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Ecologists Call for a Transformed Financial System

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Introduction

Ecologists, alarmed by how human activity is depleting ecosystems faster than they can be replenished, have added their voices to calls for a transformed financial system. Ecological economists point to how excessive consumption leads to more extraction of raw materials and emissions of wastes than can be sustained on a finite planet.

The financial crisis of 2007-2008 has shown how the current financial system is neither sustainable nor just. The human and ecological devastation that resulted from that crisis makes the search for a new financial system more urgent than ever.

Yet efforts to recover from it are being built on the flawed assumption that endless economic growth is possible.

Part One of this briefing paper describes how the current financial system is based on the creation of money out of nothing, primarily through private lending. It then notes how attempts to deal with the financial crisis of 2007-2008 involved the creation of yet more money out of nothing by central banks.

Part Two begins by noting the urgency of the ecological challenges humanity faces, especially from climate change. Recognition of these challenges leads to demands to curtail the overexploitation of the natural world and a new economic paradigm not based on endless growth. The paper then describes how ecological economists envision a different financial system compatible with preserving life on planet Earth, the home we share with millions of other species.

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Part One: How the Financial System Functions

Before we can describe how ecological economists envision an alternative financial system, we need to review how the conventional monetary system functions and how it changed dramatically with the invention of new financial instruments that were at the heart of the crisis.

Prior to the financial innovations introduced during the 1980s, there were basically two kinds of money in circulation. Central banks (or national treasuries) issued legal tender in the form of coins and bank notes. In addition, private banks created a larger amount of money by loaning it into existence.

The growth (or retraction) of the money supply could be regulated by central banks through a system known as fractional reserve banking. Under this system, banks are required to maintain a portion of their shareholders' capital, or of the deposits they hold for customers, on hand as reserves available to cover losses from bad loans or depositors' withdrawals.

Reduced to its basic elements, a fractional reserve system operates in this manner. People make deposits in a bank trusting that their money will be available for withdrawal when they need it, especially when it is guaranteed by government-sponsored deposit insurance. The bank then sets aside a small portion of the deposits in its reserve account while making most of the money available for lending to other customers. When a borrower takes out a bank loan and then spends the money, it ends up as a deposit in another bank.

Since the lending bank counts the value of the loan as an asset on its books and the bank receiving a new deposit counts it as a liability on its books, the same amount is counted twice, thus effectively expanding the money supply. When the second bank lends most of that deposit to a third borrower (after putting aside a portion in its reserve account), an additional new amount of money is created and deposited in a yet another bank (or bank account).

Each time this process is repeated, more new money is created. The rate at which new money is created can be slowed down by raising the portion of the deposit that banks must keep on hand as reserves. If the banks are required to keep 4% of deposits on hand, the banking system can create up to 25 times as much new money as the initial deposits. If the reserve requirement is 5%, the system can only create 20 times as much new money.[1]

Innovations transformed the financial system

Prior to the 1980s, nearly all the money in circulation consisted of legal tender issued by central banks and bank loans. This changed dramatically during the latter two decades of the twentieth century with the creation of new kinds of financial instruments. These consisted of contracts for debts, such as home mortgages, packaged as tradable securities and derivatives.

Derivatives are financial instruments whose value is based on, or derived from, the value of other contracts for tradable items such as commodities, company shares or currencies. As is illustrated in the Figure below, these new kinds of liquidity (i.e., assets that can be easily converted into cash) substantially expanded the amount of money readily available for use.

Source: Independent Strategy, courtesy CLSA

In 2009, only 1% of world liquidity was legal tender created by central banks (called "power money" in this figure) while 6% consisted of traditional bank loans. The "power money" was worth about US$4.4 trillion and the bank loans some US$50 trillion. The other 93% of world liquidity consisted of contracts for debts packaged as tradable securities (worth US$91 trillion) and contracts for derivatives (with a nominal value of US$611 trillion).

Roel Aalbersberg, a member of the World Council of Churches' Advisory Group on Economic Matters, refers to bank loans and legal tender as "money as we knew it," that is, the traditional kind of money used to fund the production and distribution of real goods and services.[2]

As shown in the Liquidity Pyramid , in 2009 central bank money was equivalent to 7% of the world's Gross Domestic Product while money created by bank loans was equivalent to 80% of global GDP.[3]

The nominal value of securitized loans found in the next tranche of the Pyramid was equivalent to another 145% of world GDP and derivatives were as large as 976% of world GDP, an indication of the unreal nature of the liquidity in these financial instruments involved in trading largely unrelated to tangible goods and services. Roel Aalbersberg calls this kind of money "virtual, unreal, imaginary, fake, wind ... [analogous to] a huge balloon, filled with hot air, and carrying a tiny basket full of passengers high above the solid ground."[4]

Origins of the new liquidity

Where did all this new liquidity come from? Although banks create money by lending it into existence, these trillions of dollars worth of new liquidity were created by private financial institutions without the involvement of central banks or government treasuries.

This new kind of virtual liquidity is by and large intangible as it shows up only on computer screens or on paper contracts. It is created by what financial consultant Satyajit Das calls "financial alchemy."[5] Financial firms package and repackage debts for resale or invent new kinds of derivatives based less and less on actual commodities and more and more on expected future movements in prices or interest rates.

Financial Times editor Sebastian Mallaby explains: "In the run-up to the crisis, even synthetic collateralised debt obligations, consisting of nothing more substantial than a bunch of Wall Street promises, could be turned into money with few questions asked. Financiers were conjuring money out of nothing. By no means was this the exclusive province of central banks."[6]

To finance investments in securitized debts and exotic derivatives, the trading arms of banks often used off-balance-sheet accounts against which they were not required to hold reserves or pay for deposit insurance. They raised money through repurchase agreements or "repos" by which they lent each other huge sums of money on a short-term basis. According to journalist Ron Suskind, firms "found a way to shift risky activities and liabilities off their books. With the ready spigot of repo money, they could then tailor their cash flows and balance sheets to create the illusion of health and stability. And as liabilities disappeared from their books, the amount of leverage the firms could operate with increased."[7]

Why didn't the creation of all this new money result in higher inflation as conventional monetary theory would suggest? David Roche and Bob McKee, authors of *New Monetarism*, maintain: "All this new money didn't boost officially-measured inflation because globalization and technology kept down the prices of most things we buy rather than invest in."[8]

While the availability of cheap manufactured goods imported from Asia kept down the costs for consumers, the prices of financial assets "began to soar, as money got cheaper and more plentiful. But no one counts asset price inflation as inflation. Indeed asset price inflation is always called wealth creation until the credit bubble of underpriced capital that always lies at its base finally bursts."[9]

As the supply of virtual money increased, reserve requirements were lowered in some countries. In 2004, the U.S. Securities and Exchange Commission permitted investment banks to set their own net capital requirements, allowing them to incur debt to-net-capital ratios as high as 40 to one.[10]

In Canada, the Mulroney government quietly lowered reserve requirements in 1991, arguing that banks would keep enough cash on hand anyway since, for example, they need it to stock automated teller machines. Bankers lobbied for loosened regulation on the assumption that they could always borrow enough from other financial institutions to cover withdrawals or losses.

In the run up to the crisis, banks increased loan volumes taking on more and more risk. They also increased their leverage ratios, that is, they financed more of their investments with borrowed funds rather than their own capital.

Instead of having at least one dollar in reserve for each 20 dollars in assets, i.e., loans or investments in other financial instruments (as was the case in Canada when the crisis hit), U.S. banks had asset to capital ratios on the order of 30 to one. In some European banks the ratios were as high as 50 to one.[11]

How the crisis began

In 2007 and 2008, the inability of home buyers in the U.S. to make payments on subprime mortgages set off a cascade of defaults among inter-dependent markets for new financial instruments.[12]

The market collapsed for securitized debt known as Collateralized Debt Obligations (CDOs) containing bundles of mortgages of dubious quality repackaged and sold as high quality securities. Then the market for another new financial instrument, Credit Default Swaps (CDSs), also seized up.

CDSs are a type of derivative that is similar to an insurance policy. Creditors buy them to protect themselves against the risk of default. CDS sellers collect fees for taking on the risk that a loan will not be repaid. But unlike insurance policies, multiple CDS contracts could be issued for a single CDO. This allowed speculators who had no interest in the original loans to gamble on the possibility that the home buyers might default on their mortgages.

When the defaults occurred, the CDS sellers, like insurance giant AIG (American International Group), did not have enough capital to cover the money they owed on the multiple contracts they had issued.

Bailouts with money created out of nothing

In the midst of the crisis, government treasuries and central banks stepped in to organize massive bailouts of financial firms that otherwise would (or in a few cases did) go bankrupt. Estimates of the amount of money devoted to public bailouts vary widely depending on the time-frame and the methodology used to calculate them.

A survey conducted by the International Monetary Fund, released in 2010, found that by then member countries of the Group of Twenty (G20) had announced or pledged US$9.7 trillion worth of support for the private financial sector in the form of guarantees, asset swaps and purchases and direct government financing.[13] The pledged amounts exceeded actual amounts by a wide margin because governments wanted to deter runs on their banks by demonstrating that they were prepared to go to great lengths to persuade their citizens that their life savings and pension funds were safe.

Since the United States was the epicentre of the crisis, its bailout programs merit particular attention. Public debate in the U.S. has focused largely on congressional authorization for the Troubled Asset Relief Program (TARP). Although Congress authorized the Treasury Department to spend up to US$700 billion to stabilize financial markets, only US$470 billion was committed and US$387 billion actually disbursed by the time the program ended in 2010.

Most of the money went to bail out banks, while a portion also went to AIG and to the auto companies. The TARP program became a political lightening rod and a central focus for the emerging Tea Party movement. While the TARP funding was substantial, it was much smaller than the enormous sums that the Federal Reserve Board, the U.S. central bank, made available for bailouts.

One survey by graduate students at the University of Missouri-Kansas City examined 16 different bailout facilities created by the Federal Reserve known by an alphabet soup of acronyms such as PCF (primary credit facility), TAF (term auction facility) and TSLP (term securities lending facility and term options program). They calculated that the total amount of funds set aside for these programs amounted to an astounding US$29 trillion.[14]

This total overstates the actual amount of bailout money expended as it tallies the gross amounts from various facilities that made loans for short periods before they were repaid. There is a great deal of double counting since some of these bailout funds were loaned, repaid and then loaned again. It also includes money set aside for facilities that were never fully drawn down.

When the U.S. Government Accountability Office (GAO) conducted its first ever audit of the Federal Reserve, it found that the gross amount of bailout loans the Fed had issued to 20 private financial corporations amounted to US$16 trillion over the period from December 1, 2007 to July 21, 2010.[15]

Since many of these loans were for very short periods, even overnight, before they were repaid and in some cases borrowed again, the GAO report includes a second estimate of the amounts loaned after adjusting for different terms. The term-adjusted amount for loans to the top 20 borrowers still amounted to US$1.1 trillion over the same period. Much of this money was made available to banks outside the U.S. including British, German, Swiss and French banks. Most of these loans were repaid within the two and a half year period audited.

Contrary to the often stated claim that Canadian banks did not require bailouts, the Canadian government offered them various kinds of emergency support. The Canadian Mortgage and Housing Corporation offered to take over up to $125 billion worth of home mortgages from the private banks.

The Minister of Finance offered the banks support through a program called the Extraordinary Financing Framework. The Bank of Canada provided loans at near-zero interest rates.

Canadian Auto Workers economist Jim Stanford notes: "In total, various federal agencies offered the banks up to $200 billion in cash and short term-ultra-low interest loans."[16]

Conclusion to Part One

The mammoth size of the rescue facilities indicates how deep the crisis had become. As Roel Aalbersberg describes it, when governments saw that the massive hot air balloon containing so much unreal money had sprung a leak, their first response was "to pump in massive amounts of more hot air into the leaking balloon."[17]

Both the liquidity that private financiers pumped into the balloon and the bailout money created by central banks were created out of nothing.

One lesson from the crisis is a realization of how easy it is for both private institutions and central banks to create money through nothing more than bookkeeping entries. A basic question then is who should control this power of money creation, the private sector or public institutions?

Part Two: An Ecological Appraisal of the Financial System

When discussing a new financial architecture it is important to distinguish between the goals reformers intend to achieve. If the goal is to restore the financial system to its pre-2007 state, with only a few tighter regulations, then nothing substantial will change and future crises will be inevitable. In our view the goal should be to establish a new financial system that would enhance human wellbeing on an ecologically sustainable basis.

This requires ceasing to treat money as a commodity that can be traded with the sole purpose of making more money. Instead finance should be seen as a public service to facilitate the fulfillment of genuine human needs and ecological integrity on a planet threatened by devastating climate change.

Our ecological critique of the financial system is grounded in an understanding of that our current overexploitation of natural wealth and excessive emissions of greenhouse gases are not sustainable.

Humanity's unsustainable ecological footprint

One measure of the ecological challenge we face is the size of humanity's ecological footprint which already exceeds the Earth's carrying capacity.

Ecological footprints measure how much of the Earth's arable land, pastures, forests, oceanic food production and carbon dioxide absorption capacity is utilized by humans relative to an ecosystem's carrying capacity.

When ecological footprints were first calculated in 1961, humans lived within the regenerative capacity of the natural world. But since the late 1970s our overall consumption has exceeded the Earth's biocapacity.

In 2007 humanity's ecological footprint exceeded the planet's carrying capacity by 50%.[18] In other words for humans to continue to consume natural resources at the current rate we would need one and a half Earths to sustain our level of consumption.

The one quarter of humanity who live in the global North who consume about two-thirds of the world's resources are most responsible for this overconsumption. The other three-quarters, who live in the global South, consume less than what would be their fair share in a world where all lived sustainably.

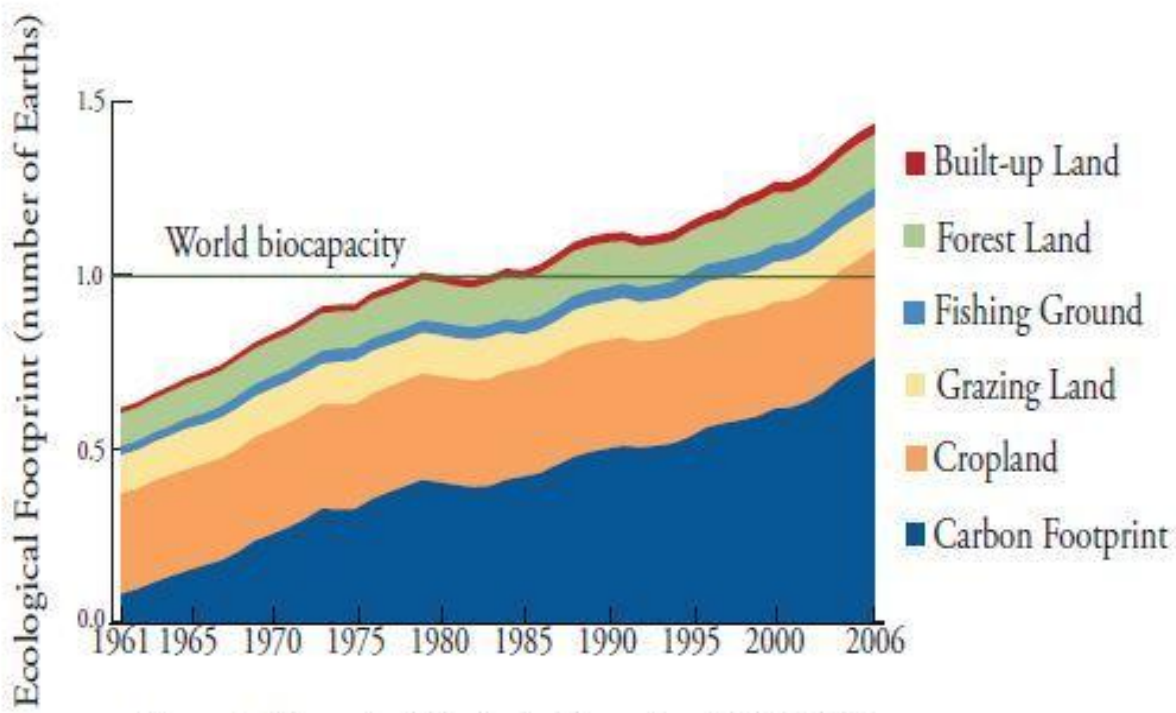

Figure 3. Humanity's Ecological Footprint, 1961-2006

As the figure illustrates, our human carbon footprint is the biggest factor enlarging humanity's ecological footprint beyond the threshold of sustainability. It is caused primarily by our overconsumption of fossil fuels. Each year more carbon dioxide, the principal greenhouse gas, is released into the atmosphere than can be absorbed by the world's oceans and vegetation. Carbon dioxide emissions account for about two-thirds of a North American's ecological footprint. If everyone in the world consumed as much as the average U.S. or Canadian resident, the biocapacity of more than four and a half Earths would be needed to support such levels of consumption.[19]

Carbon emissions and economic growth

Peter Victor, an ecological economist at York University, maintains that merely reducing the intensity of carbon dioxide emissions per unit of output is not enough. If we are to achieve the level of emission reductions necessary to prevent runaway climate change, Northern countries will have to learn to live without any growth in Gross Domestic Product.

While there is a clear link between economic growth and carbon emissions, the latter do not fall as quickly in a retracting economy as they rise in one that is expanding. Richard York, a professor at the University of Oregon, examined the relationship between carbon dioxide emissions and economic growth in 150 countries between 1960 and 2008. He found that while carbon emissions rise on average by 0.7% for every one percentage increase in GDP per capita, they fall by only 0.43% for each one percent decline in GDP per person.

When the financial crisis shut down economic growth in 2008, GDP fell by 3.5% but carbon emissions continued to grow by 3%. As Professor York explains: "When economies decline, factories don't shut down immediately, people don't stop driving (although they may defer buying a new car) and new buildings still needed heating or air-conditioning."[20]

One of the lessons of the 2007-08 crisis is that we cannot simply rely on a decline in GDP growth to reduce greenhouse gas emissions. There are other lessons from the way that governments and central banks responded to the crisis that indicate a way forward that is not dependent on expanded material throughput.

Central banks can meet public needs without causing inflation

Observing how central banks responded to the crisis by creating substantial amounts of money for bailout funds merely through bookkeeping entries, critics began to ask why not use the money created for worthy public purposes rather than to subsidize private corporations.

The objection that money creation by central banks is always and inevitably inflationary is belied by the actual experience following to 2007-2008 crisis. There was no spike in inflation in the U.S. after the Federal Reserve added over a trillion dollars to the money supply in 2008 through what is known as "quantitative easing" (or QE). That money was used mostly to purchase toxic assets such as securitized packages of subprime mortgages from private banks. Far from causing a dangerous spike in inflation, public money was needed to stave off the threat of deflation, that is, falling prices as had occurred in the Great Depression of the 1930s.

Again in 2010, the Federal Reserve created US$600 billion through an operation known as QE2. This money was used to purchase long-term Treasury bonds from banks and other financial institutions without any guarantee that the banks would use this new money to lend to businesses so that they could invest in the real economy. During the four years since 2008, the U.S., European, United Kingdom and Japanese central banks have injected more that US$11 trillion in liquidity into the world economy through QE and loans at near-zero interest rates without sparking global inflation.[21]

As outlined in our 2010 *Briefing Paper* "Can Quantitative Easing Fund Green Jobs?" the Bank of Canada, like other central banks, can create money by lending it directly to any level of government – federal, provincial or municipal – for investments in the real economy.[22] In a world threatened by devastating climate change, priority areas for this investment must include energy conservation measures, public transit and renewable energy. What distinguishes this type of public investment from QE aimed at the revival of the private sector is the end goal of spending where green energy projects take priority over private investment in fossil fuels.

The *Financial Times* economics analyst Martin Wolf defends money creation by central banks by pointing out that here is no automatic link to inflation. In fact he says that in periods when private banks do not lend enough money to generate sufficient demand, central bank lending is needed to stimulate economic activity. Wolf mocks the notion that central banks cannot be trusted to use their power to create money responsibly as akin to "arguing that electricity should be banned because it is dangerous."[23]

If the threat of an inflationary spiral does arise, central banks can shrink the money supply by stopping lending, calling in some loans or raising private banks' reserve requirements to constrain their lending. As David Korten explains, under a public credit system: "If there is a need to grow or shrink the money supply, the government simply adjusts its taxes and public spending, either to put new money into the economy or to withdraw it."[24]

Interest payments require continued growth

What makes the present financial system incompatible with a reduced material throughput is its dependence on growth to keep up with interest payments on loans. Since interest charges constitute a lien on the future production of real wealth, interest bearing loans can only be repaid in full if there is sufficient growth in the production of real goods. But on a finite planet the production of goods dependent on natural wealth cannot grow fast enough to pay off all financial debts.

As popular educator Mark Hathaway and theologian Leonardo Boff explain: "We confuse money (or the zeros and ones zipping through cyberspace that have largely replaced physical currency) with the real wealth it is meant to represent. ... [Unlike money] real wealth is subject to spoilage. Grain cannot accumulate forever in barns and silos; clothing eventually wears out. ... At best, natural wealth (like forests or crops growing in a field) can grow at rates fixed by the inputs of sun, clean water, air and healthy soil. [Unlike financial investments] real wealth ... never grows at exponential rates for any significant rate of time."[25]

Ecological economists maintain that even if we lived on a planet with infinite natural resources and waste-absorption capacity, real interest rates within a debt-based monetary system could not exceed the real growth rate of the economy over the long term. Prominent ecological economist Joan Martinez Alier makes the case succinctly: "We cannot force the economy to grow indefinitely at the pace at which compound interest grows on loans."[26]

Moreover ecological economists recognize that under the current, debt-based monetary system "failure to grow leads to ... default on debts ... accompanied by misery, poverty and unemployment."[27] In their view, economic recessions should no longer be defined in terms of declines in economic growth as measured by such a flawed indicator as Gross Domestic Product. Instead recessions should be redefined in terms of the rates of poverty, inequality and unemployment they create.[28]

A steady-state economy based on public money

Ecological economists advocate a steady-state economy with the goal of creating meaningful employment and a just distribution of resources while not exceeding the carrying capacity of the planet. Whereas growth cannot continue indefinitely on a finite planet, an increase in the quality of goods and services provided by a given throughput of natural resources can advance.

In order to make this possible, the ability of the private banking system to create more and more liquidity must be constrained by gradually raising private banks' reserve requirements. They say reserve requirements should eventually reach 100%, thereby eliminating entirely the ability of private banks to create money through lending. As private bank money creation is phased out, the ability to manage the money supply would be restored to governments and central banks.

Under a 100% reserve system, central banks would create money by lending it for public purposes and also take it out of circulation by recalling loans when inflation threatened. In a paper prepared for the 2012 *Montreal Conference on Degrowth in the Americas*, Joshua Farley and colleagues assert: "Governments could also simply spend money into existence to provide public goods, invest in social and human capital, ensure full employment, rebuild decaying infrastructure, [and] restore the natural systems that sustain [life]."[29] Renowned ecological economist Herman Daly asks: "Why should the public pay interest to the private banking sector to provide a medium of exchange that the government can provide at little or no cost?"[30]

Daly maintains that the end of fractional reserve banking does not necessarily entail the end of private banking. He suggests: "Banks would earn their profit by financial mediation only, lending savers' money for them ... and charging for checking, safekeeping and other services." This would mean a much smaller financial sector with no lending for speculative investments.

Daly asserts: "With 100% reserves there is no danger of a run on a bank leading to a cascading collapse of the credit pyramid." He states that a safer banking system would no longer need deposit insurance nor would there be any danger of the collapse of the whole financial system if a "too big to fail" bank went under.

To those who argue that a fundamental transformation of the financial architecture is unworkable and utopian, Herman Daly replies: "To dismiss such sound policies as 'extreme' in the face of the repeatedly demonstrated failure and fraud of our current financial system is quite absurd."[31]

KAIROS: Canadian Ecumenical Justice Initiatives unites eleven churches and religious institutions in work for social justice in Canada and around the globe.

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