

An Age of Stagnation?

World Future Review

2014, Vol. 6(2) 120–129

© The Author(s) 2014

Reprints and permissions:

sagepub.com/journalsPermissions.nav

DOI: 10.1177/1946756714533205

wfr.sagepub.com



Stephen Aguilar-Millan¹, Jason Swanson²,
Kate Burgess-MacIntosh³, and Laura Schlehuber⁴

Abstract

Much of the policy focus since the onset of the Great Recession in 2008 has been based upon a return of the global economy to “business-as-usual.” It is assumed that it is both possible and desirable to return to the pre-recession trajectory of the global economy, despite such a growth path leading to an imbalanced global economy that was neither sustainable from an environmental perspective nor equitable from the perspective of supporting a fair society. Policy makers have failed in this objective. It may be that governments have simply been unsuccessful. It is also possible that the structural components of the global economy have changed in such a way that a return to the pre-recession growth path is not possible. This article is an investigation into this possibility. It will consider three elements—debt, technology, and demography—that argue that we have entered a sustained period of sluggish economic growth by asking three core questions: (1) Will the rebalancing of the global economy undermine the ability of economies to restore prosperity? (2) Have the long-term trends in innovation reached a moment of pause, to delay future growth prospects? (3) Are the demographic trends facing the world likely to act as a brake upon future economic growth? We then ask the question of whether or not this is entirely undesirable before taking the view that it provides a good opportunity to switch into a low carbon, low-growth economy if the fundamental issues of inequality and fairness can be addressed. If we are to have a prolonged period of subdued prosperity, then that affords us an opportunity to devise a structure that is both kind to the planet and equitable to its inhabitants. To misquote Churchill, it would be a shame to let a perfectly good recession go to waste.

Keywords

growth, global economy, recession, business as usual, sustainability

Introduction

Much of the policy focus since the onset of the Great Recession in 2008 has been based upon a return of the global economy to “business-as-usual.” It is tacitly assumed that it is both possible and desirable to return to the pre-recession trajectory of the global economy. This is despite evidence to suggest that such a growth path was leading to an imbalanced global economy that was neither sustainable from an environmental perspective nor equitable from the perspective of supporting a fair society.

Ever since the onset of the recession, such efforts to return to business-as-usual have eluded

policy makers. While there has been some limited success in achieving a coordinated international effort to respond to the crisis—particularly at the outset of the recession—these efforts have not come to much as national priorities have taken precedence over international collaboration.

¹European Futures Observatory, Ipswich, UK

²European Futures Observatory, Pittsburgh, PA, USA

³European Futures Observatory, Lowell, MA, USA

⁴European Futures Observatory, Friendswood, TX, USA

Corresponding Author:

Stephen Aguilar-Millan, European Futures Observatory, 6 Greenways Close, Ipswich, Suffolk, IP1 3RB, UK.

Email: stephena@eufo.org

It may be that national governments have been unsuccessful in their attempts to achieve this goal because it required an international response, but it is also possible that the structural components of the global economy have changed in such a way that a return to the pre-recession growth path is not possible. This article is an investigation into this possibility.

Global recession, by definition, implies a shortfall of aggregate demand in relation to aggregate supply. It may be that aggregate demand contains a structural weakness that prevents demand from flowing into the global economy. We shall examine this case by looking at the components of aggregate demand and considering whether or not they may make a significant contribution to further growth.

Aggregate supply is the product of the supply of labor and labor productivity. It may also be the case that the supply of labor, from a long-term perspective, is not contributing as much to the dynamic growth setting as previously experienced. It may be the case that aggregate supply is held back because the technology implicit in labor productivity no longer is growing as fast as it used to. We shall examine both of these cases.

In a dynamic setting, there is a complex interplay between aggregate supply and aggregate demand. We shall draw together these two elements in our conclusion to suggest that the global economy presently suffers from deficiencies in demand, but once recovery sets in, constraints to aggregate supply will become a far greater factor in holding back economic growth. We have already seen five years of muted growth. If this situation were to last another five to ten years, as we believe that it may well do, then we are truly in an age of stagnation.

The Weakness of Aggregate Demand

The financial crisis of 2008 and its ensuing recession came as a surprise to many. There were visible warning signs that went unrecognized prior to mortgages foreclosing, banks collapsing, job layoffs multiplying, and the fear of economic collapse setting in. Yet the housing

bubble and crash, the reckless borrowing and lending of financial institutions, and a slew of other economic forces that simultaneously converged to create the greatest economic crisis since the Great Depression all seemed to go unanticipated by many economists and financial institutions until it was too late to avert.

What resulted was an unprecedented fall in aggregate demand and an enormous amount of debt that could not be repaid easily, summoning all to address the now heavily visible financial imbalances that had accumulated over decades. Five years have since passed, but the rippling effects left in the wake of the crisis are still felt throughout the global economy and may continue to do so for some time to come. Economists, using their once-reliable forecasting systems, yearn to derive a formula—a method—of manipulating and recreating the economy back to the pre-recession glory days of the “Great Moderation.” But, what if it cannot be fixed? Could it be possible that we are entering an age of more or less permanent stagnation?

During a recent International Monetary Fund (IMF) research conference, economist Larry Summers warned that the world was headed toward a period of “secular stagnation” as the years of rapid growth and any economic benefits derived from globalization’s effects were over.¹ Adding to the notion of economic stagnation, a 2013 annual study undertaken by Moody Britain determined that the British public has come to terms with the present-day reality of never returning to life as it once was but instead is “intent on building a future on firmer foundations, in preparation for a better life by 2020.”² Are we finally able to embrace the reality that slow growth is the new normal? Will the consequences of our recent actions be felt by the generations yet to come?

Through observation of the rebalancing of the debtor versus creditor nations, between currency zones and among households and financial institutions, we can see that the economy could be moving toward an age of stagnation. In 2007, as many citizens defaulted on their mortgage loans, debt-heavy lenders (banks and other financial institutions) were unable to absorb this weight while continuing

business-as-usual. As this contagion spread, central banks stepped in to bail out many mid and large-sized banks before they filed for bankruptcy. Thus, the loans of consumers and private financial institutions passed into the hands of government as debt.

The assumption of so much debt by the public sector has constrained the ability of governments to use traditional fiscal mechanisms to find a way out of the current recession. The need to service and repay the relatively higher levels of public sector debt has led many governments to resort to a fiscal contraction, best known as the policy of austerity. This has further taken demand out of economies already under pressure.

As governments such as the United States endeavor to pay back this debt in future years, it will not be with conventional monetary policy that has been used to stimulate the economy. Traditionally, monetary expansion has been implemented through the reduction of nominal interest rates and the devaluation of the national currency. With nominal interest rates at, or close to, zero in many of the developed nations, this option to stimulate aggregate demand is somewhat limited. Instead, quantitative easing (QE) or forward guidance will continue to be used but with a limited impact on demand and at the cost of ballooning government balance sheets (in the United States, the Federal Government balance sheet is approaching four trillion dollars³).

The ability of governments to devalue their currencies depends entirely upon the willingness of other governments to allow them to do so. Competitive devaluations, with the purpose of stimulating domestic demand as export prices fall and import prices rise in relation to other currencies, can be self-defeating if all nations attempt to devalue their currencies at the same time. It is in the Eurozone that the greatest problems have occurred.

The nations of the Eurozone have entered into a situation where external devaluation of the currency is no longer an option, which means that their only way forward is internal devaluation to address the imbalances within the Eurozone. In some of the weaker Eurozone economies, such as Spain and Ireland, excessive

levels of private debt had built up. In other weak Eurozone economies, such as Greece and Italy, the buildup had been of public-sector debt. Turbulence in the bond markets has led to these issues being addressed in the only way open to governments—internal devaluation, or, as we now know it, austerity. In the words of *The Economist*, “The euro area cannot enjoy real prosperity until its overhang of private debt is reduced and its young people are brought back to the labour market.”⁴ This process is likely to continue to cause aggregate demand to be subdued as we move into the future.

Households are now keenly aware of the dangers that excessive debt entails. Many households now wish to use their discretionary income to pay down their debts. This has resulted in a rise in the savings ratio, which has had a dampening effect on consumer spending. Increased savings equates to a reduction in consumption and eventually reduced investment as companies delay the purchase of extra capacity in the face of sluggish demand.

Coupled with this, people are apprehensive about taking risks and investing. Alan Greenspan, former Chair of the U.S. Federal Reserve, addresses the issue of “animal spirits” in a 2013 Foreign Affairs article. A term first coined by Keynes, animal spirits refer to the emotions and impulses that compel economic movement. According to Greenspan, present-day usage of the term among economists refers to the “fears that stifle action” (Greenspan 2013). It is these animal spirits that is holding back investment by firms and causing households to restrain their spending. Both will act to hold back aggregate demand for some time to come.

If our view is correct, we can expect economic growth to be subdued from now on because aggregate demand is likely to be quite subdued. We need to bear in mind a few key points. The effect of public mood in relation to investment and “animal spirits” must be recognized as playing a significant and even destabilizing role in obtaining economic growth. The ability of governments to intervene to rectify this is somewhat limited owing to the continuing need for fiscal austerity. The ability of the external current account (the nation’s exports) is likely to be kept

in check as a means to ignite economic growth because all governments would like to resort to competitive devaluations. It will be only when the global financial system has been rebalanced that a longer run stability will be achieved and aggregate demand will be able to trigger a return to economic growth.

A Pause in the Pace of Change

Since the financial crash of 2008, there has been much speculation as to where future sources of economic growth may come from. Historically, one of the largest drivers of economic growth is innovation. Keeping this in mind, as we consider what the world economy may look like in the future and whether or not we are entering into an age of stagnation, a critical question we should ask ourselves is how will the pace of innovation impact upon future economic growth rates?

Taking a sufficiently long perspective, there emerges quite a few long-term trends in the development of technology. These trends appear as surges of technological advancement that we conveniently think of as “waves.” These waves of technological innovation and advancement, rather than breaking and receding, act as additives to one another, giving a view of a continuous stream of progress.

We think of long waves of technology through the works of Kondratieff, Schumpeter, and Perez (Alexander 2001; Perez 2003; Schumpeter 2010). In each of these, similar patterns of recurring events occur that lead to a technological paradigm becoming dominant, before being replaced by another. It is conventional to think in terms of five waves: the Industrial Revolution (started 1770), the Age of Railways (1829), the Age of Steel and Electricity (1875), and the Information Age (1971) (Perez 2003). If the model is correct, then we are presently in the middle of the fifth wave, a point in time where the Information Age will start to exhibit signs of maturity and where the sixth wave will start to gather pace.

An important point about the maturity phase in the Perez model is that investment starts to level off and diminish at this point. As

investment slows down, so the growth of labor productivity falls as well. This diminishes the contribution that rising productivity can contribute to aggregate supply, resulting in falling growth rates. There is much evidence from the developed economies to support this view. Since the onset of the recession, investment rates have fallen, labor productivity has fallen, and economic growth rates have fallen. These trends are likely to continue for some time to come as the supply of productive investment opportunities remains limited and business sentiment is dominated by caution about future economic prospects. At some point, the interest rate cycle will turn, causing interest rates to rise. This will expose the vulnerability of households and businesses and could delay the eruption of investment in the technologies of the sixth wave. Eventually, this eruption will take place to give a renewed burst of technological innovation but that may not happen for some years to come. In the meantime, the Perez model suggests that we ought not to give too much reliance just yet on a bout of investment-led growth.

If Perez gave us a model using waves of innovation that create economic cycles, Robert J. Gordon proposes a similar model using Industrial Revolutions (Gordon 2012), suggesting that U.S. economic growth is linked to periods of slow and rapid growth based on the timing of three industrial revolutions—steam and railroads (1750–1830); electricity, internal combustion, and petroleum (1870–1900); and computers, the Internet, and mobile phones (1960 to the present). Many of these advances that spurred economic growth are “one time only” advances. The fact that so many fundamental one-time-only inventions have already occurred limits the potential for a continuing stream of equally basic inventions.

Gordon is not alone in arguing that the pace of innovation is slowing. Jonathan Huebner (2005) in his article *A Possible Declining Trend for Worldwide Innovation* argues that innovation has been declining steadily since the industrial revolution. Huebner states that innovation is headed toward an economic limit that will be reached in 2038. This limit will be marked by very low innovation. Huebner

examines U.S. Patent data that when normalized to total, U.S. population shows a patent “peak” in 1914. From 1914 to 1985, there is a drop to 50 percent of the 1914 value, then a rise from 1985 to 1999 back up to 75 percent of the value from 1914. Huebner uses this data to argue to the per capita innovation rate of the United States has been in decline since 1914.

John Smart wrote a rebuttal to Huebner’s article on his Accelerating Change website.⁵ Smart noted that there were shortcomings with Huebner’s data. In regards to his patent information, Huebner stopped in the year 1999. Smart argues that if 2003 data were included, they would have refuted Huebner’s argument that U.S. patents per capita fit a bell curve and are now in decline. Rather than witnessing a declining trend in innovation, perhaps we need a better measure? If we are to consider the pace of innovation, we should look at the innovation that happens “under the hood” in addition to the “above hood” innovations. While human social innovation may follow political and generational cycles of advance and regrouping, technological innovation may be becoming smoother and subtler in its exponential growth the closer we get to the modern era.

This brings us back to the original question: how will the pace of innovation impact upon future economic growth rates? According to the Perez model, we are currently sitting in the middle of the fifth wave. Our economy is at a turning point, waiting for the sixth wave to begin and with it an economic boost. This is naturally a point where innovation comes off the pace and improvements in labor productivity start to lessen. If that is so, then we can expect the contribution of improved productivity to growth to diminish during the transition period of the next twenty years or so.

If we then add the analyses of Gordon and Heubner, then we can expect a slowdown or leveling off in terms of innovation, perhaps reducing the rate of innovation until a transition into the sixth wave of technological innovation gives rise to an economic rebound.

It is certainly our contention that we are entering a period of transition in the developed economies. Whilst many productivity gains have been made during the information age,

there are grounds to believe that the pace of improvement is slowing. We see this as the result of structural issues rather than being a temporary consequence of a particularly deep recession. As these trends develop, the problems solved by the information age—largely those of labor productivity—will be less pressing, and the problems that the sixth wave will solve will come to the fore. In the meantime, as we progress through this transition, we will have to wait for technology to lead us into a period of higher economic growth.

The People Problem

The recent recession has affected the demographic trajectory of the developed world, launching future impacts on our economic growth rates. Europe and North America have especially been jolted off-course, with both beginning to show the signs of wear-and-tear on past projections of major life milestones of emerging generations, Gen X and Gen Y. The root cause may never be understood completely, but most important now is to understand what is happening and, more importantly, how it will change the world of the future.

Joel Kotkin (2012) approached the problem in his *Newsweek* article *Are Millennials the Screwed Generation?* His focus, on the previous generation’s financial blunders leading to the recession, was supported by startling figures, such as that the median net worth of individuals living in the United States under the age of thirty-five has fallen 37 percent between 2005 and 2010 according to the U.S. Census. In contrast, those over the age of sixty-five have only faced a 13 percent fall. The recent monetary policy of Quantitative Easing has served to exacerbate this inter-generational imbalance by inflating real estate and stock values, to the benefit of older citizens, and to the detriment of younger citizens.

Unemployment for those ages eighteen to twenty-nine is the worst at 50 percent in Spain and Greece, compared with 35 percent in Italy, 22 percent in France, 22 percent in the United Kingdom, 12 percent in the United States, and 8 percent in Germany, Kotkin explains. The International Labour Organisation, as cited in

an April 2013 *Economist* article (The Economist 2013) discusses that seventy-five million young people, or 6 percent of all fifteen- to twenty-four-year-olds, are unemployed. In the same article, data from the Organisation for Economic Co-operation and Development (OECD) states that twenty-six million young people, those between fifteen and twenty-nine years of age, are “NEETS,” those not in employment, education, or training. In addition, between 2010 and mid-2013, Portugal, Spain, and Ireland have each lost about 2 percent of their working-age population to areas abroad, in search of new opportunities, an article in *The Guardian* written by Heather Stewart (2013) explains. Ironically, this has given rise to a hidden export of embodied human capital as well-educated youngsters seek employment opportunities abroad.

These discouraging figures build the foundation for longer implications, with a meek job market potentially delaying major life milestones, such as getting married or having children. Marriage may move to being an unrealized or long-term goal when meeting basic needs becomes trying. One of the consequences of the recession has been that people are marrying later and having children later in life, which will have the consequential effect of reducing the birthrate, to the long-term detriment of the economy. In 2011, the Pew Research Center reported⁶ a decline in marriage rates and an increase in age of marriage. Marriage has shifted approximately five years later over the course of fifty-plus years; in other words, every ten years, the average age of marriage moves to one year older. This shift is reverberating throughout the recovering economy, with additional life milestones, such as having children, mirroring the delay. The birthrate fell to an all-time low in 2011 in the United States, according to research conducted by the Pew Research Center.⁷ Initial findings put the birthrate for 2011 at 62.3 births per 1,000 women, the lowest birthrate since 1920, the earliest year with reliable figures for this count.

Could the rise of life expectancy be contributing to the overall problem? From 1960 to 2011, many countries, including the United States and

parts of Europe, saw gains in average life expectancy. The highest gain (13.3 years to age 82.4) was seen in Italy, with Spain (13 years to age 82.1), Greece (12 years to age 80.9), France (11.6 years to age 81.8), and Germany (11.2 years to 80.7) seeing the largest gains toward the average, according to World Life Expectancy reporting.⁸ Curiously, Spain, Greece, and Italy were also the three countries with the highest unemployment for those aged eighteen to twenty-nine. It would appear that there is a correlation between longevity and youth unemployment, as an older population blocks the career prospects for a younger cohort following on behind. As populations age across the developed world, this could be an increasing feature of the employment market.

Spain and Greece have also seen the largest number of residents leaving for Germany. According to OECD, between September of 2011 and September of 2012, 34,000 Greeks and 28,000 Spaniards moved to Germany, according to data cited in a recent *Wall Street Journal* article written by Matina Stevis (2013). OECD states that over 116,000 people from countries facing economic crisis have relocated to Germany. One might wonder, in the long run, if this group presents a new potential burden for the Spanish and Greek governments, who are paying to train a well-educated workforce, but who are not receiving the benefits to their tax base.

Instead of being pigeonholed by their generational silos of Gen X and Gen Y, the “forgotten generation” and “generation screwed,” it is time to consider not how we got here, but what we will do to ensure a better future. A collaborative effort, which could be nicknamed Generation Disappointed in reflection of their current state, must emerge to enact an exchange that creates more opportunities for the next generation of leadership and workforce professionals. Transitioning the world’s burgeoning populations to Generation Optimistic will ensure a healthy future, one that is essential to underpin the eventual resumption of economic growth.

Finding the Upside

Let us just suppose that there is a good likelihood that any recovery from the Great Recession will

be rather subdued. If we take the view that aggregate demand will be somewhat muted as the developed economies re-balance some of the financial imbalances that have arisen in recent decades, if we take the view that aggregate supply will be held back by population growth in the developed economies being subdued, and if we admit the possibility that labor productivity will dip as we move from one technological paradigm to another, then two interesting questions emerge. Can we derive some benefits from this course of events? And second, what is the likely path that will lead us out of this situation?

Ever since the Great Recession began, the policy objective has been to restore the developed economies back to where they were before it began. We could call this the policy of a return to “business as usual.” Of course, this policy has not exactly worked, owing to a number of factors. As the various economic agents (individuals, households, companies, and governments) have striven to adjust their balance sheets by paying down their debts, spending in the global economy has relied upon the emerging nations for the growth that has been seen. The policy of austerity in the developed world has effectively denied governments of the ability to use fiscal policy as a means to stimulate aggregate demand. This has just left monetary policy for governments to use through the policy of quantitative easing, which has had some effect, but not as much as fiscal policy could have done.

The result of this has been the squeezing of living standards across the developed economies. There has been a stark rise in inequality in the societies of the developed world, along with a feeling that governments are not acting in the best interests of the population they serve. The rise of the concept of “The 1 percent” and the rapid spread across the developed world of the Occupy Movement has served to make this feeling far more entrenched. Governments have responded by a more determined effort to return to the path of an ever-growing economy. Without the effective means to achieve this, they have not been all that successful.

There has been one area, however, in which the Great Recession has been quite beneficial. With the reduction of economic activity, both

on an absolute level and in terms of the output gap—the gap between aggregate demand and aggregate supply in a dynamic context—the carbon intensity of economic activity in the developed world has fallen. Reduced levels of economic activity have reduced the absolute amounts of carbon that we are adding to the atmosphere. This is evidenced by such measures as reduced levels of traffic congestion in the developed economies and fewer and shorter journeys being undertaken. In terms of the prospect of the onset of disruptive climate change, this is quite a beneficial side effect of the Great Recession. It could be argued that the Great Recession has provided a unique opportunity to address some of the issues around global warming and climate change.⁹

The recent uptick in the economic performance of the developed world could be argued to show that the combined policies of fiscal austerity and monetary stimulus through quantitative easing are, at last, starting to work. We would argue differently. Much of the recent growth in the developed world has come through the expansion of credit. Individuals and households are borrowing again to finance their lifestyles. We would argue that this is not sustainable in the longer term because this is precisely the route that led us into the Great Recession to begin with. The over-expansion of credit, which is a technical way of saying banks lending to people who have little chance of repaying or servicing their debt, has recommenced, giving rise to renewed bubbles in asset prices—mainly real estate and the financial markets. It is almost as if we are waiting for these bubbles to burst, the cue for which may well be the turning of the credit cycle when central banks reduce the pace of quantitative easing and interest rates start to drift upward again. We are presently unaware of the exact extent of zombie households and companies (those whose loans will turn delinquent once the credit cycle turns), but the turning of the credit cycle will certainly expose them, to the detriment of further economic growth.¹⁰

An alternative path, one that policy makers may well eventually find through a process of trial and error, would be to restructure the economies of the developed world so that they

become investment-led rather than consumption-led. This investment is likely to come through a combination of public-sector investment and private-sector investment.¹¹

If we are right, and the global economy is in a period of transition where it is moving from the information age to another technological paradigm, then we ought to consider what the focus of this new paradigm might be. There are grounds to believe that the focus could well be upon the whole issue of sustainability. This is unlikely not only to be solely focused on climate mitigation but also to include the issue of resource scarcity, simply because these are likely to be the most pressing issues in the first half of this century. Dealing with the twin issues of climate mitigation and resource scarcity will require substantial volumes of investment to gain traction. Those investments have already started in many parts of the world, with expenditure in areas such as the retro-fitting of buildings to adapt to a changing climate, from expenditure on developing drought resistant crops, to the taxation of carbon-emitting activities. Once these expenditures hit critical mass, then we can readily expect the developed nations to rise from a weak recovery into one that has greater strength.

A move toward a green economy will not necessarily turn out to be a stable and sustainable outcome if it does not also deal with the issue of inequality and the improvement of living standards.¹² The political climate has the potential to either speed the process of recovery or to slow it down. It is becoming evident to many observers that it may be necessary to implement policies of redistribution to speed recovery. This is not only within the nations of the developed world but also in the relations between the developed economies and the emerging economies. The key to this is trade, but that means embracing the awkward political issue of confronting some of the vested interests in the developed world.

In many respects, the Great Recession provides us with a good opportunity to embark on a different path to the one we have taken in the last half century. It gives us an opportunity to have generosity replace greed. It gives us an opportunity to live within the means of our planetary resources. It also offers the

opportunity to build a more sustainable future for the generations following on from us.

Conclusion

We are now in a position where we can start to draw our conclusions. It is our belief that aggregate demand is currently constrained and is presently the key brake on the return to growth. As household spending has remained muted as households repair their balance sheets, we cannot look to consumption as a means to stimulate growth. As governments struggle with the need for fiscal austerity, we cannot expect fiscal policy to act to stimulate aggregate demand. As companies wait for productive investment opportunities to emerge, we are unlikely to see an investment-led recovery any time soon. The only real possibility is for an export-led recovery. However, as all nations are simultaneously following this policy, in the aggregate, these efforts cancel each other out. In total, demand is relatively muted and is likely to remain so for some time to come.

We accept that we have outlined a single point future, and it is worth considering the countervailing forces that might lead to different outcomes. If it is the case that the current upturn in economies across the globe is real, rather than due to the further expansion of household debt, then recovery is likely to come sooner rather than later. In this possibility, it is important for the increase in consumer spending to trigger a round of investment in productive capacity and the growth in world trade. To date, neither of these has happened. Equally, it could be that the transition from the fifth wave of technological development to the sixth could be smoother and quicker than we anticipate. If so, then the rate of labor displacement (from old occupations) and replacement (into new occupations) would remain high. To date, there is little evidence to support that view. Finally, it could be the case that the demographic impacts of the recession could reverse, with young people forming households and bearing children at an earlier age. Such a feature would pre-suppose the recovery in household incomes and a willingness of Millennials to adopt the social mores of their parents and grandparents. Once again,

there is scant evidence of that. Each of these core assumptions in our view of the future could turn out to be false, giving rise to a very different outcome. However, developing these different outcomes is an interesting possibility that is beyond the scope of this piece.

Eventually, as we move out of the information age and into the sixth wave, we can expect to see an investment-led recovery, much as the onset of the information age led to the Great Boom of the 1980s.¹³ Recovering investment will boost household incomes sufficiently to revive consumption as a generator of aggregate demand. It will also help to repair the tax base, easing the pressure on public finances. However, just as that happens, the longer term constraints in aggregate supply, especially in the labor markets, will start to act as a constraint upon future economic growth.

It is not just the quantity of labor that will act as a brake but also the skill-sets within the labor force. In the absence of large and significant bouts of immigration from the emerging world to the developed world, it is likely that recovery will expose these weaknesses in the labor markets, constraining aggregate supply and extending further the period of relative stagnation. It is only when both aggregate supply and aggregate demand start to develop in tandem again that a prolonged period of sustained growth will be experienced.

Of course, this does not mean to say that the recovery will be sustainable either in terms of its impact on the environment or in producing a fair outcome for society as a whole. The dissolution of the Washington Consensus in 2008 has led many to take the view that we ought to arrange our affairs differently in the years to come (Skidelsky and Skidelsky 2012). If we are to have a prolonged period of subdued prosperity, then that affords us an excellent opportunity to devise a structure that is both kind to the planet and equitable to its inhabitants. To misquote Churchill, it would be a shame to let a perfectly good recession go to waste.

Acknowledgment

We are indebted to the help and encouragement provided in the production of this article by the faculty of

the Futures Programme at the University of Houston. Special thanks are owed to Drs. Peter Bishop and Andy Hines for their kind support.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. http://www.upi.com/Top_News/Analysis/Walker/2013/12/09/That-gloomy-Summers/UPI-10971386588383/
2. <http://www.independent.co.uk/life-style/health-and-families/health-news/moody-brit-ain-we-might-feel-a-little-deflated-but-we-are-also-more-settled--and-realistic--about-what-lies-ahead-8944578.html>
3. <http://www.zerohedge.com/contributed/2013-12-18/fed%E2%80%99s-ballooning-4-trillion-balance-sheet-bodes-well-gold-2014b>
4. <http://www.economist.com/news/leaders/21592613-good-news-about-global-growth-risks-pushing-interest-rates-up-and-politicians-appetite-reform>
5. See <http://accelerating.org/articles/huebnerinnovation.html>
6. Research on marriage rate declining and marriage age rising from Pew can be found online at <http://www.pewsocialtrends.org/2011/12/14/marriage-rate-declines-and-marriage-age-rises/>
7. Pew's report on birthrate can be found online at <http://www.pewsocialtrends.org/2012/11/29/u-s-birth-rate-falls-to-a-record-low-decline-is-greatest-among-immigrants/>
8. More on World Life Expectancy's reported data can be viewed online at <http://www.worldlifeexpectancy.com/>
9. Paradoxically, environmental economists, such as Tim Jackson, have been arguing for an end of growth on environmental grounds for some years, and the recession has given just that situation. See Jackson (2009).
10. See <http://www.economist.com/news/leaders/21588366-its-not-just-sovereign-borrowing-there-are-too-many-zombie-firms-and-over-indebted-for-a-discussion-of-the-extent-of>

- indebtedness and how that may hold back further recovery when the interest rate cycle turns.
11. It is often forgotten that the key initial investments of the Information Age were made by the U.S. Department of Defense. One could argue that without this key initial investment originating in the public sector, we would not have the modern economy shaped quite the way it is today.
 12. Our definition of sustainable development follows the Brundtland Model, which holds that a sustainable economy is one in which the needs of the economy, the environment, and society are in harmonious balance. See "Our Common Future" (1987).
 13. For a fuller discussion of the investment opportunities that are likely to arise in the Sixth Wave, see Aguilar-Millan (2012).

References

- United Nations World Commission on Environment and Development. 1987. "Our Common Future." Report of the World Commission on Environment and Development, Oxford University Press, UK.
- Aguilar-Millan, Stephen. 2012. "Surfing the Sixth Wave." *World Future Review* 4 (2): 45–54.
- Alexander, Michael A. 2001. *The Kondratiev Cycle: A Generational Interpretation*. Bloomington: iUniverse.
- Gordon, Robert J. 2012. "Is U.S. Economic Growth Over? Faltering Innovation Confronts the Six Headwinds." National Bureau of Economic Research Working Paper 18315. <http://www.nber.org/papers/w18315>
- Greenspan, Alan. 2013. "Never Saw It Coming: Why the Financial Crisis Took Economists by Surprise." *Foreign Affairs*, November-December. <http://www.foreignaffairs.com/articles/140161/alan-greenspan/never-saw-it-coming>
- Huebner, Jonathan. 2005. "A Possible Declining Trend for Worldwide Innovation." *Technological Forecasting & Social Change* 72:980–89.
- Jackson, Tim. 2009. *Prosperity without Growth*. London: Earthscan.
- Kotkin, Joel. 2012. "Are Millennials the Screwed Generation?" *Newsweek*, July 16. <http://www.newsweek.com/are-millennials-screwed-generation-65523>
- Perez, Carlota. 2003. *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*. Cheltenham: Edward Elgar Publishing.
- Schumpeter, Joseph A. 2010. *Capitalism, Socialism, and Democracy*. Cheltenham: Pober Publishing.
- Skidelsky, Robert, and Edward Skidelsky. 2012. *How Much Is Enough?* London: Allen Lane.
- Stavis, Matina. 2013. "Southern Europeans Flee to Germany: OECD." *Wall Street Journal*, June 13. <http://online.wsj.com/news/articles/SB10001424127887323734304578542732501579940>
- Stewart, Heather. 2013. "The Eurozone's Struggling Counties Face a Future 'Baby Recession.'" *The Guardian*, August 18. <http://www.theguardian.com/business/2013/aug/18/eurozone-baby-recession>
- The Economist*. 2013. "Generation Jobless." April 27. <http://www.economist.com/news/international/21576657-around-world-almost-300m-15-24-year-olds-are-not-working-what-has-caused>

Author Biographies

Stephen Aguilar-Millan, is the director of research at the European Futures Observatory, United Kingdom.

Jason Swanson is a research associate at the European Futures Observatory, Pittsburgh, Pennsylvania.

Kate Burgess-MacIntosh is a research associate at the European Futures Observatory, Lowell, Massachusetts.

Laura Schlehuber is a research associate at the European Futures Observatory, Friendswood, Texas.