GLOBAL DEVELOPMENT AND ENVIRONMENT INSTITUTE

WORKING PAPER NO. 13-02

Green Keynesianism: Beyond Standard Growth Paradigms

Jonathan M. Harris

February 2013

Tufts University
Medford MA 02155, USA
http://ase.tufts.edu/gdae

View the complete list of working papers on our website:
http://www.ase.tufts.edu/gdae/publications/working_papers/index.html

Abstract:

In the wake of the global financial crisis, Keynesianism has had something of a revival. In practice, governments have turned to Keynesian policy measures to avert economic collapse. In the theoretical area, mainstream economists have started to give grudging attention to Keynesian perspectives previously dismissed in favor of New Classical theories.

This theoretical and practical shift is taking place at the same time that environmental issues, in particular global climate change, are compelling attention to alternative development paths. Significant potential now exists for "Green Keynesianism" -- combining Keynesian fiscal policies with environmental goals.

But there are also tensions between the two perspectives of Keynesianism and ecological economics. Traditional Keynesianism is growth-oriented, while ecological economics stresses limits to growth. Expansionary policies needed to deal with recession may be in conflict with goals of reducing resource and energy use and carbon emissions. In addition, long-term deficit and debt problems pose a threat to implementation of expansionary fiscal policies.

This paper explores the possibilities for Green Keynesianism in theory and practice, and suggests that these apparent contradictions can be resolved, and that Green Keynesian policies offer a solution to both economic stagnation and global environmental threats.

Green Keynesianism: Beyond Standard Growth Paradigms

Jonathan M. Harris

A Reinterpretation of the Keynesian Vision

> "The outstanding faults of the economic society in which we live are its failure to provide for full employment and its arbitrary and inequitable distribution of wealth and incomes"
>
> -- John Maynard Keynes, *The General Theory,* 1936

> We have involved ourselves in a colossal muddle, having blundered in the control of a delicate machine, the working of which we do not understand. The result is that our possibilities of wealth may run to waste for a time – perhaps for a long time.
>
> -- John Maynard Keynes, *The Great Slump of 1930*

> "Keynesian economics remains the best framework we have for making sense of recessions and depressions."
>
> -- Paul Krugman, "How Did Economists Get it So Wrong?" 2009

In the wake of the global financial crisis, Keynesianism has had something of a revival. In practice, governments have turned to Keynesian policy measures to avert economic collapse. In the theoretical area, mainstream economists have started to give grudging attention to Keynesian perspectives previously dismissed in favor of New Classical theories. In a recent paper, Paul Krugman suggests that "not only do these disputes involve many of the same issues Keynes grappled with 75 years ago, we are – frustratingly – retracing much of the same ground covered in the 1930s." (Krugman, 2011).

Keynes' "colossal muddle" seems to apply well to the confusion and dismay characterizing both economists and policy-makers in the face of the events of 2007-2009, and continues to ring true as we grapple with inadequate recovery and the possibility of a "double-dip" recession. Ecological economists might also recognize the concept of a blundering approach to a delicately balanced machine in a different sense, considering the widespread damage wrought on ecosystems that we only partially understand, as a result of unrestrained economic growth. But can the remedies suggested by Keynes – government intervention through fiscal and monetary policy to rebuild aggregate demand and economic confidence – also be reinterpreted in a more ecological sense?

The financial and economic crisis has had the effect of eclipsing major environmental issues in public debate. But these issues have, if anything, gained in urgency. The scientific evidence supporting human-induced climate change has grown stronger, the possibilities of catastrophic outcomes more significant, and the

recommendations of scientists for carbon reductions more drastic, within the last few years. Water shortages, species loss, ocean pollution and fisheries decline, and a host of other issues have grown more pressing as human population crosses the 7 billion mark. How do these issues relate to the shifting perceptions of macroeconomic realities as we enter the second decade of the twenty-first century?

Just before the onset of the current economic crisis, I suggested that there was a possibility of a synthesis between Keynesian macroeconomics and the kind of environmental macroeconomics originally called for by Herman Daly (Daly, 1991a and b, 1996):

> Keynes did not focus on issues of ecological sustainability, but from our current standpoint in the first decade of the twenty-first century, it certainly seems reasonable to include environmental degradation as one of the "outstanding faults" of the economic system. The implementation of ambitious programs for social investment and redirection of the macro economy towards sustainability will be essential for preserving economic systems in the twenty-first century. It will, however, require a turn away from conventional macroeconomics. (Harris, 2009)

To explore whether such a synthesis might be possible, it is important to reconsider the essential vision of Keynes concerning the *causes* of economic disruptions such as recession and depression, before looking at policy solutions. Keynes, of course, rejected the classical notion of an automatic tendency towards full employment based on price and wage adjustment. But the key element in his vision is not, as is frequently assumed, market imperfections or "sticky" prices. These may play a role. But the central point that Keynes emphasized, although it was lost on many of his later followers and exponents, was the essential instability of investment due to the uncertain connection between present and future.

Theories of efficient markets depend on the idea of perfect information about market conditions – probably not possible even in the present. But perfect information about the future is clearly impossible. This is what gives rise to bubbles, boom and bust, and periods of irrational optimism or pessimism. Current investments are based on current prices, and expectations about the future. But expectations vary, and may be wildly wrong. The resulting variations in investment can generate self-reinforcing cycles in aggregate demand, leading to long periods of expansion or depression. Hence the clear need for government to stabilize the economy with countercyclical fiscal and monetary policy.

Here again there is an interesting parallel to a central issue in ecological economics. One of the key points about resource management is the inadequacy of market incentives for long-term resource conservation. Similarly, market mechanisms deal poorly with cumulative pollutants whose impacts build up over time. These resource and environmental issue have moved from being specific concerns about individual resources to macro-level issues of global climate change, fisheries collapse, groundwater

depletion, etc. So it is evident that however well markets may deal with efficient allocation of resources in the short-term, they clearly fail to balance short-term (static) efficiency considerations with long-term (dynamic) efficiency. A clear government policy role is indicated to prevent resource overdraft and to sustain long-term resource and environmental balance.

If the current macroeconomic crisis forces a reassessment of the market-based, minimal government intervention approach that has characterized most mainstream economic theory, it seems necessary to take into account both the traditional Keynesian and the environmental critiques. A revised approach might be something like this:

Both inherent economic instability and the incompatibility between many market outcomes and environmental sustainability mean that national economies, and the world economy, are vulnerable to major economic fluctuations, and to degradation of the essential resource and environmental base for economic activity. This necessitates government intervention to stabilize economic systems and to preserve essential ecological functions.

In considering appropriate government policy initiatives, monetary intervention is not enough. While central bank policy can to some extent mitigate economic fluctuations, it has crucial limitations. One limitation is the Keynesian "liquidity trap" – the inability of central banks to push interest rates below zero, or to ensure that additional monetary reserves will be deployed to create expanded aggregate demand. (A current demonstration of this phenomenon is evident in a recent New York Times article, "In cautious times, banks flooded with cash"[1]). Another is the inability of monetary policy to create jobs directly, or to target interventions toward environmental investment. For these reasons, fiscal policy is essential, and needs to be focused specifically on the goals of full employment, social equity, and environmental sustainability. Monetary policy should be used both to enable these targeted fiscal interventions, and to promote traditional monetary goals of adequate liquidity and price stability.

As a description of the main principles of macroeconomic theory and policy, this clearly stands as rank heresy in terms of what up until recently has been the mainstream consensus.[2] But, as noted, this consensus is now in serious question, and perhaps defunct. This creates a major opportunity for a new kind of macroeconomics to emerge – one that is "old" in that it returns to some traditional Keynesian principles, but "new" in that it incorporates the ecological realities of the twenty-first century. It provides an opportunity to address some of the major problems of the contemporary economy, including growing income and wealth inequality, inadequate infrastructure investment, fossil fuel dependence, and the adverse impacts of economic growth on the environment.

[1] According to the article, "Bankers have an odd-sounding problem these days: they are awash in cash. Ordinarily, in a more robust environment, an influx of deposits would be used to finance new businesses, expansion plans, and home purchases. But in today's fragile economy, the bulk of the new money is doing little to spur growth." (New York Times, October 25, 2011).

[2] For a macroeconomics text that advances this non-mainstream view, see Goodwin et al, 2009.

This revised approach does not provide a definitive answer to the question of whether or when a limit to macroeconomic growth – Daly's concept of "optimal macroeconomic scale" – may be required. It does, however, provide a framework to address this question as a central issue in macroeconomics. Daly first called for a move to a steady-state economy over a quarter of a century ago (Daly, 1973), but his perspective has never been taken seriously within mainstream macroeconomics. A revised macroeconomics will incorporate the possibility of a steady state, but there are many questions to be resolved about what this really means, and what a transition from current growth-oriented macro might look like.[3]

A Revised Approach to Keynesian Theory

In previous articles, I have suggested that a new breakdown of the major sectors of aggregate demand is useful in thinking about alternatives to current economic growth patterns (Harris, 2007, 2009). Specifically, the three major sectors of consumption, investment, and government spending can be divided into subsectors representing material goods, services, resource-intensive and resource-conserving investment, and investment in human and natural capital.

The idea is that we can then distinguish between those macroeconomic aggregates that should be strictly limited – resource-intensive consumption and investment, and energy-intensive infrastructure – and those that can expand over time without negative environmental consequences. The latter would include large areas of health, education, cultural activity, and resource- and energy-conserving investment. The conclusion is that there is plenty of scope for growth in economic activity, concentrated in these categories, without growth in resource throughput[4], and with a significant decline in the most damaging throughput, that of carbon-intensive fuels.

A revised breakdown of macroeconomic categories would look something like this[5]:

C_g = consumption of non-durable goods and energy-intensive services
C_s = consumption of human-capital intensive services[6]
C_m = household investment in consumer durables

I_{me} = investment in energy-intensive manufactured capital
I_{mc} = investment in energy-conserving manufactured capital

[3] For further discussion of this issue, see Harris, 2010.

[4] Throughput, a term introduced by Herman Daly, refers to the combined processes of input of resources and output of wastes.

[5] The categories and equations that follow are adapted from Harris (2009).

[6] In GDP accounting, the term "services" refers to a wide range of activities including health care, education, and information services, as well as transportation and utility services. Here we divide services into more energy-intensive types such as transportation and more human-capital intensive types such as education.

I_n = investment in natural capital[7]
I_h = investment in human capital

G_g = government consumption of non-durable goods and energy-intensive services
G_s = government consumption of human capital-intensive services
G_{me} = government investment in energy-intensive manufactured capital
G_{mc} = government investment in energy-conserving manufactured capital
G_n = government investment in natural capital
G_h = government investment in human capital

These categories are conceptual, and do not correspond to current categories of national income accounting. The do, however, resonate with the extensive literature on "greening" the national income accounts, which makes similar distinctions between socially or environmentally beneficial and harmful GDP categories.

Thus the basic equation of macroeconomic balance can be restated:

$$(1)\quad Y = C + I + G + (X - M)$$

$$(2)\quad Y = [C_g + C_s + C_m] + [I_{me} + I_{mc} + I_n + I_h] + [G_g + G_s + G_{me} + G_{mc} + G_n + G_h] + (X - M)$$

While ecological principles imply limits on C_g, I_{me}, G_g, and G_{me}, the other terms in the equation can grow over time without significant negative environmental impact, and indeed with a positive effect in the case of natural capital or energy-conserving investment.[8] The equation can be rearranged to distinguish between macroeconomic aggregates that we wish to limit, and those that we wish to encourage:

$$(3)\quad Y = [C_g + I_{me} + G_g + G_{me}] + [C_s + C_m + I_{mc} + I_n + I_h + G_s + G_n + G_{mc} + G_h] + (X - M)$$

To satisfy sustainability criteria, the terms in the first set of brackets should be stabilized or reduced over time, but the terms in the second set of brackets can be expanded. These categories are sensitive to various kinds of government policy, so different options are available to achieve the desired results. Regarding the government

[7] The concept of 'natural capital' has been promoted by ecological economists to emphasize the importance of healthy ecosystems and natural resources to economic production and human well-being. Investment in natural capital preserves or improves these resource functions – for example, conserving forests and wetlands or rebuilding soils.

[8] Not all services are environmentally benign, but many services such as education and health care typically have less environmental impact than goods production. This formulation also assumes that investment in natural capital is wisely managed; for example, replacement of natural forest with plantation forest would not count as investment in natural capital.

spending terms, these are clearly in the domain of fiscal policy (more on this below). The investment categories are responsive to a variety of tax and other incentives, as well as possibly preferential provision of credit to certain sectors. The consumption categories may also be affected by tax policy, in particular a carbon tax or equivalent that raises the price of fossil fuels and all fossil-fuel intensive goods and services, as well as by subsidies and tax credits for favored activities.

Regarding the foreign sector term, which has here been left in the traditional form, it would certainly be possible to break the import and export categories down in a similar fashion. Trade policy to affect these is a trickier question. If, for example, "greener" production in one country is offset by imports of more energy- and carbon-intensive goods from abroad, either border tariffs or some kind of globally coordinated policy is required to prevent "leakage". Without going into the many ramifications of this issue, it can simply be noted that trade policies will need to complement domestic "green Keynesian" policies. It is likely that this would require significant revision of some WTO guidelines that prevent environmental considerations from being a part of trade policy.

Green Keynesianism and the Current Crisis

One interpretation of the crisis that began in 2007-8 is that the global economy has in some sense reached the limits of growth. This perspective has been presented by analysts such as Richard Heinberg (Heinberg, 2011). Heinberg summarizes the case thus:

> Economic growth as we have known it is over and done with. The growth we are talking about is the expansion of the overall size of the economy … and of the quantities of energy and material goods flowing through it. The economic crisis that began in 2007-2008 was both foreseeable and inevitable, and it marks a permanent fundamental break from past decades – a period during which most economists adopted the unrealistic view that perpetual economic growth is necessary and also possible to achieve. There are now fundamental barriers to ongoing economic expansion, and the world is colliding with those barriers. (Heinberg, 2011, p. 1-2).

The problem with this argument is that it conflates two quite different possible causes for a cessation of growth. One is based on ecological limits. This argument is very familiar to those who have followed the discussion in ecological economics since Daly introduced the idea of fundamental macroeconomic limits. Its most pressing manifestation today, as I have emphasized, has to do with the impacts of global climate change:

> The cognitive disconnect between scientists' warnings of potential catastrophe if carbon emissions continue unchecked on the one hand, and the political and economic realities of steadily increasing emissions on the other, defines the outstanding economic problem of the twenty-first

> century. Can economic growth continue while carbon emissions are drastically reduced? (Harris, 2009, p. 169)

The other possible cause for limits to growth is financial. According to Heinberg:

> Financial disruptions due to the inability of our existing monetary, banking, and investment systems to adjust to both resource scarcity and soaring environmental costs – and their inability (in the context of a shrinking economy) to service the enormous piles of government and private debt that have been generated over the past couple of decades. (Heinberg, 2011, p. 2-3)

But the financial crisis of 2008, and the European debt crisis of 2010-2011, had little to do with resource scarcity or environmental limits. It is certainly true that the management of private and government debt was a central feature of these crises, but it does not appear that the housing bubble and subsequent recession that caused and accentuated debt and default issues in the U.S and Europe had any significant environmental dimension. Nor is the failure to resume growth centered on environmental factors. It is true that there have been some significant increases in oil and commodities prices since 2006, but price trends have been variable since 2008, and have generally fallen somewhat as a result of recession.

The real causes of continued sluggish growth or "double-dip" recession lie in the financial sphere. The U.S. banking system has not recovered from the 2007-2008 crisis, so credit remains tight despite efforts by the U.S. Federal Reserve Bank to expand it. So long as the Fed's policies are not accompanied by expansionary fiscal policy, they will be limited in their effectiveness (as noted above, this is the Keynesian "liquidity trap"). In Europe, the problem has had more to do with willful policy errors, in particular a reliance on austerity policies and the unwillingness of the European Central Bank to provide sufficient credit to allow debt-strapped countries to recover, thereby promoting a vicious cycle of economic decline and worsening debt problems.

These problems, and their remedies, are well described by long-established Keynesian analysis. In order to restart an economy mired in recession, the Keynesian formula is a combination of expansionary fiscal and monetary policy. In the U.S., this approach was followed during the period 2009-2010, but fiscal expansionism came to a screeching halt with the Republican electoral victories in 2010. This has placed the burden of fighting recession entirely on monetary policy. In Europe, a misplaced emphasis on excessively contractionary fiscal and monetary policies threatened (as of late 2011) to plunge the continent back into recession. Thus the reasons for a failure of economic growth to resume lie in mistaken policy approaches as well as the continuing financial damage from the collapse of excessively leveraged and inadequately regulated investment in housing and other areas.

This is not to suggest that resource and environmental problems are not significant. But their current impact is primarily to degrade the quality of the ecosphere rather than to limit economic growth. There is a good argument that economic growth, or at least growth in resource and energy throughput, *should* be limited to prevent further

ecological damage, especially climate change (Victor, 2008; Jackson, 2009; Harris, 2009 and 2010). There is also a likelihood that resource demands from China, India, and other growing economies will eventually raise oil and other commodity prices to the point where there will be significant impacts on growth. But given a general lack of policies to internalize environmental costs into prices through carbon taxes or similar mechanisms, the economic system is currently insensitive to ecological damage, and environmental constraints do not serve as a limit on growth in most areas.

From the point of view of a "Green" Keynesian analysis, this distinction between financial and environmental limits to growth is crucial. If indeed Keynesian policies can offer a route out of economic stagnation and high unemployment, then it is vital to implement such policies. As numerous analysts have pointed out, the social and political costs of continued high unemployment are staggering, not just in terms of current deprivation but also in loss of human capital and the possibility of political breakdown and the rise of anti-democratic demagogues. The experience of the 1930s indicates that the alternative to democratic Keynesian policies to create employment, such as Roosevelt's New Deal, is a collapse of democracy and the rise of authoritarian alternatives.

But if environmental problems are not the immediate cause of the crisis, there is nonetheless a danger that a solution to the problems of recession and unemployment will worsen pressures on the environment. A resumption of standard-style economic growth, even if possible, will increase demand for fossil fuels, minerals, water, etc., implying greater ecological damage and worsening the drivers of climate change. So either a different type of growth, or an adaptation to a lower- or no-growth economy, is needed. How can this be compatible with solving the unemployment problem?

Green Keynesianism in Practice

Fiscal policy is the central element of an environmentally-oriented Keynesianism. As noted above, expansionary monetary policy is essential for recovering from recession, but it lacks any differentiation between environmentally beneficial and harmful GDP categories. Fiscal policy can be specifically targeted. There are recent examples of this in the Obama administration's 2009-2010 stimulus package. In part this was directed towards traditional types of spending such as highway maintenance, but a significant portion (about $71 billion) was specifically oriented towards "green" investments, together with another $20 billion in "green" tax incentives.[9]

[9] Specific provisions included spending on energy efficiency in Federal buildings and Department of Defense facilities ($8.7 billion); smart-grid infrastructure investment ($11 billion); energy and conservation grants to state and local governments ($6.3 billion); weatherization assistance ($5 billion); energy efficiency and renewable energy research ($2.5 billion); grants for advanced battery manufacturing ($2 billion); loan guarantees for wind and solar projects ($6 billion); public transit and high-speed rail ($17.7 billion); environmental cleanup ($14.6 billion); and environmental research ($6.6 billion). See "U.S. Economic Stimulus Package includes Billions for Energy and Environment," http://environment.about.com/od/environmentallawpolicy/a/econ_stimulus.htm

The double benefit of such policies is that they promote employment and also advance a transition to a more environmentally sustainable economy. In terms of the GDP categories outline above, they expand the beneficial categories, with a focus on public and private investment. It is easily possible to envision much larger programs of this nature. For example, the stimulus program included $5 billion for weatherization programs. A major nationwide program for building energy efficiency retrofit could easily be ten times as large. The stimulus program temporarily quadrupled U.S. spending on energy research and development; a permanent increase of this magnitude would have enormous long-term benefits in promoting a transition to efficiency and renewables.

And energy is by no means the only option for beneficial spending. Investment in education and the development of human capital is one of the most productive forms of investment. The stimulus program helped avert teacher layoffs and other educational cutbacks; unfortunately, after 2010 these fiscal policies have been largely eliminated and widespread teacher layoffs at the state level have resulted. What sense does this make in an era of 9% unemployment? Surely a program to *expand* teacher hiring and raise incentives for young people to enter teaching professions would make much more sense.

A European example of Green Keynesian policy is provided by Portugal, which has achieved an impressive government-led transition from fossil fuels towards renewable power, with the percentage of renewable supply in Portugal's grid up from 17 percent in 2005 to 45 percent in 2010.[10] This involved a $22 billion investment in modernizing its electrical grid and developing wind and hydropower facilities. Portugal will recoup some of its investment through European Union carbon credits, and will save about $2.3 billion a year on avoided natural gas imports. Unfortunately, the current one-sided emphasis on austerity policies in Europe makes such ecologically friendly, employment-generating projects much less likely, despite their clear long-term benefits. It also raises the more general question of whether Green Keynesianism is sustainable form a fiscal point of view. What are the limits to "green" expansionary policies?

Potential Limits to Green Keynesianism

(1) Deficits and Debt

The main counterweight to Keynesian expansionary polices as a solution for recession comes from arguments related to deficits and debt. The most extreme form of this is the New Classical assertion that government deficit spending is completely ineffective in stimulating the economy – it merely replaces private spending. This seems to be refuted in practice by the experience with the 2009-10 stimulus package, which clearly helped to fill a widening gap in aggregate demand following the 2008 collapse. According to a recent analysis by Alan Blinder and Mark Zandi, aggressive Federal policy action (including the "green" investments discussed above) "probably averted what could have been called Great Depression 2.0 . . . without the government's

[10] "Portugal Gives Itself a Clean-Energy Makeover," *New York Times* August 10, 2010.

response, GDP in 2010 would be about 11.5% lower, payroll employment would be less by some 8 ½ million jobs, and the nation would now be experiencing deflation."[11]

A more realistic concern is that mounting deficits and debt will eventually lead to inflation, or to European-style sovereign debt crises. Certainly economies cannot continue indefinitely with ever-rising debt loads. But in recessionary times, successful expansionary policy may actually lower long-term debt through generating employment and higher tax revenues. As Paul Krugman points out: "Suppose that government uses borrowed money to buy useful things like infrastructure. The true social cost will be very low, because the spending will put resources that would otherwise be unemployed to work [and allow private debtors to pay down their debt] … the argument that debt can't cure debt is just wrong." (Krugman, 2011)

To a significant degree, the spreading European sovereign debt crisis arises from unwillingness to use European Central Bank to finance debt, allowing indebted players to recover. Instead, "austerity" policies make debt harder to manage and threaten major defaults and financial catastrophe.[12] In a situation of crisis and looming economic collapse, arguments about moral hazard and rewarding improvident behavior have to take a back to seat to the urgent need to restore economic health and full employment – which can only be achieved through expansionary fiscal and monetary policy. The dangers of such an approach – essentially some degree of inflation – pale beside the prospect of massive and spreading economic decline, perhaps on the scale of the Great Depression, that could result from failure to act.[13]

Similarly in the U.S., a focus on debt reduction undermines the ability to support a still-weak economy with further stimulus spending. Just as in 1937, a withdrawal of Federal spending to accommodate calls for fiscal prudence could very well plunge the economy into a "double-dip" recession. While managing expenditures, increasing revenues, and bringing the budget closer to balance are all worthy long-term goals, what Keynes called "the Treasury view" urging balancing the budget during recession is likely to be disastrous -- and actually worsen long-term debt problems. Instead, the government needs to borrow excess savings and put them to work in ways which can generate long-term growth in revenues. Distinguishing between short-term and long-term goals on debt management is vital – and the longer term need to keep debt at a manageable level is also consistent with Green Keynesianism, as we will discuss.

(2) Environmental Limits to Growth

The short-term case for deficit spending is that we need economic growth to generate both employment and revenues. But ecological economists point out that we can't grow forever, and therefore can't rely on growth to pay down debt. Undoubtedly there are long-term limits to growth. But this is true primarily of "throughput" growth (growth in energy and resources and resulting waste streams). There is plenty of scope

[11] Blinder and Zandi, 2010.
[12] "German Fears about Inflation Stall Bold Steps in Debt Crisis," *New York Times* Dec. 2, 2011.
[13] "New Reports Warn of Escalating Dangers from Europe's Debt Crisis," *New York Times* Nov. 28, 2011.

for growth in services, human capital, environmental infrastructure, renewable energy, and other beneficial areas. In many cases these forms of growth are labor-intensive, promoting greater employment. (For example, organic agriculture is typically more labor-intensive, so shifting from highly mechanized and chemical-dependent agriculture is likely to increase employment).

In the longer term, there is a strong ecological case that we will have to adapt to a steady-state economy (Daly 1991b, 1996). But we don't need a steady-state with 9% unemployment! It is essential to promote employment growth, and, as Peter Victor has pointed out, labor market institutions encouraging a shorter work week can allow higher employment with less resource and energy throughput (Victor, 2008).

Should the economy reach a point at which debt reduction becomes a major issue, there are many options that are consistent with Green Keynesianism. The Keynesian policy toolkit includes contractionary as well as expansionary measures, and these too can be adapted for environmental ends, especially by placing taxes on environmental "bads" or higher income segments of the population. Such policies could include: health care reform to limit growth of unnecessary health spending and high administrative costs; a carbon tax with partial per-capita rebate to generate revenues while inducing a shift away from fossil fuels and preserving or improving income equity; higher taxes on upper-income earners and capital gains (eliminating the Bush-era tax cuts, for example, would eliminate more than half of the projected U.S. deficit).[14]

The most pressing environmental limit is the need for drastic reductions in carbon emissions (Harris, 2009). In theory, there is no barrier to reducing carbon by imposing steadily increasing carbon taxes or their equivalent (Ackerman and Stanton, 2011). The revenues from carbon taxes or auctioned carbon permits can be used for a variety of purposes consistent with social and environmental objectives, including: a per-capita rebate to promote income equity and eliminate the regressive nature of an energy tax (see e.g. Boyce and Riddle, 2009); subsidies for research and development, renewable energy, and energy efficiency (which also indirectly benefit lower-income consumers by reducing energy costs); or simply deficit reduction if this is considered a priority. Higher energy costs resulting from a carbon tax or equivalent would constrain traditional energy-intensive growth, but would not significantly impact human services or investment in human capital, and would promote investment in energy efficiency and energy alternatives.

[14] Kathy Ruffing and James R. Horney, "Economic Downturn and Bush Policies Continue to Drive Large Projected Deficits," Center on Budget and Policy Priorities, May 10, 2011 http://www.cbpp.org/cms/?fa=view&id=3490

(3) Political Barriers

The main barrier to implementation of Green Keynesian policies is not economic or environmental limits, nor deficits and debt. Rather, it is a broadly-held but erroneous perception that government action is the problem rather than the solution. In the U.S., this takes the form of a belief that the Obama economic stimulus "failed" and that taxpayers paid dearly for a Wall Street bailout. This belief (strongly supported by more conservative members of the economics profession[15]) was largely responsible for the rightward turn in U.S. politics in 2010 and the subsequent focus on deficit reduction and cutting back government spending. But it correlates poorly with the facts.

As noted above, the economic stimulus saved or created about 8.5 million jobs (Blinder and Zandi, 2010). At a total cost of $787 billion in Federal spending and tax cuts, this works out to about $92,000 per job. But even this figure is too high, as the stimulus also paid for substantial real infrastructure investment that conveys long-term economic benefits (a substantial part of it it, as noted above, being specifically "green" investment). Considering the alternative – a cascade of negative multiplier effects forcing the U.S. and world economies into depression conditions – this seems like a bargain. The fact that the stimulus was not large enough to overcome the massive effects of the 2008 collapse argues for more stimulus, not less, but the fact that unemployment remains high leads many to the seemingly common-sense, but erroneous, conclusion that the stimulus failed.

Even the much-maligned bank and industrial bailouts have proved to be good investments. So far, taxpayers have not paid a penny for either stimulus or bailout. In fact, taxes have gone down significantly, and are now at levels not seen since the 1950s. Most of the bailout money was repaid; the government made a profit on much of it.[16] The auto industry bailout saved Michigan and most of U.S. industry from depression, and its eventual net cost was almost zero ($74 out of $86 billion had been repaid as of mid-2010).[17]

So good political slogans are not necessarily good economics. It is of course true that government fiscal policy may well involve some inefficiency and waste. But the perception that government action is necessarily bad undercuts our ability to respond both to economic and environmental crises. In addition, the allergic reaction in the American political system to anything involving the word "tax" (unless followed by "cuts") greatly constrains sensible fiscal policy. Overcoming these political barriers may be difficult. But economists should not endorse the pessimistic view that we are impotent in the face of economic crisis, recession, and debt. A sensible combination of fiscal and monetary

[15] See, for example, Allan H. Metzler, "Four Reasons Keynesians Keep Getting It Wrong," *Wall Street Journal*, Oct 28, 2010. Metzler argues that "government spending has failed to bring about an economic recovery … more than a trillion dollars of spending by the Bush and Obama has left the economy in a slump and unemployment hovering above 9%" and recommends a program of government spending cuts.
[16] "As Banks Repay Bailout Money, U.S. Sees a Profit," NYT Aug 30, 2009.
[17] "Government could recoup most of auto bailout funds," Detroit Free Press, July 25, 2010

policy options holds great potential for responding both to unemployment and to environmental priorities including carbon reduction. We need to expand, not contract, the Keynesian toolbox to respond to this combination of twenty-first century economic and environmental issues.

Policies for Full Employment, Climate Stabilization, and Ecological Balance

What would a Green Keynesian policy mix aimed at a combination of economic and environmental goals look like? There are many options, but here are some possibilities:

- Increased hiring in public sector: teachers, police, transit and park workers, etc.
- Large-scale building retrofit publicly financed but carried out by private contractors
- Increased public R&D expenditures with accompanying higher education investment (like the "Sputnik" push for stronger science education in the 1950s)
- Major energy efficiency and renewables investment, partly public and partly incentivized private investment
- Investment in public transit and infrastructure
- Carbon tax or equivalent (cap & trade with auction)
- Recycle carbon tax revenues for energy efficiency, renewables, progressive rebates
- Infrastructure investment – hi-speed rail, public transit, green buildings
- Efficiency standards for cars, machinery, buildings
- Preferential credit or subsidy for energy efficiency investments
- Financial reform and re-regulation including the equivalent of Glass-Steagall "firewall" between basic banking and risky investments (another Keynesian precedent).

And at the international level:

- A Global Investment Fund for efficiency and renewable energy investment (like the World Bank but with a non-carbon energy focus).
- Integrated cap-and-trade schemes for industrialized economies with carbon credits for developing countries, including agriculture and forestry.
- Efficiency and renewables technology transfer, with waiver of intellectual property and WTO subsidy rules for least developed economies
- Microcredit schemes for local solar, wind, ecological preservation, etc.

This list of policies is by no means comprehensive, but it is meant to suggest the outlines for a new and more optimistic approach to economic policy. Just as the impact of Keynesian analysis helped to break through the seemingly intractable problems of the Great Depression, a revised and "greened" Keynesian vision can help us escape the daunting problems of economic stagnation, debt crisis, and global environmental threats that confront us today.

The needed theoretical and policy reorientation requires a turn away from the narrowed vision that has until recently characterized modern economics. The tools are available, drawing both on the historical tradition of Keynesianism and the modern vision of ecological economics, to guide a new social response that can mobilize the strengths of both human capital and technology to respond to economic, social, and environmental problems. The main difficulty lies not in the practical challenges, large though they are, but in overcoming the restrictive habits of thought that limit the scope of economic theory and policy.

Jonathan Harris is Director of the Theory and Education Program at the Global Development And Environment Institute. He holds a Ph.D. from Boston University. Inquiries can be sent to Jonathan.Harris@tufts.edu

References

Ackerman, F. and E.A. Stanton (2011) *Climate Risks and Carbon Prices: Revising the Social Cost of Carbon,* Report for the Economics for Equity and the Environment Network, http://www.sei-us.org/publications/id/399.

Boyce, James K., and Matthew Riddle (2009), "Cap and Dividend: How to Curb Global Warming while Promoting Income Equity," Chapter 9 in Harris, Jonathan M., and Neva R. Goodwin (eds.), *Twenty-First Century Macroeconomics: Responding to the Climate Challenge*, Cheltenham, U.K. and Northampton, MA: Edward Elgar.

Blinder, Alan S. and Mark Zandi (2010), "How the Great Recession was Brought to an End," http://www.economy.com/mark-zandi/documents/End-of-Great-Recession.pdf

Daly, Herman E., ed. (1973), *Toward a Steady-State Economy*. San Francisco: W.H. Freeman.

Daly, Herman E. (1991a), "Elements of Environmental Macroeconomics," Chapter 3 in Robert Costanza (ed.), *Ecological Economics: The Science and Management of Sustainability*, New York: Columbia University Press.

Daly, Herman E. (1991b), *Steady-State Economics*. Washington, D.C.: Island Press.

Daly, Herman E. (1996), *Beyond Growth: The Economic of Sustainable Development*, Boston: Beacon Press.

Goodwin, Neva, Julie A. Nelson, and Jonathan M. Harris (2009), *Macroeconomics in Context*. Armonk, N.Y. and London, England: M.E. Sharpe.

Harris, Jonathan M. (2007), "Reorienting Macroeconomic Theory towards Environmental Sustainability," Chapter 2 in John M. Gowdy and John D. Erickson (eds.), *Frontiers in Ecological Economic Theory and Application*. Cheltenham, U.K. and Northampton, MA: Edward Elgar.

Harris, Jonathan M. (2009), "Ecological Macroeconomics: Consumption, Investment, and Climate Change," Chapter 8 in Harris, Jonathan M., and Neva R. Goodwin (eds), *Twenty-First Century Macroeconomics: Responding to the Climate Challenge*, Cheltenham, U.K. and Northampton, MA: Edward Elgar. Also available as Tufts University Global Development and Environment Institute Working Paper 08-02 at http://www.ase.tufts.edu/gdae/publications/working_papers/index.html

Harris, Jonathan M. (2010), "The Macroeconomics of Development without Throughput Growth," Tufts University Global Development And Environment Institute Working Paper 10-05, at http://www.ase.tufts.edu/gdae/publications/working_papers/index.html

Heinberg, Richard (2011), *The End of Growth*. Canada, New Society Publishers.

Keynes, John M. (1964 [1936]), *The General Theory of Employment, Interest, and Money*, New York: Harcourt, Brace (original publication London: Macmillan).

Keynes, John M. (1930), "The Great Slump of 1930," London: The Nation & Athenæum, issues of December 20 and December 27, 1930 (First Edition).

Jackson, Tim (2009), *Prosperity without Growth: Economics for a Finite Planet*, London: Earthscan Publishing.

Krugman, Paul (2009), "How Did Economists Get it so Wrong?" *New York Times* Sept 2.

Krugman, Paul (2011), "Mr. Keynes and the Moderns," paper presented at Cambridge UK conference commemorating the 75th anniversary of the publication of *The General theory of Employment, Interest, and Money*.

Victor, Peter A. (2008). *Managing Without Growth: Slower by Design, Not Disaster*, Cheltenham, U.K. and Northampton, MA: Edward Elgar.

The Global Development And Environment Institute

GDAE is a research institute at Tufts University dedicated to promoting a better understanding of how societies can pursue their economic goals in an environmentally and socially sustainable manner. GDAE pursues its mission through original research, policy work, publication projects, curriculum development, conferences, and other activities. The "GDAE Working Papers" series presents substantive work-in-progress by GDAE-affiliated researchers.

We welcome your comments, either by email or directly to the author or to GDAE:
Tufts University, 44 Teele Ave, Medford, MA 02155; Tel: 617-627-3530; Fax: 617-627-2409; Email: gdae@tufts.edu; Website: http://ase.tufts.edu/gdae.

Recent Papers in this Series:

13-02 Green Keynesianism: Beyond Standard Growth Paradigms (Jonathan M. Harris, February 2013)
13-01 Climate Impacts on Agriculture: A Challenge to Complacency? (Frank Ackerman and Elizabeth A. Stanton, January 2013)
12-07 Poisoning the Well, or How Economic Theory Damages Moral Imagination (Julie A. Nelson, October 2012)
12-06 A Financial Crisis Manual: Causes, Consequences, and Lessons of the Financial Crisis (Ben Beachy, December 2012)
12-05 Are Women Really More Risk-Averse than Men? (Julie A. Nelson, September 2012)
12-04 Is Dismissing the Precautionary Principle the Manly Thing to Do? Gender and the Economics of Climate Change (Julie A. Nelson, September 2012)
12-03 Achieving Mexico's Maize Potential (Antonio Turrent Fernández, Timothy A. Wise, and Elise Garvey, October 2012)
12-02 The Cost to Developing Countries of U.S. Corn Ethanol Expansion (Timothy A. Wise, October 2012)
12-01 The Cost to Mexico of U.S. Corn Ethanol Expansion (Timothy A. Wise, May 2012)
11-03 Would Women Leaders Have Prevented the Global Financial Crisis? Implications for Teaching about Gender, Behavior, and Economics (Julie A. Nelson, September 2012)
11-02 Ethics and the Economist: What Climate Change Demands of Us (J. A. Nelson, May 2011)
11-01 Investment Treaty Arbitration and Developing Countries: A Re-Appraisal (Kevin P. Gallagher and Elen Shrestha, May 2011)
10-06 Does Profit-Seeking Rule Out Love? Evidence (or Not) from Economics and Law (Julie A. Nelson, September 2010)
10-05 The Macroeconomics of Development without Throughput Growth (Jonathan Harris, September 2010)
10-04 Buyer Power in U.S. Hog Markets: A Critical Review of the Literature (Timothy A. Wise and Sarah E. Trist, August 2010)
10-03 The Relational Economy: A Buddhist and Feminist Analysis (Julie A. Nelson, May 2010)
10-02 Care Ethics and Markets: A View from Feminist Economics (Julie A. Nelson, May 2010)
10-01 Climate-Resilient Industrial Development Paths: Design Principles and Alternative Models (Lyuba Zarsky, February 2010)
09-08 Agricultural Dumping Under NAFTA: Estimating the Costs of U.S. Agricultural Policies to Mexican Producers (Timothy A. Wise, December 2009)

View the complete list of working papers on our website:
http://www.ase.tufts.edu/gdae/publications/working_papers/index.html