

Too Many Cliffs

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ABSTRACT

The U.S. economy is currently been mired in stagnation. Different schools of economic thought have different visions of the economy, different explanations for the crisis, and different policies to rectify the problems. The result is policy impasse, sometimes referred to as “The Fiscal Cliff.” What are missing are theories of the limits to growth. This paper looks beyond the “Fiscal Cliff” to economic problems that will occur as the age of economic growth ends: specifically a “Net Energy Cliff” and a “Climate Cliff.” Solutions to the fiscal and energy cliffs could make the climate cliff far more difficult to transcend.

INTRODUCTION

As one looks at the economy of the United States in the second decade of the twenty-first century two phenomena appear: economic stagnation and political impasse. Annual percentage growth rates in real gross domestic product, which averaged 5.9% in the decade of the 1940s, driven by the stimulus of World War II spending, averaged 4.4% per year during the vibrant decade of the 1960s. By the first decade of the 21st century this figure had declined to 2.6% and to only 1.67% per year during the second decade (Foster and Magdoff 2009, Bureau of Economic Analysis 2014). The World Bank estimates real growth to be only 1.0% for the world in 2012 (World Bank 2014). Behind these immediately apparent issues lay others of crucial importance, such as rising levels of debt and inequality, along with environmental constraints like peak oil, declining energy returns on investment, impending planetary boundaries, such as the rise in atmospheric concentrations of carbon dioxide. Recent political manifestations include concerns over the fiscal cliff of unpaid debt and debates over the passage of continuing resolutions to raise the debt ceiling. While political processes have their own dynamics revolving around issues such as the beneficence or malignancy of big government itself, as well as the intricacies of personality and coalition building, I assert that underlying these political intransigencies are profound differences in economic philosophies as to the nature of the economy and economic growth. Period of impasse, defined as periods when no political party or coalition has the power to implement its own agenda, yet does possess the power to block the policies of its rival, have occurred before in the history of the United States (Wolfe 1981). The most recent example was the period at the end of the 1970s.

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While there were many proximate causes, such as Watergate, the seizure of the American Embassy in Tehran, and President Carter's "Life is not Fair" speech, the ultimate causes lie in the breakdown of the post-World War II "golden age" of American capitalism and the subsequent failure of Keynesian-based policies to produce the goals enumerated in the Employment Act of 1946: reasonably full employment; stable prices; and economic growth. Instead the era was characterized by falling rates of productivity growth; two oil rises, stagflation, and the collapse of the Bretton Woods Accords. The impasse was not resolved until the election of Ronald Reagan in 1980, who was able to implement a more market-oriented set of policies in the wake of the devastating recession of 1981-1982. Since that time conservative politics and neoclassical economics have dominated the ideological landscape. Indeed, energy and economic analysts Daniel Yergin and Joseph Stanislaw considered Richard Nixon to be the "last liberal president" of the United States (Yergin and Stanislaw 1997). Nobel Prize-winning economist Robert Lucas summed up the transformation of the economics profession when he stated: "One cannot find good under-forty economists who identify themselves or their work as 'keynesian.' Indeed, people even take offense if referred to as Keynesians. At research seminars, people don't take Keynesian theorizing seriously anymore; the audience starts to whisper and giggle at one another" (Lucas 1980, quoted in Perelman 2007: 183).

However, in the wake of the financial collapse of 2007-2008 and subsequent "Great Recession," Keynesian economics has made somewhat of a comeback, at least in policy circles. Spokespeople such as Nobel Laureates Paul Krugman and Joseph Stiglitz, along with former Labor Secretary Robert Reich have responded to the persistent sluggish growth and high rates of unemployment with calls for more government stimulus to boost aggregate demand and for the redistribution of income. Liberal and conservative economists have subsequently advanced programs to rekindle economic growth that are fundamentally in opposition to one another.

However the mainstream debate does not take sufficiently seriously the idea of limits to economic growth. In this paper I will develop the idea that there exist two sets of profound limits to growth. One set is internal and manifests itself as a tendency toward stagnation, or slow growth. These limits are found in an economy characterized by globalization, large-scale concentrated oligopolies, and the dominance of finance over industry. In other words, the decades-long tendency towards stagnation we have witnessed is not the result of bad policy choices, but can be found embedded in the very institutional structure of the economy itself. A second set of limits is imposed by nature. Many scientific measures such as ecological footprinting, analysis of carrying capacity, energy return on investment, and the effects of increasing atmospheric carbon dioxide indicate that the present level of economic activity has already overshoot at least three of eleven "Planetary Boundaries" and is critically close to another three (Rockstrom 2009). Since energy has long been a driver of economic growth, a world of less-available, and increasingly expensive, energy will serve as a limit to future economic growth (Cleveland 1984, Hall and Klitgaard 2011, Campbell and Laharère 1998). Moreover, the destabilization of the Earth's climate from the increased loading of carbon dioxide in the atmosphere will likely destabilize the economy as

well. Consequently the discussion of future economic policy should include an analysis of the interaction of internal and biophysical limits, as beyond the fiscal cliff lie steeper and more precarious precipices such as a net energy cliff, a biodiversity cliff, and a climate cliff. Any supposed solution to the fiscal cliff arrived at by increasing growth, especially growth in material throughput, new sources of energy, and expanded consumption is likely to exacerbate problems associated with being close to, or exceeding, our planetary boundaries. Attempts to live within nature's limits by reducing the size of the economy will make problems such as debt management and the maintenance of employment exceedingly difficult, if not impossible. Economists need to consider the restructuring of social institutions in a manner that can accommodate a smaller impact upon nature's systems while simultaneously allowing human beings to live decent and meaningful lives.

THE CONSERVATIVE ARGUMENT

Conservative political thought is based upon the idea that a competitive economy will produce allocatively efficient results if left to its own devices. Hayek, for example, believed that the Great Depression would have ended in the absence of increased governmental activity if enough time elapsed. Many conservative politicians, especially the Tea Party wing of the Republican Party, exhibit a profound distrust of government and argue that it should be kept to the basic principles consistent with *laissez-faire* such as protecting property rights and providing for the common defense. Conservative economists over the years have advanced the theories that economies can thrive and grow without inflation and serious unemployment if the government will simply exhibit responsible fiscal policy, provide a stable monetary policy, keep taxes and regulations to a minimum, and allow people to pursue their own self-interest (Skousen 1994). Economist David Kotz enunciated a somewhat more ambitious agenda for conservative (or neoliberal) policy including: 1) the removal of institutional barriers to the free movement of commodities and capital; 2) the withdrawal of the state from regulatory activity; 3) privatization of state enterprise and public services; 4) a shift to regressive taxation; 5) the end of the capital-labor accord (whereby increases in productivity were translated into increases in wages by means of negotiations between unions and management); 6) the replacement of co-respective oligopoly pricing behavior by renewed competition; and 7) a faith in entrepreneurial activity and free-market ideology (Kotz 2009). In a financialized economy the market will serve as an essentially perfect carrier of information, such that no individual can successfully "beat the market," thereby rendering financial regulations unneeded, and, indeed, counterproductive.

Conservatives identify uncertainty as a major problem. Fixed investment grew by only 5.4% over the course of the first decade of the 21st century, fluctuating significantly in the process. Conservative politicians tend to blame government for creating uncertainty by means of its expansionary monetary and fiscal policies. Debt only adds to the uncertainty problem. Consumer debt as a percentage of disposable income increased from 62% in 1975 to 127% in 2005. By the same year total debt stood at

330% of the economy (Foster and Magdoff 2009). Conservative doctrine contends that since a government must fund its expenditures by selling bonds any increase in government spending must be met by a decrease in private sector funding, or by an increase in interest rates. The economy cannot simply live on expanding debt. A period of austerity will create the fiscal discipline needed for the private sector of the economy to grow in the long run by means of fostering an atmosphere in which individual enterprise can thrive (Ahiakpor 2012).

The combination of the financial collapse of 2007-2008 and subsequent recession, and an increase in severe weather driven by increased carbon emissions has made more economists take a skeptical attitude towards free market ideology than at any time in the course of two decades. A liberal resurgence and an increased credibility for the lessons of Keynesian economics, has appeared recently.

THE LIBERAL APPROACH

In the 1920s and 1930s John Maynard Keynes broke with his “Classical” predecessors, primarily over “Say’s Law” and the derivation of the labor supply curve. He argued that an economy can reach equilibrium at any level of employment, and less than full employment levels of equilibrium output can be traced to a lack of effective demand. Keynes’ analysis was also linked to uncertainty, but the uncertainty was to be found in the private sector in the process of investment, especially investment in long-lived fixed capital assets. No one can predict accurately business conditions, even in the intermediate term, and capital investment necessitates calculating market values far into the future. This necessitated the development of financial markets, and these markets were prone to both speculation and the miscalculations involved with “animal spirits.” It is impossible to reduce this uncertainty to calculable risk (Keynes 1937). What is now termed “irrational exuberance” can create bubbles subject to collapse in a positive feedback situation. “Speculators may do no harm as bubbles on a steady stream of enterprise. But the situation is serious when enterprise becomes a bubble on a whirlpool of speculation” (Keynes 1964: 159). Moreover the classical policy prescription of reducing wages to expand employment and reduce business costs was counterproductive in that the decline of wage income further reduced effective demand. Keynes also believed in direct governmental action. While most economists recognize Keynes’ dictum that “in the long run we are all dead,” few can cite the source or the context of the quote. Arguing against a policy of benign neglect towards economic downturns following the recession of 1921 Keynes stated: “But this long run is a misguided guide to current affairs. In the long run we are all dead. Economists set themselves too easy a task if in the tempestuous seasons they can only say that when the storm is long past the ocean is flat again” (Keynes 1923: 80).

Most students of today who study liberal macroeconomics learn not the economics of Keynes, but the “New Economics” of the American “Keynesians” of the 1950s and 1960s. Correct use of monetary and fiscal policy can keep the economy at full-employment equilibrium and produce economic growth by matching the level of aggregate demand to the productive capacity of the economy. The

government is a vital component of a modern economy, providing sufficient demand and liquidity when the private sector is unable to, and “cooling down” an “overheated” economy when needed, without producing large-scale unemployment. As previously mentioned, these policies were rendered ineffective by the global economic conditions of the early 1970s, falling largely into disrepute. However in the years following the “Great Recession” of the late 2000s strong advocates of governmental action to stimulate the economy in the wake of prolonged stagnation have re-emerged.

One prominent liberal Keynesian of today is Nobel Laureate Paul Krugman. His primary arguments are that the government has not exhibited fiscal irresponsibility by increasing levels of deficit spending. On the contrary, the stimulus has been inadequate. It was too short lived and of insufficient magnitude to solve the most important problem of persistent unemployment. He points to the higher European rates of unemployment rates and lower rates of economic growth as proof that austerity plans, or the cutting of public spending in order to balance the budget, are effective as methods of spurring economic growth. More fundamentally, Krugman advocates an expansionary fiscal policy, in the form of spending rather than tax cuts, because monetary policy has reached its limits. Once the Federal Reserve has pushed the Federal Funds Rate essentially to zero we are once again living in the Keynesian world of the liquidity trap, when further monetary policy is ineffective. Even though the Federal Reserve has come up with innovative policy instruments such as quantitative easing, the increased liquidity is not resulting in the expansion of the real economy, as the unemployment rate remained stubbornly high 7% three years into the recovery. Moreover capacity utilization stood at 79.1% in December 2013, below the 1972-2012 average of 80.2 (FRB 2014). In contrast stock market prices grew by more than 25% over the course of 2013. He considers the deficit to be a lower priority problem than employment. According to Krugman if markets are excellent conduits of information the bond market should be responding to fears of inflation and potential crowding out by increasing interest rates. However this has not occurred and interest rates remain low, possibly due not only to the easy money policy of the Fed, but also to debt deflation (Krugman 2013).

Another point of Krugman’s is that moral hazard was exacerbated by the loosening of financial regulations in the 1980s and 1990s. Unregulated “shadow banking” combined with a growing gap between the growth of productivity and stagnant wages to produce the conditions for the crisis. The way out is for the government to spend where the private sector will not. Conservative policy choices such as reducing the progressivity of taxes, slashing social programs, and cutting education expenditures all served to increase inequality and potentially reduce the consumption of “the bottom 80%” (Krugman 2013).

The liberal economist most associated with the perils of rising income inequality is Robert Reich. Reich remains an avowed underconsumptionist, arguing that the growing income inequality since the 1980s, attributed to soaring stock values and stagnant wages, technological change and globalization, serves to reduce potential consumption spending, and thereby aggregate demand through a multiplier effect. Gini Coefficients have risen considerably from .401 in 1972 to .477 in 2012 (U.S. Bureau of the

Census 2014). According to a much-quoted 2013 study by Picketty and Saez wages have remained flat since 1970 while productivity has more than doubled. The income share captured by the top decile exceeds 50% while the top 0.01% of income earners has more than quintupled since 1970. Moreover the top 1% of income earners captured more than 95% of income gains since the trough of the “Great Recession” (Picketty and Saez 2013). Reich calls for a return to the Basic Bargain negotiated in the late 1940s whereby increases in productivity were translated into increasing wages, and the increase in working class consumption served as the basis to justify increased investment. This provided the basis for a prolonged period of sustained economic growth (Reich 2011).

RADICAL PERSPECTIVES

From the more radical social structure of accumulation (SSA) perspective, Reich’s Basic Bargain did not happen in an institutional vacuum. Rather it was the result of a historically specific set of conditions that followed World War II, including not only the capital-labor accord of which Reich speaks, but also a capital-citizen accord based on economic growth, world economic hegemony in production and finance, especially as regards the Bretton Woods Accords, and the containment of price competition (Bowles 1990). From a biophysical perspective it was also the age of cheap oil and rising productivity growth (Hall and Klitgaard 2011). Historically it is the consolidation of an SSA that produces a prolonged period of economic growth. When these conditions evaporated in the early 1970s the capitalist class could no longer afford the Basic Bargain, given declining productivity growth and rising input prices. Although much of the conservative agenda was implemented during the last two decades of the 20th century a new, neoliberal, SSA was never fully consolidated and vibrant economic growth henceforth was replaced by stagnation (Kotz 2009).

Another radical perspective has been advanced by the Monthly Review School since the 1940s. The American economy is characterized by large-scale oligopolies not tiny competitive enterprises, and these corporations avoid price competition. Rather they compete on the basis of the extension of market share and cost reduction. This pricing behavior coupled with the increases in productivity, facilitated by the application of fossil fuel, allow the economic surplus, or the difference between the value of output and the sum of subsistence consumption and replacement investment, to rise. Ways of absorbing, or spending this surplus included consumption, investment, and flat out waste. Unabsorbed surplus is the primary cause of stagnation. Normally sufficient outlets are not found, as even increasing mass consumption, foreign trade, and government spending cannot offset the increases in productivity in a context of the excess capacity that develops as a consequence of co-respective oligopoly behavior (Baran and Sweezy 1966). This raises a fundamental theoretical difference between radical and neoclassical economics. For the neoclassical theorist the market economy is built upon efficiency. For the radical economist it is built upon waste, and even our normally wasteful economy cannot transcend the tendency towards slow growth often called the “Sweezy Normal State.”

In *Monopoly Capital* Baran and Sweezy explained the periods of historically vibrant growth as the result of epoch-making innovations that absorb tremendous amounts of investment capital and surplus, such as the steam engine, the railroad, and the automobile. These innovations also create entire new industries, and provide for the expansion of employment and the creation of new markets. War and its aftermath are also ways of counteracting the stagnation tendency of monopoly capital. In 1939 the unemployment rate was 17.9%. Five years later it had fallen to 1.2% (Baran and Sweezy 1966). As the SSA theorists state, the new postwar social structure that produced the golden age was constructed largely upon the aftermath of the war. In the 1980s Sweezy and Harry Magdoff turned their attention to the increasing financialization of the economy. In distinction to the mainstream business press who saw the expansion of finance at the expense of industry as a drag upon the economy, Magdoff and Sweezy analyzed that the financial sector expanded because of the underlying stagnation in the real economy. The expansion of debt was a major, along with military spending, factor in propping up the economy and producing what growth was forthcoming in the 1980s and 1990s (Magdoff and Sweezy 1987). This debt expansion was driven by the creation of exotic new financial instruments in the context of a deregulated banking system. While conservatives tend to focus their ire on the expansion of the budget deficit, the expansion of government debt was relatively small when compared to the expansion of financial sector debt. Government debt, including state and local debt expanded a little more than eighteen-fold in the period from 1970 to 2007. Financial firm debt expanded by a factor of 160. When the expansion debt exceeded the ability to repay the underlying weakness in the real economy was exposed. The economy suffered not a financial collapse of historic magnitude and a deep recession as well, as the underlying stagnationist tendencies of the real economy manifested themselves (Foster and Magdoff 2009).

BIOPHYSICAL ECONOMICS

Economic development and economic value, since ancient times, have depended largely upon the appropriation and adaptation of energy. It is not surprising that the Physiocrats developed a value theory whereby all value was based in agricultural production. At that point, before the era of fossil fuels, land was the primary way of accessing energy—primarily through photosynthetic capacity. The tremendous expansion of output in the industrial revolution depended not only upon the reorganization of the labor process, but upon the application of fossil-based energy, first in the form of coal and later in the form of natural gas. Historically, lower quality, less dense, forms of energy were replaced by higher quality, more dense forms of energy. Draft animals replaced human muscle power and increased labor productivity in the process, once agricultural productivity increased enough to produce fodder for the draft animals. Coal replaced biomass and heralded the industrial revolution. In the early 20th century oil replaced coal, especially in transportation, and electricity replaced steam. Electricity was not only a more flexible source of power, but allowed for the revolutionary transformation of the workplace, as electric motors could be placed on individual machines, according to power needs, and the multi-story factory, dependent upon a central power source, could be replaced by the expansive, single story production facility (DuBoff 1967).

For example, without electricity Ford's innovations in automobile assembly would scarcely have been possible (Hall and Klitgaard 2011).

The most fruitful method of assessing the economic dimensions of energy quality is by calculating the Energy Return on Investment (EROI).

$$\text{EROI} = \frac{\text{Energy Returned to Society}}{\text{Energy Required to Get that Energy}}$$

A great number of studies (Campbell, Campbell and Laharère) have indicated that the production of conventional crude oil has already peaked in the first decade of the 20th century. The problem is not one of "running out of oil," but one of a declining geophysical supply relative to an increasing demand. When the U.S. supply of conventional oil peaked in 1970, the nation became increasingly vulnerable to variations in the world market. Most analysts attribute at least a portion of the causes of stagflation to high oil prices. Much of the success of the Reagan era programs, not to mention the collapse of the Soviet Union, have a great deal to do with the collapse of world oil prices from over \$100 per barrel to \$10 per barrel. Oil producers behaved historically as Ricardo predicted they would. They exploited the cheapest, highest quality resources first. Consequently as conventional oil is depleted a greater amount of oil comes from "unconventional" sources such as deepwater drilling, natural gas liquids (such as propane and butane), tight oil (made possible by the combination of hydraulic fracturing and horizontal drilling), and oil sands. The EROIs of unconventional sources of hydrocarbons, along with alternatives such as wind and solar, today are much lower than were the EROIs of conventional oil at the beginning of the oil age. EROIs exceeded 100:1 when the big finds occurred in Texas and Oklahoma in the 1930s. By the peak year of 1970 the EROI of domestic oil had fallen to 30:1. Oil and gas production in 2005 had an EROI that ranged between 11:1 and 8:1. Even imported oil carried a 2007 EROI of only 12:1. Wind turbines have an EROI in the 18:1 range and photovoltaics range from 6:1 to 8:1. Nuclear power has an EROI of approximately 5:1. The EROI for corn ethanol has been estimated to be as low as 0.8:1. It actually takes more energy to manufacture the ethanol than the ethanol returns! (Hall and Klitgaard 2011).

Much of our existing infrastructure was built upon cheap oil. Many analysts count on a rebounding housing sector to drive economic growth. Yet the present configuration of suburban housing was built upon 25 cent per gallon gasoline. Whether or not it can exist at \$5.00 or \$10.00 per gallon gasoline, especially in the context of stagnant wage income is highly suspect. The question arises: what level of EROI do we need to support a civilized society? If energy returns on investment were as low as 1.1:1 all we could do would be to pump the oil out of the ground and look at it. If we wanted to transport and refine it we would need higher EROIs. If society wanted to support education, especially female literacy in developing nations, health care and the arts we would need EROIs of around 10:1 (Lambert *et al.* 2013). Energy sources with lower EROIs are literally leading society off a net energy cliff more precarious than the fiscal cliff of political impasse. Murphy and Hall estimate that without high EROI energy sources economic growth will stagnate because of biophysical causes (Murphy and Hall 2011). While new techniques for getting oil out of the ground have been developed in recent years and have increased the

available supply, the newly discovered oil is not cheap oil. The energy inputs into deepwater and tight oil assure us that we will not return to \$10 per barrel oil that drove economic development as recently as the 1980s and 1990s.

However finding higher EROI fuels would not, in and of itself, be a panacea for economic growth, for there are dire consequences of using the fossil fuels. Atmospheric concentrations of carbon dioxide exceeding 400 parts per million have already been observed at Mauna Loa. James Hansen has estimated that climatic “tipping points” can occur at concentrations of CO₂ of 350 ppm, a figure that would result in 1 watt of radiative forcing, but 350 ppm is a figure we have not seen in decades. Current 400 ppm CO₂ concentrations have resulted in a radiative forcing of 1.5 watts. If concentrations exceed 450 parts per million the probabilities of keeping global temperature increases to less than 2 degrees Celsius, as agreed to at the Copenhagen Climate Convention are virtually nil. Hansen asserts that if we exploit fully all the hydrocarbons already discovered that it is essentially “game over” for climate stability. While the relation between carbon dioxide and temperature is settled science, some controversy remains, especially as regards the climate forcing of atmospheric aerosols. These aerosols increase the albedo (reflectivity) of the atmosphere. If the aerosol forcing is two watts rather than one, we are masking even greater climate change potential by the release of criterion pollutants (Hansen 2009, Rockstrom 2009). Journalist Bill McKibben puts it simply: the planet at an average temperature of 2 degrees or higher will be unlike the planet upon which human life evolved, and which produced the Holocene stability in which agriculture and an economic surplus itself developed (McKibben 2011). The costs of adapting to climate change will be staggering, raising questions of who will pay in the current period of political impasse. The consequences of reversing the process are even more challenging.

CONCLUSION

Neither liberals nor conservatives possess the answers to our current economic dilemmas. Conservatives have a point in that there is a limit to how much debt can be contracted and still remain sustainable over the long run. Yet I believe the conservative position is ultimately incorrect because the economy is not competitive, and price competition is essential to allocative efficiency. The liberal position seem to reflect the Keynesian roots of “spending one’s way out of a recession,” either by direct government stimulus, continued easy money policy, or by a return of the Basic Bargain of wage growth commensurate with productivity growth, administered by mature collective bargaining, including strong unions. But from a biophysical point of view the increase in consumption needed to drive growth, the expansion of the housing sector into even more distant patches of farmland requiring even more fossil fuels in commuting and house maintenance seems counterproductive. If the historical engine of economic growth has been cheap fossil fuels, what will be the engine when the era of cheap fossil fuels ends? Moreover, we have already exceeded the first tipping point of climate change, and it is not a problem for our grandchildren, it is a problem for us.

If the economic stagnation is embedded in the very structure of the economy, in the form of inadequate surplus absorption, then there is simply no fixing the economy first and dealing with the environment later. Economic stagnation pervades the planet from the developed world (European and Japanese stagnation are far worse than that which is occurring in the United States) to emerging economies like China. Chinese growth has been driven by investment rather than consumption and has resulted in large degrees of excess capacity and the status of the world's largest emitter of carbon dioxide. The fundamental dilemma of a mature market economy is that the same growth that is needed to produce employment is the basic cause of pressure upon the earth's fragile biophysical systems. What we need is an institutional structure that divorces meaningful work and meaningful lives from the need to grow perpetually.

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