers, wages are driven down to waiters-waiting-on-waiters wages—that is, to the value of low-skilled workers serving each other without the added benefit of constrained resources. In a theoretical economy without constrained resources, lower-skilled workers are, in effect, already earning waiters-waiting-on-waiters wages that can fall no further. Trade and immigration have no effect in that world. Unfortunately, we don't live in that world.

Trade deficits only exacerbate the problem. With balanced trade, Americans buy goods that employ offshore workers, and offshore economies buy goods that employ American workers. With trade deficits, offshore economies loan America proceeds from the sale of goods to Americans rather than buying American goods. To reach full employment at the highest possible wages, consumers, risk-takers, and

properly trained talent must borrow that money and put it to work creating jobs lost to trade deficits. Trade deficits just strain constrained resources further.

Ultimately, in a world with constrained resources, growth can manifest itself in two ways: Where the supply of labor is restricted—as it was in the 1950s and 1960s—growing demand drives up wages. Where the supply of labor is unrestricted, as it is today, growth drives up employment.

Since 1980, the U.S. economy has increased employment by nearly 50 percent—more than twice the growth of that of Germany and France, and more than three times the growth of that of Japan.[1] And that difference would have been greater still were it not for the disproportionate benefit of U.S. innovation, which accelerated the rest of the world's growth.

Because of this growth, today America is home to nearly 40 million foreign-born adult immigrants and their 20 million native-born adult children—a very large proportion relative to the rest of America's 140 million eighteen- to sixty-five-year-old population.[2] In truth, *no other high-wage economy has done more to grow the world's middle class and working class than America's.*

It's disingenuous to close one eye, ignore America's extraordinary employment growth relative to its peers, and claim that the outsized success of America's 1 percent has slowed the growth of middle- and working-class incomes. The outsized success of America's 1 percent has been *the* chief source of growth exerting upward pressure on domestic employment and wages.

Trade with Low-Wage Economies and Other Changing Circumstances Slow Middle-Class Wage Growth

The U.S. economy has changed significantly since the end of World War II, when increased capital investment in the face of a shortage of lesser-skilled workers raised wages. Today a slowdown in exogenously driven growth; trade with low-wage economies; domestic manufacturing productivity gains; a population fully saturated with education; a

growing supply of lesser-skilled domestic labor; and constraints on the assets that create highly productive, lower-skilled employment—namely, entrepreneurial risk-taking, investment, and properly trained talent—slow middle- and working-class wage growth.

A dearth of births in the Great Depression restricted the supply of labor in the 1950s and 1960s when the economy rebounded after two decades of damage—first from the Great Depression and then from World War II. At the same time, interstate highways and television created enormous American mass markets. Capital-intensive companies like General Motors and Procter & Gamble raced to exploit unrealized economies of scale and hire lesser-skilled workers to operate their machinery. This window of opportunity opened at a time when World War II killed a large number of working-age men in Europe and Japan, both of which were rebuilding economies destroyed by the war and, as a result, were temporarily less able to compete. With minimal international competition, the window for American businesses temporarily opened even wider.

Meanwhile, America was the first nation to send a significant portion of its students to college.[3] It discovered a large pool of talented workers that grew more productive with education. The success of America's college graduates not only increased the productivity of both skilled and unskilled workers, but also further reduced the supply of lesser-skilled labor.

With a much larger share of students not yet graduating from high school, Europe and Japan needed several decades before they were able to duplicate America's educational success. Again, the temporary lack of international competition opened a window of opportunity that accelerated American growth.

With a shortage of labor in the face of growing manufacturing demand, agricultural technology freed rural workers to capitalize on these opportunities. World War II pulled young farm boys off the farm. Higher wages made factory work more attractive when they returned. Rural farmhands consequently migrated to inherently more productive cities, which further increased their capacity to add value.

These favorable exogenous trends (two decades of pent-up growth, the value of mass markets and related capital investment, education, and rural migration) combined with waves of population growth (first

from the baby boom, then from the increased workforce participation of women, and finally from immigration) accelerated growth. With manufacturers racing to hire workers in order to satisfy growing demand, wages rose.

To satisfy growing demand, manufacturers invested more capital—both plant and equipment—and employed more workers. At the same time, they substituted capital for workers. They automated tasks by investing more capital per worker to make workers more productive. This dynamic employed an increasing number of workers in increasingly more capital-intensive jobs. This raised the productivity of the marginal worker.

Fast exogenous growth also reduced investment uncertainty. Eventually, growth absorbs excess capacity. Less risk lowers the cost of capital, which accelerates investment. Rapid growth over the last twenty-five years similarly reduces investment risk in China today.

Ultimately, competition forces investors to share the value they create with customers and workers. When employers compete for workers, the least productive employer sets the wages for a given skill level. That employer's workers would gladly take work at higher wages if it was available. When employers that are more productive need more workers, they bid up wages and drive the least productive employers out of business. As marginal producers raise their productivity—what economists call their marginal product of labor—to survive, wages rise. Under these conditions, competition for workers seems to lead to a never-ending spiral of productivity improvements and wage increases.

These circumstances led economists to believe that income inequality narrows as countries grow richer—what economists call a Kuznets curve, after Simon Kuznets, the economist who theorized it. In agrarian economies, where a small cabal of landowners initially controls the means of production, industrialization of those economies often broadens ownership of the means of production and raises wages, which narrows income inequality. Similarly, where a broad base of uneducated talent becomes educated, income inequality again may narrow.

But this provides a cautionary tale. Economists often make their bones by discovering generalizable truths. Economic circumstances,

however, affect the application of these generalizable truths. Consider a chess game: in general, a queen may be more valuable than a knight, but in particular circumstances, the knight is superior. Chess players must continually study the changing circumstances of each new position to apply generalizable truths correctly. You simply can't get very far in chess with generalizable truths alone, nor can you with economics.

Most economic models assume labor and capital constrain growth, but circumstances have changed. Now properly trained talent and the economy's capacity and willingness to bear risk constrain growth. This has far-reaching consequences.

The economy, like biology, is a nested hierarchy of positive feedback loops, where each issue bears on many other issues. Biologists expected that decoding the human genome would lead to a host of drug discoveries, but they quickly discovered unexpected complexities. Genes have multiple purposes. They work in conjunction with one another and through redundancies. Proteins alter how genes express themselves. Glycomes, namely sugars, affect proteins, and environmental circumstances affect both. Because of these complexities, decoding the genome has not resulted in the straightforward discoveries for which scientists had hoped.

The same is true of economics. Failure to see all the linkages is the chief source of flawed macroeconomic reasoning. In fact, demagogues often ignore or oversimplify complex linkages to make their proposed solutions look better on paper than they actually are in reality. A proper diagnosis of the economy requires careful delineation of randomly changing and logically evolving circumstances.

In a post-industrial economy, a Kuznets curve hasn't described reality. In an economy saturated with education, for example, information technology, and not education, augments the value of cognitive skill. Unlike the saturation of education, this has increased income inequality. As computerization converges on cognition, the value of human creativity may later decline. There may be no generalizable governing principle whatsoever. The ebb and flow of outcomes may be entirely circumstantial.

Unfortunately, circumstances favorable to lesser-skilled workers in the 1950s and 1960s ran their course. Exogenous sources of growth

slowed. America saturated its talent with education. Further gains have proved difficult to achieve. The migration of rural America to the cities is over.

Competition drives manufacturers, who can ship their products around the world, to relocate their factories offshore to low-wage economies. Domestic manufacturers must increase their productivity (e.g., auto assemblers), specialize (e.g., GE), move production offshore (e.g., toys and appliances), or never start producing in the first place (e.g., electronics) to compete successfully against lower-wage offshore producers. These outcomes all displace workers, who must find employment elsewhere.

The increased availability of capital, from both the shift from a capital-intensive economy to a knowledge-intensive economy in high-wage economies and the high saving rates in many low-wage economies, like China's, accelerates investment offshore that reduces manufacturing employment in high-wage economies.

Productivity gains from capital investment now hollow out manufacturing employment and drive unskilled workers to the harder-to-manage service sector, where productivity growth has been slower. Meanwhile, the baby boom, the increased participation of women in the workforce, immigration, and international trade greatly increased the supply of labor, especially lower-skilled labor.

Displaced workers must depend on entrepreneurial risk-takers, properly trained talent, and investors to find and commercialize new sources of employment with productivity and wages comparable to their prior capital-intensive manufacturing jobs. The ease of finding such work should not be taken for granted. To the extent these resources are in short supply, an increase in the number of job seekers—whether from displaced workers, newly arriving immigrants, or population growth—strains resources critical to job creation.

Balanced trade should return an equivalent amount of income and employment to the United States from offshore economies as offshore economies buy U.S. goods with the dollars they earn by selling Americans products. And U.S. consumers should spend their savings from lower-cost products—whether produced offshore or domestically—on other products and services that employ Americans, generally on domestic services that low-wage offshore labor cannot perform. Were that not the case, trade would not balance.

If the supply of U.S. labor were constrained, this increased domestic spending would increase wages independent of productivity gains. This dynamic buoys the demand for domestic labor. To the extent displaced workers can find work at wages higher than the lower wages of offshore workers, the economy as a whole is better off. The savings of lower-cost goods outweigh the reduction of wages. After all, offshore production is cheaper *because* displaced domestic workers can find work at higher wages. Were that not the case, it would be cheaper to produce imported goods with domestic workers.

Similarly, innovation and capital investment have historically lowered the cost of goods more than they have lowered the wages of lesser-skilled labor. The introduction of tractors, for example, did not result in the starvation of the displaced farmers. Quite the contrary—the lower cost of food allowed displaced workers to find work as teachers and carpenters, jobs that were uneconomical when the cost of food was astronomically high. The lower cost of food makes these jobs economical.

Agriculture converted to tractors en masse because the value of the newfound work was greater than the now-lower cost of food. Were that not the case, tractors would have been uneconomical investments—growing food with labor instead of capital would have been cheaper. Technology and capital investment are economical because they are cheaper than the value of the displaced labor.

As is the case with most all investment, competition forced all surviving farmers to buy tractors to avoid losses when competition lowered the cost of producing food. Competition between farmers lowered the price of food. In turn, this reduced the return on investment in a tractor to the cost of capital. So consumers, not investors, captured most of the value of tractors through the lower cost of food. Since even as recently as 1960, the cost of food in the United States has fallen from 18 percent of GDP to 10 percent.[4]

Luddites have always feared that displaced workers would be unable to find work at wages greater than the now-lower cost of goods, even though the history of technology tells a contradictory tale. When they smashed the looms, the Luddites could never have imagined that we would pay people to drive us to perform physical exercise, brew our coffee one cup at a time, and even swirl the foamy milk to make it pretty. These jobs became economical *because* of the lower cost of goods.

So far, the U.S. economy has employed an enormous influx of low-wage workers, both immigrants and offshore workers, with little, if any, decrease in median wages. If, on average, displaced lesser-skilled U.S. workers can find work at high enough wages—that is, with a high enough marginal product of labor—the lower cost of imported goods may increase the value of their wages because their wages can purchase more.

But while it's true that trade with low-wage economies may lower prices more than wages, an economy like America's buys products made with low-wage, lesser-skilled labor and sells products made with high-skilled labor—such as operating systems produced by Microsoft, Apple, and Google. Middle- and working-class workers bear the burden of lower wages while retirees, the non-working poor, and higher-skilled workers and their families—where 20 percent of the families earn 50 percent of the after-tax pay—share the benefits of lower-priced goods. The cost and benefits are not distributed proportionally. As such, trade will slow middle- and working-class wage growth relative to the rest of the economy.

Christian Broda and John Romalis of the University of Chicago and David Weinstein of Columbia University, however, present evidence that the resulting lower prices of imported goods disproportionately benefit low-income households. Lower-income families spend a disproportionate share of their income on low-cost imported goods sold at stores like Walmart, relative to richer households. The Consumer Price Index doesn't reflect this fact. Instead, it produces a price index for the average person—what economists call a representative agent.

Broda, Romalis, and Weinstein estimate that the cost of living for the poor is 25 percent less expensive than the Consumer Price Index (CPI) suggests, and that subsequently "current poverty rates [2005] are less than half of the official numbers."[5] Using a different methodology, the University of Chicago's Bruce Meyer and the University of Notre Dame's James Sullivan find a difference between actual and official poverty rates of a similar magnitude over the same period. These mismeasurements of income may also exaggerate the extent of rising income inequality and slowing middle-class wage growth.

There is, however, an important difference between low-income

households, especially households with the lowest quintile of income, and low-wage workers. Many low-income families are not working full time or even part time. Their adult members are retired, disabled, sick, unemployed, or headed by single mothers with young children. Only about 3 percent of full-time workers live in poverty.[6]

Because government aid enables low-income (non-working) families to consume substantially more than they earn, trade likely lowers the cost of their consumption more than it lowers the price of their labor, because they don't work much. So while both the poor and the rich share in the benefits of lower prices from trade with low-wage economies, lower-skilled workers bear 100 percent of its burden. It would hardly be surprising, then, to find that the benefits of trade and immigration increase inequality by holding back middle- and working-class wage growth more than others—even if they make everyone richer.

Evolving circumstances have changed the relative growth rates of the pay of highly skilled and less-skilled high-wage workers. Conditions favorable to less-skilled workers in the 1950s have given way to less favorable conditions today. Investments in capital and education no longer accelerate lesser-skilled wage growth. Constraints on the resources that accelerate growth—risk-taking and properly trained talent—slow middle- and working-class wage growth further. While trade with low-wage economies makes everyone better off on average, it also slows middle- and working-class wage growth relative to the rest of the economy.

Low-Skilled Immigration Strains Constrained Resources, Which Slows Wage Growth Further

The effect of immigration on wages is more concerning than trade. Unskilled immigrants largely compete with domestic workers at prevailing wage rates when resources are constrained. To the extent an increase in the supply of labor pushes down wages, it only reduces the cost of goods proportionally. In that case, middle- and working-class workers suffer 100 percent of wage reduction for only a portion of the similarly sized benefits.

An influx of workers should push down the marginal product of labor and reduce wages. If prospective employers had found more

profitable work for workers than their existing jobs, these jobs would already exist. Newly created jobs are presumably the next best alternative to existing jobs—that is, less profitable than existing jobs—and should, therefore, have lower pay.

Workers who take these jobs would gladly take a higher-paying comparably skilled job for a nickel more than they are currently earning. Their lower wage sets the pay for all similarly skilled work.

To address these concerns, advocates of trade and immigration insist that immigrants and offshore workers complement rather than compete with American workers, and that competition will force domestic employers to invest the capital necessary to raise the productivity of immigrants and displaced workers back to the productivity of the rest of the workforce—what economists call capital deepening.[7]

Some even claim restrictions on immigration have left trillions of dollars of unharvested value "lying on the sidewalk."[8] They believe trade and immigration only raise the rest of the world's wages to America's with little, if any, adverse effect on the level and growth rate of American wages. But you have to digest a lot of hard-to-swallow assumptions to get all the way there.

In effect, they see the economy as waiters waiting on waiters—that is, on average, the economy serves itself. In that economy, the addition of another waiter is of no consequence. Without constraints, supply creates its own demand at prevailing wages.

If waiters previously saved enough capital to seat themselves as customers, then another waiter will save and invest enough money to add another seat of restaurant capacity. From this perspective, economic growth has no constraints other than the know-how to achieve its current level of productivity.

The economy, after all, has always grown to employ the children of its workers. What difference does it make if new workers are grown children, immigrants, or offshore workers?

And in an economy of waiters and dishwashers, if unassimilated immigrants are compelled to wash dishes, it frees dishwashers to work as higher-paid waiters. Everyone supposedly benefits. Dishwashers complement rather than compete with waiters.

Proponents of trade and immigration are confident, perhaps even cavalier, that businesses will capitalize on the availability of lesser-skilled

labor, that competition between employers will force companies to invest to raise the productivity of new workers to the rest of the workforce, and that the economy will grow proportionally. Were this not the case, an increase in the supply of lesser-skilled, lower-wage labor would reduce lesser-skilled wages as lower-wage workers bid down wages.

Historically, savings have limited investment. But since the recession, trillions of dollars of bank deposits have sat unused neither lent nor borrowed.[9] And prior to the recession, lending largely increased household consumption through subprime mortgage lending. Borrowers did not use these funds for business investment. The availability of savings for investment does not seem to limit growth.

Nevertheless, liberal economists Larry Summers and Paul Krugman are reluctant to agree with the underlying logic of trade and immigration advocates who state that supply creates its own demand. Summers's theory of secular stagnation (discussed at length in chapter 5) asserts that a shortage of investment opportunities currently limits growth despite a surplus of unused savings.[10] That hardly represents a world without constraints to growth where supply—in this case, savings—creates its own demand, quite the contrary.

Krugman adamantly denies the notion that supply creates its own demand. He insists:

> One of the intellectually horrifying things about the response to economic crisis was the way many economists . . . seemed utterly unaware that Say's Law—the proposition that supply creates its own demand . . .—had been refuted three generations ago.[11]

Again, Krugman is implicitly admitting there are constraints to growth even during times when savings sit unused.

University of California, Berkeley, economist David Card, one of the chief architects of these theories, admits that if immigrant labor competes rather than complements the existing workforce, or if capital investment is fixed, or at least doesn't rise proportionately to maintain worker productivity fully, wages will fall.[12]

Card's qualification applies to any economic constraint that restricts investment, especially constraints that restrict investment at a time when savings sit unused.

There are three constraints that can restrict investment even when savings sit unused—the limits of our know-how, properly trained talent, and the economy's capacity and willingness to bear risk.

It's hard to believe that we have fully exploited the limits of our know-how when median U.S. family incomes peaked at $57,800 in 1999 and have since fallen back to $53,700 in 2014; unskilled dishwashers earn less than unskilled factory workers; and full-time Hispanic workers earn less on average than their non-Hispanic counterparts.[13] Each indicates opportunities for growth without additional insights.

It is similarly hard to believe know-how is the binding constraint to growth when savings sit unused in a world full of capital deepening opportunities and where investors have overcome political risks associated with investing abroad, as evidenced by capital pouring into low-wage economies like Mexico's and China's.

With one of the highest levels of capital investment per worker in the world, and correspondingly with one of the highest levels of GDP per worker, America's productivity has demonstrated the value of additional capital investment to the rest of the world.[14] Savings sit unused despite opportunities to duplicate America's investment success without the need for new insights.

It's true that lack of infrastructure as well as political and legal uncertainties increase the riskiness of investments outside the United States and that the value of low-wage labor offsets the higher offshore risks when competing to supply high-wage rather than low-wage economies. Nevertheless, companies and their investors have raced to build offshore manufacturing to produce goods for both high-wage economies and the local economy. Given the magnitude of these investments, it is hard to believe that international risks alone account for the much lower capital investment per worker throughout the world.

More likely, properly trained talent and the economy's capacity and willingness to bear risk limit growth. The U.S. economy has unused savings that it is reluctant to invest—whether domestically or aboard—without better engineering and supervision to manage the risks and more equity to bear potential losses. Chapter 5 discusses these unconventional constraints further. Suffice it to say here that if constraints limit growth, then trade and immigration spread a limited amount of income over a greater number of workers.

If the income of the highest-skilled workers is limited in the short run, for example, and their spending raises the pay of lesser-skilled workers when the supply of lesser-skilled workers is limited, then another lesser-skilled worker—a waiter, for example—drives their wages back down toward waiters-waiting-on-waiters pay unless waiters contribute proportionally to the resources that constrain growth. Surely they do not.

Similarly, if lesser-skilled immigrants and displaced workers depend on higher-skilled entrepreneurs and investors to find and commercialize new employment opportunities, then wage growth will slow at the margin if constrained resources don't grow proportionally to the workers seeking work.

If project-management skills or companies' capacity and willingness to bear risk slow automotive manufacturers—who are racing one another to invest in Mexico to take advantage of cheap labor—from investing at an even faster rate, then devoting constrained resources to Mexican investment slows domestic investment in the United States. This slows domestic productivity growth, reduces the marginal product of labor, reduces wages, and increases income inequality.

If innovation and entrepreneurial risk-taking limit the growth of high-wage economies at this time, then additional workers, who fail to produce that growth, slow wage growth. To the extent finding and harvesting information-related innovations consumes a limited amount of entrepreneurial risk-taking and properly trained talent, and these efforts produce a minimal amount of lesser-skilled domestic employment—for example, Apple, Google, Facebook, and Microsoft—then the addition of lesser-skilled workers reduces their wages further still.

If innovation employs an increasing share of properly trained talent that would otherwise supervise less-talented workers and make them more productive, then low-skilled immigration reduces wages by diluting the available supervision.

We can see this measured in the military. While the quality of enlisted marines has increased since the draft ended in 1972, the test scores of commissioned officers have dropped significantly—approximately ten IQ points.[15] The same thing is likely occurring throughout the entire economy. The quality of blue-collar supervision is probably declining, and the productivity growth of lesser-skilled workers is slowing as a result.

Similarly, the most talented women are no longer schoolteachers

who educate our children. They are doctors, lawyers, and business executives. Lesser talent may reduce the effectiveness of teachers and the outcomes of students.

Opportunities in engineering and computer programming have stripped factories of critically needed, higher-skilled mechanics and foremen. American manufacturers, who employ armies of blue-collar workers, have a hard time competing with German and Chinese factories that still have higher-skilled workers in those skilled positions. Lack of manufacturing talent limits U.S. investment in manufacturing.

And if a limited number of successful innovators and properly trained talent pay a disproportionate share of the taxes, to the extent lower-skilled immigrants consume more government benefits than they contribute in tax revenues, it reduces the government benefits available to others (see Figure 10-1, "Federal Government Expenditures and Taxes by Household Type").

Implicit in most economic arguments, and especially arguments that low-wage immigrants and offshore workers do not diminish U.S. wages, is the notion of *all other things being equal.* For example, immigration may not lower wages if the ratio of higher-skilled to lower-skilled workers or the availability of savings per lower- and higher-skilled worker remains constant. But "other things" rarely ever remain constant relative to one another.

Overly simplified economic theories that assume capital alone increases the productivity of labor are mistaken. Risk-taking and properly trained talent constrain growth. Unless low-skilled immigration contributes proportionally to constrained resources, which it does not, it slows lesser-skilled wage growth relative to what would have been the case if the supply of lesser-skilled labor had been restricted.

Trade Deficits Strain the Economy's Capacity and Willingness to Take Risk and Reduce Wages Further

Unlike immigration, trade deficits add to the available workforce without also adding to demand. Trade deficits simply export jobs to off-

shore workers. Prior to the financial crisis, trade deficits reached a whopping 6 percent of GDP.[16] That represents an enormous increase in the supply of labor—principally low-skilled labor.

To run trade surpluses, exporters must lend importers like the United States the proceeds from the sale of goods to Americans, rather than using the proceeds to buy goods that employ Americans. Surplus exporters do this by buying U.S. government–guaranteed debt. With a limited amount of safe government-guaranteed debt, risk-averse savers who would have bought safe government debt lend their money elsewhere—namely, to banks, as deposits available to be lent.

To reemploy U.S. workers idled by trade deficits, the U.S. economy must borrow and spend these newly created deposits. If these deposits sit idle, U.S. growth, employment, and wages will be lower than they would be if the economy used all its available resources—chiefly, labor idled by trade deficits.

Of course, the economy can always reach full employment by cutting wages, in effect, by spreading a given amount of labor income over a greater number of workers. To reach full employment at the highest possible wages, the economy must fully utilize all its resources.

To put risk-averse savings to work, someone must bear the risk of using those savings. With a limited capacity and willingness to bear risk, a portion of this capacity must be used to regain employment lost to trade deficits rather than using it to grow employment and wages further.

As U.S. business has grown increasingly profitable, it has had less need for debt to finance investment. Instead, business has increasingly self-funded its growth. It is true that companies have used debt to buy back shares, pay dividends, finance mergers, and fund leveraged buyouts. But unlike investment, these transactions do not consume savings. They merely exchange savings and ownership rights to future cash flows between one owner and another, which leaves savings unused.

With fewer productive uses for savings, at least at the margin, America indirectly loaned risk-averse foreign savings lent to the United States by surplus exporters, like China and Germany, and once upon a time Japan, to poor subprime homeowners. Unlike richer homeowners, these homeowners borrowed against the rising value of their

homes and behaved as if they won the lottery. They used the proceeds to increase their consumption.[17]

Rising home prices and innovative Wall Street financing—structured finance and loan syndication—found investors, chiefly foreign investors, to bear the risk of loaning money to subprime consumers with limited income to repay such loans. In the wake of the financial crisis, those investors are gone.

At the same time, surplus exporters like China used their savings to build empty apartment buildings while Germany loaned their savings to Greece. None of these unwise uses represent productive investments that permanently increase productivity or growth.

Now that government regulations have stifled lending to subprime homeowners, and lenders and borrowers haven't yet found viable alternative uses for risk-averse savings, these savings sit idle in the aftermath of the financial crisis.[18] No surprise, growth has slowed, employment has recovered slowly, and wage growth has been lackluster.

Trade deficits export jobs. To regain lost jobs, America must take the risk of borrowing and spending risk-averse savings. This strains the economy's limited capacity and willingness to bear risk. Without trade deficits, this capacity could be used to grow employment and increase wages. Unless domestic saving rates decline or trade deficits narrow, employment and wage growth are likely to remain slower than they otherwise would be. Until then, the economy must find new uses for risk-averse savings and investors willing to bear the risk of putting these savings to work to grow the economy faster.

Empirical Studies Claiming Trade and Immigration Have Minimal Effects Are Unconvincing

To address the thorny issues of trade and immigration, economists have turned to empirical studies to determine the degree to which trade and immigration affect middle- and working-class wage growth. The economic circumstances are so complex, however, that the conclusions remain unresolved.

In a seminal study, David Card insisted that after the Mariel boatlift of 1980, when Fidel Castro released 125,000 Cuban immigrants to

Florida—60 percent of whom were high school dropouts—wages barely fell in Miami.

London School of Economics economist Gianmarco Ottaviano and University of California, Davis, economist Giovanni Peri claim, "US-born workers (with at least a high school degree) who accounted for 90% of the US-born labor force in 2004, gained from immigration [from 1990 to 2004]. Their real wage gains in the long run range between 0.7% and 3.4% while even in the short run they either gain (high school graduates) or have essentially no wage change (college graduates). . . . The wage losses . . . are concentrated among previous immigrants who experience most of the competition from new immigrants." They argue, "This result stems from the imperfect substitutability between US- and foreign-born workers so that immigration increases the wages of US-born at the expenses of a decrease in wages of foreign-born workers."[19]

University of Cape Town economist Lawrence Edwards and Harvard economist Robert Lawrence, using data from the 1990s and early 2000s, find, "Trade is not a major source of increasing U.S. wage inequality. . . . The goods exported by developing countries are highly imperfect substitutes for those produced by developed countries. This means that for the most part, unskilled U.S. workers are not competing head to head with their counterparts in developing countries." Despite their unflinching conclusions, Edwards and Lawrence caution, "There is always the possibility that 'but for trade' U.S. wage inequality might have fallen."[20]

Unfortunately, studies claiming trade and immigration have minimal effects often depend on evidence from the 1990s when median wages accelerated after the commercialization of the Internet, e-mail, and cell phones. An influx of lesser-skilled workers may have freed greater-skilled workers to capitalize on employment opportunities afforded by the faster growing economy at that time.

Given the complexity of the economy and the constant flux of circumstances, it is near impossible to isolate the effect of one factor independent of all the others. Studies should overwhelmingly fail to find effects even when there are effects. That's why studies that find evidence of statistically significant effects are so highly prized. As such, we should exercise great caution when we use studies that find minimal effects to conclude there are, in fact, minimal effects.

Even if trade slows middle- and working-class income growth, empirical studies that attempt to measure trade's effect on income inequality ought to find little effect from trade. That would be the case, for example, if soaring payoffs for innovation produced by the 0.1 percent are the predominant reason for growing inequality, as is likely the case. They simply can't know what would have happened to wages if America's 0.1 percent had been less successful. It is not enough to say that wages did not decline, especially when advocates of income redistribution complain that wages haven't grown fast enough and blame the success of the 1 percent.

As the economy and wage growth have slowed, economists have grown increasingly skeptical that offshore and foreign-born workers complement rather than compete with domestic workers.[21]

Harvard economist George Borjas's recent reassessment of David Card's highly influential study of the Mariel boatlift, for example, found substantial downward pressure on the wages of similarly skilled workers—"perhaps as much as 30 percent."[22] While Peri criticizes Borjas's workforce sample as too small, Borjas notes his results are, nevertheless, statistically significant and that the "only way to make sure your lying eyes see the 'right' wage trend is to enlarge the sample in ways that are, at best, questionable and, most likely, just plain wrong."

More broadly, Borjas's research finds that where immigration increases the number of workers in a skill group by 10 percent, it reduces wages by 4 percent.[23]

While it is true that some immigrants may perform work that native-born Americans may be eager to leave behind (migrant workers picking crops, for example), with 60 million foreign-born immigrants and their native-born adult children, it stretches credibility that all these workers are largely complementary—that they merely free up the rest of the workforce to do more productive work. The distribution of Hispanic wages, for example, albeit lower on average than native-born workers, overlaps significantly with the rest of America's middle- and working-class workforce. And there are plenty of native-born workers who, when freed from performing some tasks, are nevertheless incapable of doing more skillful work.

With automotive and other manufacturers pouring capital into

Mexico, and with Mexico supplying an increasing share of North American production, it grows harder and harder to believe these Mexican autoworkers complement rather than compete head-to-head with American workers for jobs and investment capital.[24]

If offshore labor truly complemented American workers rather than merely displacing them, and if the supply of immigrant workers truly increased capital investment until their productivity matched domestic workers, we should see a frenzy of capital investment boosting the productivity of unskilled workers. We see the opposite.

Low-skilled employment is not growing in highly productive capital-intensive sectors like manufacturing, for example. Instead, we see capital investment producing productivity gains that exceed the growth in the demand for manufactured products, which, in turn, hollows out manufacturing employment. Lower-skilled employment has subsequently grown in less productive service sectors like retail, restaurants, household employment, and healthcare.[25] In turn, low-skilled immigrant labor has skewed toward employment in these sectors.[26]

Pro-trade and immigration theories assume that businesses will capitalize on the availability of lesser-skilled labor, and competition will force employers to invest capital to raise the productivity of new and displaced workers up to the rest of the workforce. Otherwise, an increase in the supply of labor will put downward pressure on wages. If employers face difficulties in finding employment for displaced workers, it's a strong indication of significant constraints to growth.

The evidence is worrisome. After comparing geographically distinct U.S. labor markets affected differently by trade, MIT labor economist David Autor concludes:

> Alongside the heralded consumer benefits of expanded trade are substantial adjustment costs and distributional consequences. These impacts are most visible in the local labor markets in which the industries exposed to foreign competition are concentrated. Adjustment in local labor markets is remarkably slow, with wages and labor-force participation rates remaining depressed and unemployment rates remaining elevated for at least a full decade after the China trade

> shock commences. Exposed workers experience greater job churning and reduced lifetime income. At the national level, employment has fallen in U.S. industries more exposed to import competition, as expected, but offsetting employment gains in other industries have yet to materialize.[27]

It is an ominous finding, especially when the trade deficit simultaneously flooded the U.S. economy with offshore savings that businesses could have used to fund new investment. Entrepreneurs, companies, and investors did not rush in to capitalize on the newly available supply of labor or capital. And in the absence of these constrained resources, incomes fell. That's a clear indication that constrained resources—namely, properly trained talent, which likely moved away in tough times, and the economy's capacity and willingness to take risk—had previously raised middle- and working-class pay above waiters-waiting-on-waiters pay.

It is not enough to say that some dislocated workers face hardship that they could have avoided by moving to faster-growing regions of the United States, like the San Francisco Bay Area. If risk-taking and talent don't constrain growth, where were the entrepreneurs and investors who should have rushed in to take advantage of underutilized labor in these regions and competed fiercely enough to restore high wages?

Clearly capital in combination with constrained resources previously raised pay higher than would have been the case otherwise. Without an abundance of constrained resources, capital sat unused and wages fell back to waiters-waiting-on-waiters wages—the opposite of the economics underlying trade and immigration theories that claim they have no effect on wages because resources are unconstrained.

With savings used to fund risky subprime mortgages, capital clearly did not constrain employment growth prior to the financial crisis. It largely increased household consumption. Nor have savings constrained growth since the financial crisis, as $2.4 trillion of bank deposits have sat unused.[28] This is a strong indication that something other than savings—most likely, properly trained talent and the economy's capacity and willingness to take risk—has constrained invest-

ment. If anything other than labor constrains growth, then immigration and trade deficits reduce wages.

The trend of America's middle- and working-class wages relative to the rest of the world's provides further evidence that global trade with low-wage economies is slowing middle- and working-class wage growth. According to the World Bank, real wages in the developing world have grown rapidly—40 to 80 percent cumulative from 1988 to 2008—while high-wage middle- and working-class incomes have scarcely grown.[29] The juxtaposition hardly seems coincidental.

Conclusion

Conditions favorable to lesser-skilled workers in the 1950s and 1960s—two decades of pent-up growth, the value of mass production and related capital investment, more education, rural migration, and population growth—gave the false impression that productivity growth on its own increases median wages and that the wages of advanced economies naturally grow more equally distributed over time. Neither assumption has proved to be universally true.

When growth is constrained, supply and demand determine prices. Like all commodities, the value of an additional lesser-skilled worker sets the wages for these workers, not their average productivity. When more lesser-skilled workers are available, unless they increase constrained resources proportionally, lesser-skilled wages will be lower.

In our information-intensive economy, capital is neither a constraint to growth nor the sole determinant of productivity, as many oversimplified models of trade and immigration often assume. Today properly trained talent and risk-taking constrain growth.

In order to compete with low-wage manufacturers, capital investment now reduces employment and pushes workers into less productive jobs. The productivity of displaced workers sets the pay for similarly skilled workers.

When similarly skilled workers are producing less value in less productive and, by necessity, lower-paid jobs, workers in more productive, capital-intensive manufacturing jobs can no longer capture the additional value produced by their capital-enhanced productivity.

Wages are bid down to the wages affordable to an employer with jobs that are less productive.

Capital intensity no longer determines the productivity and pay of newly created jobs—for example, swirling milk in a cup of coffee brewed one cup at a time. The prosperity of the economy—where 20 percent of the workers earn 50 percent of the pay—and the scarcity of lesser-skilled labor, or lack thereof, set pay.

Low-skilled immigration just adds to the supply of lesser-skilled workers and holds down pay. Hispanic immigrants work in landscaping, for example—jobs supported by a minimal amount of capital and technology—because more productive work isn't available for them to perform. Rather than performing work that Americans are unwilling to do, low-wage immigrants likely perform work at wages Americans are unwilling to accept.

Low-wage immigrant labor may benefit the rest of the American workforce by performing work more cheaply. Some Americans may choose to own yards that require more yardwork if the cost of yardwork is cheaper, for example. And low wages may increase demand, which expands employment. But it likely does so by lowering the marginal product of labor and putting downward pressure on wages.

It is true that competition between companies with low-wage labor drives down the prices of their product and service offerings, and that lower prices increase the value of wages. But it is also true that working- and middle-class workers likely bear the greatest burden of lower wages while enjoying only a portion of the benefits of lower prices.

While advocates of redistribution are loath to admit it, a near-unlimited supply of lesser-skilled labor—from international trade that buys low-skilled labor and sells high-skilled labor, trade deficits that export employment without extensive borrowing and lending, and low-skilled immigration—has slowed U.S. middle- and working-class wage growth. Instead of wage gains, growth has produced large employment gains. This has chiefly benefited immigrants.

At the same time, lower-cost goods and services have disproportionately benefited higher-skilled workers and people who don't work.

To advocate both for more immigration *and* for faster wage growth for the working and middle class is to work at cross-purposes. It is a stretch to assume low-skilled immigration adds proportionally to con-

strained resources and disingenuous to suggest that it is politically verboten to believe otherwise.

It is an even greater stretch to pretend that the rising income of the 1 percent is responsible for the stagnating wages of others. Quite the opposite: the growing success of the most successful Americans has put upward pressure on employment and wage growth.

Chapter 1: The Causes of Growing Inequality

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