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The use and abuse of mathematical economics

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– “There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy.”
(Hamlet, Act I, scene v)

“Whoever enters here must know mathematics.” That was the motto of Plato’s Academy. Emphasizing the Pythagorean proportions of musical temperament and the calendrical regularities of the sun, moon and planets, classical philosophy used these key ratios of nature as an analogue for shaping order in society’s basic proportions. The population’s optimum size, the city’s geometric shape and its division into equal “tribal” fractions for voting and fighting in the army were mathematically idealized. But there was little quantitative analysis of economic relations, and certainly no thought that unregulated market forces would assure social harmony. There was no statistical measurement of the debts that wracked the Greek and Roman economies, or of overall output, its distribution and value.

We now have such measures, but can we say that mathematics provides the key to understanding the major economic problems of our time? More specifically, has the marginalist and monetarist application of mathematics become so nearsighted as to lose sight of the economy’s structural problems?

The education of modern economists consists largely of higher mathematics, which are used more in an abstract metaphysical way than one that aims at empirically measuring society’s underlying trends. It is now over a century since John Shield Nicholson (1893:122) remarked that “The traditional method of English political economy was more recently attacked, or rather warped,” by pushing the hypothetical or deductive side . . . to an extreme by the adoption of mathematical devices. . . . less able mathematicians have had less restraint and less insight; they have mistaken form for substance, and the expansion of a series of hypotheses for the linking together of a series of facts. This appears to me to be especially true of the mathematical theory of utility. I venture to think that a large part of it will have to be abandoned. It savors too much of the domestic hearth and the desert island.

If today’s economics has become less relevant to the social problems that formed the subject matter of classical political economy a century ago, its scope has narrowed in large part because of the technocratic role played by mathematics. This paper asks whether this has been an inherent and inevitable development. Has the narrowing of scope of economics since the anti-classical reaction of the 1870s – the so-called neoclassical revolution of William Stanley Jevons, Carl Menger, and later of Alfred Marshall and his followers, culminating in today’s Chicago School – been inherent in the mathematization of economics? Or, does it follow from the particular way in which mathematics has been applied?

What is the proper role for mathematics to play? Is there such a thing as bad mathematical economics? What kinds of problems do its formulations tend to exclude?

Mathematical economics as tunnel vision

A clue to the modern role of mathematical model-building is provided by the degree to which higher mathematics was deemed unnecessary by 18th-century moral philosophy and the political economy that emerged out of it. To be sure, the labor theory of value was formulated in quantitative terms from William Petty through Ricardo and Marx. Britain's political arithmeticians used statistics, as did the German cameralists. The quantification of magnitudes gives concrete empirical expression to one's logic. But statistical calculations of price indices or various formulae for measuring labor and capital costs are a far cry from model-building.

What has become the distinguishing feature of mathematical economics is its formulation of problems abstractly in terms of just a few selected functions, excluding all categories that cannot be expressed in its bare equations. Key dimensions of economic life have been neglected that need not logically have been omitted, such as land pricing. Despite the emphasis that Ricardo gave to rent theory, the land nationalization debate stimulated by John Stuart Mill, Herbert Spencer and Henry George, and the central role that Thorstein Veblen assigned to urban land in Absentee Ownership, land-price gains have been ignored by today's price theory. Macroeconomic analysis likewise excludes asset-price gains ("capital gains") from its definition of economic returns.

A significant role of mathematization has been to impose this narrowness on economic analysis. By focusing on how individuals spend their income on consumption goods, or defray such consumption by saving at an interest rate that allegedly reflects their "time preference" schedules, marginalist mathematics diverts the economist's eye away from the methods used to acquire and build up wealth.

The big picture – society's long-term transformation – is excluded from analysis on the ground that its dynamics cannot be sufficiently mathematized. Reiss has located the appropriate quotation from William Roscher (*Grundlagen*, pp. 67f.): "some scientists (attempted to) fit laws of economics in algebraic formulae . . . But, of course, the advantage of the mathematical mode of expression vanishes the more, the more complex the facts to which they are applied become. . . . In every description of the life of a nation the algebraic formulae would become so complicated that they render a continuation of work impossible."

To be sure, there are ways to reason mathematically with regard to national economic development, and even to changes in the economic system. Brooks and Henry Adams suggested applying the idea of phase change that had been developed by the American mathematician Willard Gibbs.¹ But this suggestion fell on deaf ears. The concern of modern mathematical economists is not with social evolution and changing the status quo, but with analyzing the workings of marginal phenomena within the existing status quo.

The earliest expounders of economic relationships in terms of abstract mathematical functions were virtually ignored in their own day primarily because political economy had not yet narrowed into individualistic consumerism or technocratic business planning. It remained an extension of moral philosophy and public policy-making. The technical problems with

¹ Henry Adams, *The Degradation of the Democratic Dogma* (New York, 1919), introduction by Brooks Adams. For a discussion of the application of exponential growth to the movement of history, especially the economic applications of energy, see William H. Jordy, *Henry Adams: Scientific Historian* (New Haven: Yale University Press, 1953).

which the early mathematical economists dealt, such as psychological utility and price formation based on supply and demand, were still far from being deemed to be the highest concern. The marginalists would make a true breakaway by viewing the consumer rather than the producer/employer as the focal point of the economic system, and discussing the economy more from the vantage point of individual psychology than from that of national industrial and financial transformation.

The early mathematical economists concerned themselves with narrower topics such as price formation, business cost accounting and railroad planning. Gossen's mathematical formulation of utility theory was not widely noticed precisely because he focused on problems hitherto considered too mundane to be deemed an essential part of political economy's core. Likewise, von Mangoldt's editor Kleinwaechter disparaged his mathematical illustration of the principles of price formation as "redundant ballast" in view of the fact that no statistical quantification was applicable. He expunged von Mangoldt's graphic examples altogether.

As for Wilhelm Launhardt's railway economics, it was considered too technical to be classified as political economy proper. His analysis did not deal with how railroads reduced transport costs, thereby benefiting the locational value of farmland, residential and commercial property along the trackway, making fortunes for real estate speculators. As any urban planner knows, this "external" effect of railways on land prices is so large as to overwhelm the narrow direct economies involved.

Early applications of mathematical notation and graphs to economic problems thus were ignored largely because they were deemed to be more in the character of engineering or merely technical business analysis than full-fledged political economy. The most essential concerns of political economy and German Nationalökonomie were not amenable to streamlining in mathematical form. And indeed, while today's mathematical economics serves technocrats and financial strategists, it imposes a nearsighted perspective that distracts attention from what formerly was most important, in order to focus on what is merely marginal. In this sense economics has been overly distilled into the microeconomics of price theory, along with a rough macroeconomic income and output statement.

This is not to say that the building blocks of classical political economy could not be expressed quantitatively. The concept of rent served as a measure of unearned revenue by defining it as the excess of price over cost-value. Diminishing returns (or for the American protectionists, increasing returns) could be formulated mathematically, as could the productivity advantages of high-wage labor. What could not be treated with the mathematics then at hand was the political resolution of long-term structural strains. No chaos theory yet existed to deal with broad quantum leaps that occurred as political and institutional changes were introduced from outside the economic system. And as far as the dynamics of history were concerned, no mathematical formula could express the broad range of complexities that literary exposition could provide.

What made political economy the queen of the social sciences in the 19th century was its focus on the transformation of nations. It dealt with the policies most appropriate for their long-term social evolution – their legal and institutional structure, technology and financial organization. At issue was how economic institutions should be improved. The *ceteris paribus* methodology of marginalism did not deal with such broad contextual issues. It presupposed that the social structure remained constant, and then implied that no change was needed, as economies would respond to disturbances automatically by settling at a new

equilibrium. Such an approach does not have much appeal to social reformers, environmentalists, political regulators or historians dealing with the structural aspects of economic development.

Marxism emerged as the preeminent alternative to the emerging marginalist economics largely because it was almost the sole survivor of classical political economy. In addition to retaining the classical breadth of scope and the idea of stages of development, Marx used irony and the idea of inner contradictions as a logical method of interpreting economic history. This was not a method that could well be expressed mathematically. Although Marx used arithmetic examples to illustrate the rates of profit and surplus value for enterprises employing differing proportions of labor and capital, this was not a mathematical model of the economy. The Communist Manifesto hardly could be expressed in mathematical formulae, and no Marxist tried to express dialectical materialism mathematically.

It has taken a hundred years to drive out what formed the most vital concerns of classical political economy: the shape of social evolution, the strains it tends to develop and the indicated responses by the state. As long as these concerns remained paramount, there would be little reason to celebrate the first users of mathematical functions as having made a great breakthrough. Their “discovery” would have to await the time in which economics narrowed its scope and dropped its concerns with long-term transformation.

The role of political economy in the 19th century was precisely to indicate the most appropriate policies for self-direction. That is what made it political economy. But as economics became increasingly technocratic, it dropped the political dimension. And as it has narrowed and come to take the institutional and political environment for granted, the mathematical formulation of economic functions has come to be used as the criterion for acceptable theorizing. The role of mathematics in fact has been to exclude problems that are more than marginal. A basic condition for regression analysis to be applied, for instance, is a constant social and political environment.

In this way mathematical economics has become the ultimate vehicle to make the policy trivialization of economics politically acceptable, establishing status quo economics as a pseudo-science by virtue of using mathematical symbolism. As Wolfgang Drechsler has quipped, mathematics has helped enthrone irrelevance as methodology. The key aspect of the mathematization of economics has been its logical necessity of stripping away what the new economic orthodoxy sought to exclude from the classical curriculum: the socially sensitive study of wealth, how it is acquired, and how its distribution (indeed, its polarization) affects social development.

The semantics of mathematical equilibrium theory

If mathematics is deemed to be the new language of economics, it is a language with a thought structure whose semantics, syntax and vocabulary shape its user's perceptions. There are many ways in which to think, and many forms in which mathematical ideas may be expressed. Equilibrium theory, for example, may specify the conditions in which an economy's public and private-sector debts may be paid. But what happens when not all these debts can be paid? Formulating economic problems in the language of linear programming has the advantage of enabling one to reason in terms of linear inequality, e.g., to think of the economy's debt overhead as being greater than, equal to, or less than its capacity to pay.

An array of mathematical modes of expression thus is available to the economist. Equilibrium-based entropy theory views the economy as a thermodynamic system characterized by what systems analysts call negative feedback. Chaos theories are able to cope with the phenomena of increasing returns and compound interest, which are best analyzed in terms of positive feedback and intersecting trends. Points of intersection imply that something has to give and the solution must come politically from outside the economic system as such.

What determines which kind of mathematical language will be used? At first glance it may seem that if much of today's mathematical economics has become irrelevant, it is because of a fairly innocent reason: it has become a kind of art for art's sake, prone to self-indulgent game theory. But almost every economic game serves to support an economic policy.

Broadly speaking, policies fall into two categories: laissez faire or interventionist public regulation. Each set of advocates has its own preferred mode of mathematical treatment, choosing the approach that best bolsters their own conclusions. In this respect one can say that mathematics has become part of the public relations apparatus of policy-makers.

The mathematics of socialism, public regulation and protectionism view the institutional environment as a variable rather than as a given. Active state policy is justified to cope with the inherent instability and economic polarization associated with unregulated trade and financial markets. By contrast, opponents of regulation select a type of equilibrium mathematics that take the institutional environment for granted and exclude chronic instability systems from the definition of economic science, on the ground that they do not have a singular mathematical solution. Only marginal problems are held to be amenable to scientific treatment, not quandaries or other situations calling for major state intervention.

Marginalist mathematics imply that economic problems may be solved merely by small shifts in a rather narrow set of variables. This approach uses the mathematics of entropy and general equilibrium theory to foster the impression, for instance, that any economy can pay almost all its debts, simply by diverting more income from debtors to creditors. This is depicted as being possible without limit. Insolvency appears as an anomaly, not as an inevitability as in exponential growth models.

Looking over the countries in which such theorizing has been applied, one cannot help seeing that the first concern is one of political philosophy, namely, to demonstrate that the economy does not require public regulation to intervene from outside the economic system. This monetarist theory has guided Russian economic reform (and its quick bankruptcy) under Yeltsin and his oligarchy, as well as Chile's privatization (and early bankruptcy) under Gen. Pinochet, and the austerity programs (and subsequent bankruptcies and national resource selloffs) imposed by the IMF on third world debtor countries. Yet the reason for such failures is not reflected in the models. Empirically speaking, monetarist theory has become part of the economic problem, not part of the solution.

The subjectivity of statistical categories

Political economy developed out of a different tradition from statistics. The word "statistics" itself derives from "state," and early statistics accordingly dealt with public finances, debt and the economy's tax-paying capacity. The focus was on the ruler's fiscal ability to tax

the economy and to finance deficits (mainly in times of war) through public debt. From this primary concern rulers developed an interest in how to make their economies richer, so that they could generate more public revenue. This study was called Political Arithmetic. To the extent that laissez faire policies were advocated, it was as an economic plan to encourage economic growth and hence to enhance the ruler's power to tax.

Classical political economy developed largely out of the anti-royalist political ideology of the French Physiocrats and Adam Smith opposing government regulations and taxation. The emerging individualistic discipline came to define the statistical categories that shaped peoples' quantitative perception of economic phenomena.

Accounting formats require a theoretical conceptual apparatus. Categories must be defined before actual statistics can be collected. Any set of categories is itself a conceptual structure of the parts that make up the overall picture. Empirical statistics thus reflect theoretical accounting categories, for better or worse. To mathematize economic models using obsolete or dysfunctional concepts hardly can be said to be scientific, if we define science as the understanding of how the world actually works.

It is difficult to see where economies are generating wealth without dividing their activities into the classical categories of productive vs. unproductive, i.e., wealth-creating labor vs. economic overhead. Unfortunately, few economists remember the great debate over this issue that lasted for over a century.

A case in point is the GNP accounting format developed by Simon Kuznets. Its elements are neither inherent nor entirely objective. All activities are held to be productive, rather than some (such as crime prevention, medical treatment, environmental cleanup costs and warfare) being in the character of economic overhead. The production and sale of cigarettes is counted as output, and the medical treatment of smokers as yet more national product. Crime prevention is counted, but criminal earnings are not reflected in the national income statistics.

On the other hand, the national income and product accounts do not reflect the major way in which the largest sectors – real estate, mining, fuels, forestry, and even banking and finance – take their economic returns, namely, as capital gains. These sectors appear to be operating without earning any taxable profit, and their capital gains are not traced. The accumulation of real estate fortunes and stock-market gains have become the way in which wealthy people, and money managers and homeowners have built up their wealth. But this distinguishing financial phenomenon of the present decade – asset-price inflation – is lost from view by formats that treat capital gains as “external” to their model of how the economy works.

Today's national-income concept of saving gives the appearance that at the end of 1998 the domestic U.S. saving rate was a negative 2 percent of national income. Yet savings are being built up at an unprecedented rate. The low statistical rate of savings simply reflects the high degree to which new savings find their counterpart in debt (including loans to real estate and stock market speculators seeking the afore-mentioned capital gains), rather than being invested directly in the form of new tangible capital..

Meanwhile, a rising proportion of liquid savings is coming from the world's criminals and kleptocrats. Yet national income statistics neglect the economic role played by crime,

fraud and other illegal activities, despite their important economic role in generating many of society's major new fortunes. Only what is socially approved seems to be counted among society's shaping dynamics. (In the 1930s, when Roy Ovid Hall tried to include smuggling and other illicit activities in his balance of payments reports for the U.S. Department of Commerce, he was told sanctimoniously to desist from such behavior.)

What is not seen probably will not be taxed. In the United States, real estate and financial interests have actively discouraged collection of meaningful statistics on land-price gains. Congressmen and government bureaucrats have sought to rationalize the real estate gains of their major constituents and campaign contributors. Today's official statistics attribute so much of the price rise to the inflation of construction costs that in 1994 the value of all corporately-owned land in the United States was a negative \$4 billion! (The actual land value of U.S. real estate was over \$9 trillion at the time.)

These seemingly objective official statistics only distract attention from the reasons why so large a proportion of the economy's savings is being diverted away from new direct investment into real estate and stock market speculation. The party that suffers most is the government tax collector (and of course, labor, onto whose shoulders the tax burden is being shifted). In this respect, the aim of statistics has been inverted from their original function of informing the state how much can be taxed, to concealing taxable gains from users of modern national income statistics.

Problems, dilemmas and quandaries

Students are taught that economics is about making choices between scarce resources, but when resources really become scarce, economists tend to call it a crisis. Every such problem is stated in such a way as to imply a ready solution. Only marginal problems are recognized, not real dilemmas or quandaries. The idea of "scarcity" is just a "little bit" of scarcity – nothing that a slightly higher price won't cure (for output) or a bit lower wage (for employment problems).

Most economic models postulate that unemployment, for instance, can be solved by appropriate adjustments. "Trickle-down" theories of prosperity accordingly call for reductions in wage levels, while Keynesian theories call for or increased public spending to spur demand. Both approaches view savings as financing investment, which is assumed to take the form of tangible capital formation rather than a stock market or real estate bubble.

The important thing is that no structural problems are recognized, that is, no problems that cannot be solved by marginal quantitative adjustments in incomes, prices and wage levels, the money supply and the interest rate. It is in this respect that the mathematics of laissez faire monetarism are microeconomic, depicting the economy narrowly rather than broadly through the long-distance lens of historical development. The analysis may be valid as far as it goes, but it doesn't go very far, as it formulates problems marginally rather than with an eye for structural reform. Looking for small adjustments, such economics misses the degree to which the economy is losing its flexibility and is structurally rigidifying.

For public relations purposes, policy advocates present their "solutions" in a way that appears to make everyone better off. At least somebody's income is depicted as gaining, as if this automatically makes each inhabitant better off for living in a richer society (richer for

whom?). Every solution seems to be a free lunch for the economy at large. What are not recognized are situations in which economies collapse because critical break-even conditions cannot be met. When this occurs, economies face dilemmas or, even worse, quandaries.

A dilemma is a situation in which whatever path or “horn” one chooses, it involves pain and the sacrifice of well-being. Somebody or some social value must lose out. Obstacles present themselves on every side, and if the economy avoids being impaled on one horn, it will fall on the other.

It should be noted that falling on one's face is a state of equilibrium. Death is indeed the ultimate state of equilibrium. So is national austerity and its transfer of property from debtors to creditors, and from domestic governments to foreign institutional investors. But marginalist and monetarist equilibrium economics employ a mathematics that does not recognize the possibility of serious dilemmas developing, or of economies falling into quandaries whose financial and economic constraints prevent technological “real” potential from being realized. The preferred method of mathematical economics is general equilibrium analysis in an environment in which only small marginal disturbances are envisioned, not major structural problems or legal changes in the economic environment.

Economies fall into a quandary when the preconditions for a real solution are lacking. Debtors default on their payments, real estate prices fall, and asset prices for bonds and stocks also fall. Banks are unable to cover their deposit liabilities as the market value of their loan portfolios falls. The government is called on to bail them out by issuing bonds, and to pay the interest charges either by raising taxes or cutting back spending programs. The budget is balanced by selling public enterprises to foreign investors, whose remission of profits and dividends creates a balance-of-payments exchange drain that lowers the currency's exchange rate.

The situation becomes worse as the government borrows from the IMF and is forced to enact an anti-Keynesian austerity program. IMF riots break out, the government falls and a dictatorship oriented to serve global financial institutions is installed, friendly to the capital flight which strips the economy of its resources all the faster. Money-capital flees abroad and skilled labor emigrates as the economy shrinks, with no technological cause indicated in the policy models being applied.

Marginal analysis avoids dealing with such quandaries, and the quantum leaps necessary to escape. It selects a rather narrow set of phenomena (labor and materials costs, the interest rate, income and the pattern of demand) to produce models that show how economies might settle at an equilibrium point if left free from outside political interference. What is missed is the degree to which the world economy is being pushed further and further out of balance.

Mathematical economics as a distraction from economic reality

Is it sufficient atonement that so many economists upon retirement merely give an apology acknowledging that, yes, perhaps their economics have all really been just a waste of time? Upon leaving office, each new president of the American Economic Association gives the expected speech showing that he knows full well it is all just a game, and chastises his colleagues for not being more realistic. But do they not have some obligation to set things right? Or is the problem that they cannot see what has to be done?

Although academic economists hardly have shown themselves to be in favor of free markets in their own life, seeking the insulation of tenured positions and sinecures, they know well where their own money comes from. It comes from their ability to endorse creditor-oriented “free-market” policies and condemn government regulation. This premise has led their mathematical models to focus on how individuals can make money in our pecuniary society, but not how public entities can be better run.

The more libertarian the theory, the more authoritarian the economic pedagogy tends to be, precisely because its reasoning rests on specious foundations. In Pinochet’s Chile, Chicago economists showed their intellectual intolerance of a free market in economic ideas by closing the economics and social science departments of all universities save for the Catholic University in which they ruled unchallenged. Consensus was established not through reason, but by removing from the scene all who disagreed with their extremist policies.

Over the past generation, courses in mathematical economics have displaced the traditional courses in economic history and the history of economic thought that might have familiarized students with alternatives to today’s monetarist orthodoxy. Equilibrium theorizing has expunged a broad understanding of how economies work, and even the long dynamics of economic history, especially where the dynamics of debt are concerned.

The failure of mathematical economics to analyze our epoch’s financial strains suggests that its aim has not really been to explain the world as much as to censor perceptions that imply that the financial status quo is unstable and hence must be regulated. Such findings are not congenial to monetarists in their capacity as the political lobby for the financial sector. By ignoring the problems caused by the growing debt overhead, monetarist orthodoxy has removed economic planning from the democratic political process and placed it in the hands of financial technocrats. The effect has been to create a new (and highly centralized) elitist planning in the world’s finance ministries and central banks.

This poses the question of whether the most important phenomena and dynamics are being mathematized. Do today’s general equilibrium, monetarist and national income and product models correlate the appropriate phenomena, or do they omit key dynamics?

To contemporary economists, mathematics has become the badge of scientific method. But is the use of mathematics scientific ipso facto? To what extent may it be methodologically abused?

Many economists are trained in calculus and higher mathematics without feeling much need to test their theories quantitatively. They tend to use mathematics less as an empirical measuring tool than as an expository language, or simply as a decoration to give a seemingly scientific veneer to their policy prescriptions. Mathematics rarely is used to analyze statistically the financial tendencies working to polarize wealth and income, or how economies change their shape as they grow.

This shape is distorted by the inherent tendency for financial claims – bonds, bank loans and other financial securities – to grow more rapidly than the economy’s ability to carry them, much less to pay them off. The volume of such claims tends to grow by purely mathematical principles of self-expansion independently from underlying economic trends in wealth and income, and hence from the ability of debtors to pay. Savers/creditors load

tangible capital assets and real estate down with debts that in many cases are not repayable except by transferring ownership to creditors. This transfer changes the economy's structural and, in due course, political shape.

But today's monetarist models foster an illusion that economies can carry any given volume of debt without having to change their structure, e.g., their pattern of wealth ownership. Self-equilibrating shifts in incomes and prices are assumed to enable a debt overhead of any given size to be paid. This approach reduces the debt problem to one of the degree to which taxes must be raised to carry the national debt, and to which businesses and consumers must cut back their investment and consumption to service their own debts and to pay these taxes. The task of economic regulation is reduced to one merely of setting an appropriate interest rate to reflect profit rates and consumer time-preference patterns. An array of measures is selected from the overall credit supply (or what is the same thing, debt securities) to represent "money," which then is correlated with changes in goods and service prices, but not with prices for capital assets – bonds, stocks and real estate.

Such economic models all but ignore rent-seeking exploitation and the proverbial free lunch, yet real-world economics is all about obtaining a free lunch. That is why one seeks to become a political insider, after all. Yet such considerations are deemed to transcend the narrow boundaries of economics. These boundaries seem to have been narrowed precisely so as to limit the recognized "problems" only that limited part of economic life that can be mathematized, and indeed, mathematized without involving any changes in the social environment.

The resulting logical constructs of modern mathematical economics were not created without some degree of protest. Already a generation ago F. J. Dyson (1964:132f.) complained that "Mathematical intuition is more often conservative than revolutionary, more often hampering than liberating." Citing Ernst Mach's observation that "The power of mathematics rests on its evasion of all unnecessary thought and on its wonderful saving of mental operations," he worried that too much real-world complexity might be discarded.

Certainly the mathematical "badge of science" has distracted attention from the tendency for economies to veer out of balance.² The problem is that to achieve a single determinate, stable solution to any given problem (always posed as a "disturbance" to a pre-existing balance), general equilibrium theorists are driven to assume diminishing returns and diminishing marginal utility in order to "close the system." Such an approach is not a passive tool in the sense of an X-ray machine revealing the essential skeleton of reality. It is more a distorting mirror, in the sense that it formulates problems in a way that makes them appear amenable to being solved with a single determinate solution.

This singular solution is achieved by postulating a production function based on falling productivity as more labor is applied to capital and land. As for consumption, each added unit is assumed to give less and less satisfaction, so that more revenue is saved as economies become wealthier. This means a falling marginal utility of income: The more one earns, the less one feels a need to earn more. This is fortunate, because most models also assume diminishing returns to capital, which is assumed to be invested at falling profit rates as unemployment declines. Income and wealth thus are portrayed as tapering off, not as soaring and polarizing until a financial collapse point, ecological limit or other kind of crisis is

² I discuss this problem in *Trade, Development and Foreign Debt: A History of Theories of Convergence and Polarization in the World Economy* (London: Pluto Press, 2 vols., 1993).

reached. (It should be noted that the above variables all but ignore the economy's growing debt overhead relative to its assets, and the associated flow of interest.)

A particular kind of mathematical methodology thus has come to determine what is selected for study, recognizing only problems that have a single determinate mathematical solution reached by or what systems analysts call negative feedback. By contrast, a positive feedback model would depict an economic polarization that has an indeterminate number of possible resolutions as conflicting trends will intersect, forcing something to give. At such points the economic problem becomes essentially political. This is how the real world operates, but to analyze it would drive economists into an unstable universe in which the future is up for grabs. Such a body of study is deemed unscientific (or at least, uneconomic) precisely because it cannot be mathematized without becoming political.

The hypothetical “parallel universe” approach to economics

Marx (Capital, I:14) defined political economy's task as being “to lay bare the economic laws of motion of modern society.” By contrast, equilibrium theory describes how market relations might settle at a stable resting point if only the world were something other than it is. An economic universe is envisioned that is not in political motion and that is not polarizing. This hypothetical world is characterized by automatic self-adjusting mechanisms, so that active government policies appear unnecessary. It is a world free of the financial dynamics of debt growing at compound rates of interest.

One must suspect a political reason for the aversion felt by economic model-builders to the real world's financial dynamics. To acknowledge their tendency to create structural problems would imply just what it did in Sumerian and Babylonian times: The desired economic balance must be restored by fiat, that is, from outside the economic system. Neglect of the debt overhead therefore is a prerequisite for economic models to generate laissez faire conclusions. A “what if” universe is postulated – the kind of world that might exist if finance capital were not a problem. After all, what is not quantified is less likely to be perceived and regulated.

Economies are supposed to be able to pay their debts simply by saving more. The working assumption is that saving is invested productively, not in creating yet new debts. Sufficient saving and investment thus are assumed to enable any society's growth in debt to proceed ad infinitum, as creditors are assumed to invest their earnings to further expand output and raise living standards. Any increase in saving is deemed to be good, regardless of whether it is invested productively or parasitically, physically or financially. Yet such saving in reality consists not only of direct investment in tangible capital formation. It also takes the form of stock market investment and real estate speculation in the ownership of assets already in existence, merely bidding up their price.

What is neglected is today's most characteristic pattern of lending: the investment of savings in the form of financial claims on wealth – bonds, mortgages and bank loans. Channeling savings in this way enlarges the volume of financial claims attached to existing productive assets in an exponentially expanding process. This debt overhead extracts interest charges which are recycled into yet new loans rather than financing new means of production to help economies “grow their way out of debt.”

In recent decades such debt claims have grown more rapidly than tangible investment in factories and farms, buildings and homes, transport and power facilities, communications and other infrastructure. Economies have been obliged to pay their debts by cutting back new research, development and new physical reinvestment. This is the essence of IMF austerity plans, in which the currency is “stabilized” by further international borrowing on terms that destabilize the economy at large.

Cutbacks in long-term investment also are the product of corporate raids financed by high-interest junk bonds. The debts created by businesses, consumers and national economies cutting back their long-term direct investment leaves these entities even less able to carry their mounting debt burden. They are forced to live even more in the short run. Interest rates rise as debt-strapped economies become riskier, for as Adam Smith observed, “interest rates usually are highest in countries going fastest to ruin.” And as interest rates rise, yet more money is shifted away from direct investment into lending at interest, until the system is torn apart from within. Capital flees abroad, the currency falls and unemployment rises.

No doubt a point must come at which the burden grows so large that it shakes the public out of its hope that matters somehow will return to normal. In the end the global economy must be obliged to do what Adam Smith said every debtor government historically was obliged to do: let its debts go. Now that global debts are becoming dollarized, however, it is less possible for a national economies simply to inflate their way out of debt so as to make what Smith called a “pretended payment.” The only options are default or outright repudiation. But it has become academic fashion to imagine alternative “virtual realities” in which no such debt problems exist.

This turns economics into something akin to science fiction. The literary critic Colin Wilson has observed that in evaluating such fiction, the proper question to be asked is, what if the world were really like this? What does such speculation teach us?

Let us ask that question of today’s monetarist fantasies. Fearing government regulation to be corrosive, monetarism warns that governments should not act to shape the economic environment. In particular they should not seek to regulate financial markets, for that would kill the goose that lays the golden eggs.

But is this Planet Earth, or a hypothetical world in which the charging of interest either was never invented, or was banned long ago? Such theorizing may be useful as an exercise in “alternative history” as it might have evolved in some parallel universe. But monetarist mathematics are not those of earthly reality. The economist’s idea of science itself appears otherworldly. Not being amenable to a singular determinate mathematical solution, the problem of analyzing the incompatibility between the growth in debt claims and the economy’s ability to pay is deemed unscientific. In this respect the way in which modern economists use mathematics diverges from what a scientific empirical economics would be.

The main criterion for success in modern economics is its ability to maintain internal consistency in the assumptions being made. As in science fiction, the trick is to convince readers to suspend their disbelief in these assumptions. The audience is asked to take seriously problems posed in terms of a universe in which money is spent on the production of current goods and services or saved, but not lent out to create a debt problem. Students are asked to believe that debts will not tend to grow beyond the means to pay, and that any

disturbance in the economic balance will be met by automatic stabilizing responses rather than requiring action from outside the market economy. In sum, to believe that the growth in debt overhead is not a serious problem, it is necessary to suspend our natural disbelief in the fiction that shifting the money supply can steer interest rates to a precise level that will keep the economy's debt and credit, new saving and direct investment in balance.

Economics vs. the Natural Sciences: The methodology of “as if”

What is even more remarkable is the idea that economic assumptions need not have any relationship to reality at all. This attitude is largely responsible for having turned economics into a mock-science, and explains its rather odd use of mathematics. Typical of the modern attitude is the textbook *Microeconomics* (1964:5) by William Vickery, long-time chairman of Columbia University's economics department, 1992-93 president of the American Economic Association and winner of the 1997 Nobel Economics Prize. Prof. Vickery informs his students that “pure theory” need be nothing more than a string of tautologies:

Economic theory proper, indeed, is nothing more than a system of logical relations between certain sets of assumptions and the conclusions derived from them. The propositions of economic theory are derived by logical reasoning from these assumptions in exactly the same way as the theorems of geometry are derived from the axioms upon which the system is built.

The validity of a theory proper does not depend on the correspondence or lack of it between the assumptions of the theory or its conclusions and observations in the real world. A theory as an internally consistent system is valid if the conclusions follow logically from its premises, and the fact that neither the premises nor the conclusions correspond to reality may show that the theory is not very useful, but does not invalidate it. In any pure theory, all propositions are essentially tautological, in the sense that the results are implicit in the assumptions made. [*Italics added.*]

This disdain for empirical validity is not found in the physical sciences. Ptolemaic astronomers were able to mathematize models of a solar system revolving around the earth rather than the sun. The phlogiston theory of combustion was logical and even internally consistent, as is astrology, former queen of the medieval sciences. But these theories no longer are taught, because they were seen to be built on erroneous assumptions. Why strive to be logically consistent if one's working hypotheses and axioms are misleading in the first place?

Lacking empirical testing and measurement, economics narrows into a mock-science of abstract assumptions without much regard as to whether its axioms are historically grounded. The self-congratulatory language used by economists euphemizes the resulting contrast between economics and science. “Pure” theorists are depicted as drawing “heroic” generalities, that is, banal simplicities presented in a mathematical mode called “elegant” rather than simply air-headed. To the extent that the discipline uses mathematics, the spirit is closer to numerology than to the natural sciences. Indeed, astrology also is highly technical and mathematical, and like economics it deals with forecasting. But its respectability has not lasted. Is this to be the destiny of today's economic orthodoxy?

At first glance the sophistical tendency would appear to find an antecedent in John Stuart Mill's 1844 essay "On the Definition of Political Economy; and on the Method of Investigation Proper to it":

In the definition which we have attempted to frame of the science of Political Economy, we have characterized it as essentially an abstract science, and its method as the method a priori. . . . Political Economy, therefore, reasons from assumed premises – from premises which might be totally without foundation in fact, and which are not pretended to be universally in accordance with it. The conclusions of Political Economy, consequently, like those of geometry, are only true, as the common phrase is, in the abstract; that is, they are only true under certain suppositions, in which none but general causes – causes common to the whole class of cases under consideration – are taken into account.

Mill's objective here was to isolate the principles appropriate to each dimension of social science, so as to avoid the confusion that resulted from intermixing them. Recognizing that people and societies were multidimensional, his logical method sought to segregate the various dimensions of social existence layer by layer, so as to deal separately with the economic pursuit of wealth, the political policy arena, and the respective subject matters of the other social sciences then emerging. This was not logic for its own sake, but for the sake of a systematic analysis proceeding step by step.

However, post-classical equilibrium economists have pursued logical consistency as an objective in itself. Disembodied from reference to how the real world operates, logic has been turned into a game. Rather than forecasting how the world will respond to the strains now building up, economists project existing trends in a political and social environment that is assumed to be unchanging. When this becomes a condition of the mathematical analysis itself, the idea of economics merely as "logical consistency" plays a much less logical role than it did in Mill's day.

The problems inherent in this approach are typified by Nobel Prizewinner Paul Samuelson's conclusion of his famous article on "The Gains from Trade" (1939:205 [1966 II: 782]): "In pointing out the consequences of a set of abstract assumptions, one need not be committed unduly as to the relation between reality and these assumptions." This attitude did not deter him from drawing policy conclusions affecting the material world in which real people live. He defended his Factor-Price Equalization Theorem (which states that under a regime of free trade, wages and profits will tend to equalize throughout the global economy) by claiming (1949:182) simply that:

Our problem is . . . a purely logical one. Is 'If H, then inevitably C' a correct statement? The issue is not whether C (factor-price equalization) will actually hold; nor even whether H (the hypothesis) is a valid empirical generalization. It is whether C can fail to be true when H is assumed to be true. Being a logical question, it admits of only one answer, either the theorem is true or false.

Contrasting this theorem with the real-world tendency of international incomes and wages to polarize rather than equalize, Gerald Meier (1968:227) observes: "It need not . . . come with any surprise that factor returns have been so different . . . when in short, the restrictive conditions of the theorem have been so clearly violated in reality." But is it not sophistical to speak of reality violating a theory? Theory violates reality, not the other way around.

If one must be logical, why not start with realistic rather than merely hypothetical assumptions? The answer, I am afraid, is that realistic assumptions do not lead to the policy conclusions pre-selected by economic ideologues. This would explain why Samuelson-type trade theories continue to treat the international economy as a thermodynamic system to be analyzed by entropy theory, whereas the real-life world economy is an expanding system in which labor migrates and capital flows from low-income “cold” economies to high-income “hot” ones.

Wrong-headedness rarely is accidental; there usually is a self-interested policy motive. In his essay on “How Scientific are the Social Sciences?” Gunnar Myrdal (1956:336) observes: “Facts do not organize themselves into systematic knowledge, except from a point of view. This point of view amounts to a theory.” He emphasizes that “contrary to widely held opinions, not only the practical conclusions form a scientific analysis, but this analysis itself depends necessarily on value premises.”

What modern economics lacks is an epistemological dimension, the capacity for self-reflection so as to perceive the extent to which economic theorizing tends to be shaped by narrow self-interest. There is a bankers'-eye view of the world, as well as the perspective of financial manipulators, industrialists and so forth. It was the strength of Marxism to deal with economic theorizing critically on this level. Perceiving class biases, Marx viewed economic theory critically as apologetics for advocates of one policy or the other, a rhetorical system pleading for special interests. The 19th-century American protectionists likewise pointed to international biases between lead nations and latecomers regarding free trade theorizing. Today, a self-centered monetarist world view serves the global financial interests that have emerged to dominate the “real” economy. To understand its blind spots, an awareness of the self-serving motivations underlying Chicago School monetarism is necessary.

We are entitled to ask whose interests are served when economists claim that their assumptions need have no connection with reality, yet then proceed to make policy recommendations. Why do so many economics departments teach the assumptions of, say, the Heckscher-Ohlin-Samuelson theory of international equilibrium rather than starting from more realistic assumptions capable of explaining the real world's financial and economic polarization?

The products of low-wage economies exchange for those of better-paid labor for a number of reasons. Productivity differences have long been cited, but another factor also is at work: chronic depreciation of the currencies of low-wage countries as a result of the capital transfers they make in a vain attempt to service their foreign debts. In the end these debts will prove unpayable as they mount up at interest beyond the economic means to pay. The austerity programs used by the IMF and other creditor institutions are defended by models that conceal this mathematical inevitability. By depriving debtor economies of capital, educational programs and other basic infrastructure, austerity makes it harder for indebted countries to catch up. Matters are aggravated further by privatization programs that serve in effect as voluntary and self-imposed forfeitures of public assets to foreign and domestic creditors.

Creating a statistical profile of financial relationships is impaired by the fact that when wealthy individuals operate out of offshore banking centers, they appear nominally as “foreigners” in their own countries. Yet economists have constructed models in which such offshore havens, foreign debt, land values, and the composition of savings and debt appear

as statistical black holes. Such omissions help these models serve as fairy tales to rationalize today's untenable status quo. Everyone is depicted as ending up in a stable and even equitable equilibrium.

A striking analogy of the impossibility of the world's financial savings continuing to grow at compound interest ad infinitum is pointed out by Edward O. Wilson, in *Consilience* (New York: 1998:313), citing "the arithmetical riddle of the lily pond. A lily pod is placed in a pond. Each day thereafter the pod and then all its descendants double. On the thirtieth day the pond is covered completely by lily pods, which can grow no more." He then asks, "On which day was the pond half full and half empty? The twenty-ninth day."

By the time people feel obliged to argue over whether the economic glass is half empty or half full, we are on the brink of the Last Days. To financial optimists, it may be pointed out that growth in the economy's savings is simultaneously growth in its debt overhead. As debts grow, less and less saving is recycled into tangible direct investment. This may be good news for stock market and real estate speculators as savings are used to inflate the stock market and real estate bubble. But in the end the economy shrinks precisely because this "faux wealth" serves as a distraction, drawing savings away from direct investment in tangible capital formation.

What is lacking in the models preferred by vested interests is the use of mathematics to project the point at which trends intersect. At these crisis points economic forces do not have an inherently economic "solution," for the response must be political, by forcing a policy conclusion to be made.

A relevant mathematical economics would include an analysis of how wealth is turned into political power by campaign contributions, ownership of the popular press and media, and the subsidy of education and culture. These public relations for the vested interests promote "solutions" to crises that increasingly favor these interests as the economy polarizes. The analysis of such phenomena is dismissed by general equilibrium theorizing that assumes a constant and unchanging political environment. Changes in laws are deemed to be exogenous to the subject matter of economics proper. The word "exogenous" is heard so often these days (along with "externalities") that one wonders just what is left in economics proper. At issue for a more relevant empirical economics are the dynamics of social history, political institutions and the environment, not just the mechanics of supply and demand.

Governments tend to become the debtors of last resort. The culmination of this process is found in modern financial bailouts of private-sector ("socializing the losses" to savers). So we are brought back to Adam Smith's maxim that no government has ever repaid its debts. This is why nobody's savings have mounted up to become the equivalent of a solid sphere of gold extending from the sun out beyond the orbit of Saturn. The 12th-century accumulation of wealth of the Knights Templar was seized by Philip the Fair, who dissipated it in warfare. The wealth of the large Italian banking families subsequently was lost in loans to Britain's kings, who dissipated the proceeds in waging their perpetual wars with France. Most early debts were wiped out by wars, and by their inflationary aftermath in more recent times. Other fortunes were lost through confiscation, and bad judgment such as often is found with risky foreign investment. Some fortunes were dissipated by one's heirs or turned into land acquisition and other prestige asset ownership.

The relevant point for the social historian is that financial fortunes cannot continue to accumulate in the aggregate, precisely because the mathematics of compound interest are

economically untenable. Throughout history it has become increasingly difficult to keep such fortunes viable. Money has been plowed back into increasingly risky new loans in ways that may impoverish and polarize the surrounding society to the extent that they find no counterpart in new tangible investment enhancing the economy's means to pay.

The moral of all this is that there are different kinds of mathematical economics. What the Cornell philosopher E. A. Burttt referred to the metaphysical foundation of modern physical science has become a politically tinged metaphysics in the hands of monetarists and neoclassical economists. Just how far their non-quantitative spirit diverges from the origins of economics is reflected in the closing words of David Hume's *Enquiry Concerning Human Understanding*:

When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion.

Mathematizing the economy's monetary and financial dimension

Not all trends proceed at the same rate. At some point certain major trends must intersect, and something must give. This is the definition of a crisis – literally a crossing or intersection of trends where the political structure must accommodate itself to promote one trend or the other.

The example with which most people are familiar was made famous by Malthus, who argued that population growth tended mathematically to grow in excess of the economy's ability to supply food. The result, he concluded, must be starvation, wars or other "natural checks," or else a voluntary limit to population growth. Since the late 1960s the Club of Rome has warned that modern resource-consuming trends are unsustainable in light of the world's more limited growth in the supply of fuels and minerals, fresh water and air.

What these warnings achieved was to bring to peoples' attention the fact that whereas most mathematical economics has focused on foreseeable, narrowly determined consequences, over time the indirect "external" economies of commercial behavior tend to be larger than these direct economies. But they also have tended to evade mathematical and statistical treatment.³

The limits-to-growth warnings proved to be premature a generation ago, but one cannot say the same thing for the growth of debts/savings at compound interest year after year. Any statistician plotting the growth of an economy's debt quickly finds that existing trends are not sustainable. The growth of debt has become the major cause of economic

³ As early as 1849, Daniel Lee attempted to quantify the environmental depletion suffered by raw-materials exporters in his agricultural supplement to the U.S. Patent Office report. This "external" effect of foreign trade became an essential component of E. Peshine Smith's 1853 *Manual of Political Economy* (see Hudson 1975 for a discussion). Carey's Law of Association postulated that economies grow more productive at the intensive margin as they become more dense. But free traders have ignored these broad consequences, and used rhetorical invective censorially to dismiss them as "externalities."

downturns, austerity and financial polarization, creating financial crashes and, in severe cases, social crises.

Debt may be viewed as financial pollution, entailing major cleanup costs. Public policy is needed to cope with the incompatibility between the inability of consumers, businesses and governments to pay their stipulated debt service except by transferring an intolerable proportion of their assets to creditors. These transfers are done through bankruptcy proceedings, the liquidation of corporate or personal assets under distress conditions and (in the case of government debts) privatization selloffs.

The indicated solution is to limit the proliferation of debt by borrowing less, for instance, and to channel savings more into equities and tangible investment than into debt-claims on economic output. If present trends continue, it will be necessary to write off debts when they become too overgrown. This entails writing off the savings that have been invested in debt-securities – and this has now become the major political problem of our epoch. Yet monetarists – the very people who claim to specialize in financial science – see this crisis as an anomaly rather than a natural consequence of pursuing Chicago School policies. They urge economies to submit to financial austerity by sanctifying debts rather than saving themselves and their labor force at the expense of debt and savings trends.

An enormous volume of statistical research has been produced to analyze money and prices, and their links to interest rates and hence to the prices of bonds and other financial assets. When examining such research one should bear in mind that monetarism focuses on only part of the credit supply: bank deposits and “high-powered money” in the form of reserves invested in government debt. In reality the economy’s entire range of securities and other assets is available to be monetized or, more literally, creditized. The potential credit supply consists of the volume of marketable securities and debts outstanding (which their holders can collateralize as the basis for yet more credit) plus equity in “real” assets, that is, the portion of tangible asset values to which debts have not yet been attached.

Most money and credit is spent on transactions in financial securities, not on “real” goods and services. Each day the equivalent of almost an entire year’s national income passes through the New York Clearing House to buy stocks, bonds, mortgages and other bank loans. It thus is misleading to correlate the money supply only to transactions in current goods and services (“national product”). Such correlation analysis is not necessarily causal in any event. It is all too easy to mistake cause for effect. It therefore would be misleading to leave out of account the pricing of financial assets (bonds, stocks, and marketable debt securities such as mortgages, packaged consumer loans and so forth) and of the tangible assets (land and buildings, factories and equipment) on which this credit is spent. Nonetheless, these asset transactions seem to have disappeared from statistical sight as the focal point of monetarist analysis has shifted away from wealth and assets to consumer spending. For instance, despite the fact that the major asset for most families (at least in America and Britain) is the home in which they live, no adequate statistical time series for land and buildings is collected or published. In many cases one is obliged to estimate real estate values by looking at the growth of mortgage credit as a minimal proxy.

The very idea of what constitutes money remains in a state of confusion. To describe it simply as a set of counters neglects the fact that bank deposits and savings do not take the form of money as an abstract asset in itself, like gold or silver bullion. Rather, currency and bank money are debt/credit instruments. One person’s saving usually finds its counterpart in

other peoples' debts. If an individual or company deposits money in a bank or savings and loan association, a large portion of the deposit will be lent out as mortgage credit. Or, a saver may put money in a money market fund that channels its inflows into government bonds and corporate IOUs. The definition of "money" thus needs to be grounded in the overall superstructure of credit and debt.

An expanding superstructure of financial claims for payment grows and attaches itself to the economy's income and assets. These claims find their counterpart in liabilities on the opposite side of the financial system's balance sheet (e.g., the debts owed by the banks to their depositors, by insurance companies to their policy-holders, and so forth). They are securitized by the issue of bonds, mortgages and other IOUs. They represent the savings of people and the institutions through which people hold their savings, including pension fund contributions, Social Security, bank loan portfolios, insurance company reserves, and so forth. All these savings/debts must be paid out of future revenue.

Financial securities are not simply a mirror image of "real" economic activity, the "other" side of the balance sheet of assets and debts. They are a claim for payment that may be equal to, less than or greater than the economy's ability pay. When it comes to deciding what must give, the economy or its financial superstructure, the latter turns out to be more powerful – and hence, more "real" – than the economy's tangible flows of output and income. Entire economies are being crucified on the altar of debt and subjected to austerity and its foregone economic development. On this basis financial institutions have become the major economic planners of our epoch, usurping the former role of governments. Yet monetarists profess to oppose such centralized planning. What they evidently oppose is planning by elected officials with a broader set of social concerns than those of monetarist technocrats.

At the microeconomic financial level it seems wise to maximize one's return on equity by indulging in debt pyramiding. But for the economy as a whole this debt accumulates interest. Savings are lent out to finance this debt, as well as that of business and government. Wealthier economies tend to become the most highly indebted precisely because they have the most savings. Interest and amortization payments to savers tend to increase beyond the economy's overall ability to pay as debt service absorbs more and more personal disposable income and corporate cash flow. This constrains personal and business spending, creating the phenomenon of debt deflation. Yet no mathematical models depicting this process has been deemed acceptable by today's monetarist orthodoxy.

If there is any planning to be done with regard to the banking and financial system, the central issue of mathematical economics as applied to the financial sector should focus on how economies should cope with the tendency for debts to mount up until a crisis erupts? Monetarist models deny that any practical debt limit exists. Economies are supposed to "solve" their debt problem simply by succumbing to austerity, which is presented as the solution to the problem rather than a sign of having entered the financially moribund stage.

Perception of the debt-overhead problem is concealed by the characteristic feature of today's finance capitalism: an asset-price inflation of property markets, that is, rising land and stock market prices. This asset-price inflation goes hand in hand with debt deflation of the "real" goods-and-service producing economy. The failure to model this dichotomized economy is not the fault of mathematical economics as such, but reflects the constrained reasoning at the hands of the monetarist school that has monopolized economics departments in the world's universities.

Monetarist models serve largely to distract popular attention from the extent to which more wealth is being generated more by the asset-price inflation – than by building new factories to employ more people. What has happened is that the classical distinction between productive and unproductive credit has been replaced by an ostensibly value-free theory claiming that money earned in one way is just as economically worth while as money earned in any other way. This is supposed to be the case regardless of its consequences for employment, national prosperity or other effects held to be extraneous to purely financial concerns.

“Hard” facts tend to be the preoccupation of technocratic economics, whose predictions focus on the short run, that is, on marginal changes rather than structural transformations. But economic truth involves a much broader evaluation of society and even culture, as economic theory itself may be viewed as an exercise in cultural history. To the extent that “free market” monetarist economics has now become the world’s de facto form of global planning, it threatens to bring about a poorer and more unfree world. If its models and their euphemisms do not make it clear just why this is the case, the reason is a politically motivated blind spot. Monetarist planning subjects the world to austerity to pay debts to a creditor class absorbing a growing proportion of the world’s wealth, leading to economic polarization.

It is a world succumbing to economic collapse, heating up financially, ecologically and geographically to a critical mass. It also is heating up militarily as local provinces seek to secede from governments that are being turned into collection agents for global lenders. (Yugoslavia is the most notorious recent example.)

Trying to sell today’s road to financial serfdom is much like trying to sell cigarettes. Popular fears of coughing, lung cancer, and other adverse effects are countered by advertising promises that cigarettes actually freshen the breath and are associated with vigorous outdoor life as epitomized by the Marlboro Man. Scientists are hired to provide a confusing flood of statistical analysis to dispute claims about smoking being causally associated with ill health, pretending that it is all just a coincidence. Neither the personal victims of smoking nor the public health agencies that must defray many of their medical costs are able to pierce the veil of such professionalized confusion.

In a similar way economists have been mobilized to serve creditor interests. Many of these hired guns act as public relations lobbies for global financial interests, often by joining think tanks that serve as advertising agencies to promote these interests. Their assigned task is to depict austerity as laying a sound foundation for future growth rather than promoting a self-feeding collapse. As poverty intensifies, governments are urged to bail out the economy’s savers at taxpayer expense, cutting back wages even while shifting the tax burden from property onto labor. When the promised prosperity fails to materialize, the austerity lobby argues that the problem is simply that monetarist policies have not been followed intensively enough to “work their magic.” But like most magic, the purported “magic of the marketplace” is merely a trick performed by model-builders so deftly that most peoples’ eyes cannot quite follow what is happening.

As Eric Reinert has asked, if mathematical economics as practiced by the monetarists should face a product liability suit, what would be the appropriate judgment? If today’s Chicago School orthodoxy were to be tested by reality, it would flunk the test. Jobs have been downsized. Lives have been shortened and the quality of life has declined as

Chicago graduates and their clones have monopolized the staffs of national Finance Ministries, Treasury departments, central banks and the leading international financial institutions, using their positions to censor alternative economic analysis.

The crisis created between the economy's growth in debt and its ability to pay should be the starting point of mathematical economics.

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What is (wrong with) economic theory?¹

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Prologue

Following the greatest economic depression since the 1930s, the grand old man of modern economic growth theory, Nobel laureate Robert Solow, on July 20, 2010, gave a prepared statement on “Building a Science of Economics for the Real World” for a hearing in the U. S. Congress. According to Solow modern macroeconomics has not only failed at solving present economic and financial problems, but is “bound” to fail. Building dynamically stochastic general equilibrium models (DSGE) on “assuming the economy populated by a representative agent” - consisting of “one single combination worker-owner-consumer-everything-else who plans ahead carefully and lives forever” – do not pass “the smell test: does this really make sense?” One cannot but concur in Solow’s surmise that a thoughtful person “faced with the thought that economic policy was being pursued on this basis, might reasonably wonder what planet he or she is on.”

We will get back to the “representative agent model” below. But although it is one of the main reasons for the deficiencies in modern (macro)economic theory, it is far from the only modeling assumption that does not pass the smell taste. In fact in this essay it will be argued that modern orthodox (neoclassical) economic theory *in general* does not pass the smell test at all.

The recent economic crisis and the fact that orthodox economic theory has had next to nothing to contribute in understanding it, shows that neoclassical economics - in Lakatosian terms - is a degenerative research program in dire need of replacement.

1. Introduction

Tradition has it that theories are carriers of knowledge about real world target systems and that models are of little consequence in this regard. It is no longer so. Especially not in economics (in this essay “economics” should be read as “orthodox, mainstream, neoclassical economics”) where “the model is the message” has been the slogan for at least half a century. Today the models are the carriers of knowledge in the realm of “the queen of social sciences”. The distinction formerly made within science theory between theories, as a collection of descriptive existential and relational statements about what is in the world, and models as simplified representations of a particular domain of reality, is definitely blurred in contemporary economics. Both theories and models are (partial) representations of certain properties considered important to emphasis for certain aims. In most contexts within a largely quantifiable science that insists on the exclusive use of methods of mathematical deductivist reasoning – as economics – “theory” and “model” are substitutable.

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On this general view of the nature of economic theory then, a ‘theory’ is not a collection of assertions about the behavior of the actual economy but rather an explicit set of instructions for building a parallel or analogue system – a mechanical, imitation economy. A ‘good’ model, from this point of view, will not be exactly more ‘real’ than a poor one, but will provide better imitations [Lucas 1981:272].

But economic theory has not been especially successful – not even by its own criteria of delivering explanations and understanding of real world economic systems.

Modern economics is sick. Economics has increasingly become an intellectual game played for its own sake and not for its practical consequences for understanding the economic world. Economists have converted the subject into a sort of social mathematics in which analytical rigor is everything and practical relevance is nothing [Blaug 1997:3].

So how can it be this mathematical deductivist project of economic theory prevails?

[P]robably the most compelling reason why the emphasis on mathematical deductive reasoning is retained, despite everything, is that it facilitates a second orientation that is conceptually separate. This is a concern with forecasting or *prediction* ... The possibility of successful prediction relies on the occurrence of closed systems, those in which event regularities occur. And these, of course, are also precisely the required conditions for mathematical deductive reasoning to be practically useful, conditions therefore effectively presupposed by the (ubiquitous) reliance upon such methods [Bigo 2008:534].

Friedman (1953:15) claimed - rather oddly - that the descriptive realism of a theory has to be judged by its ability to yield “sufficiently accurate predictions”, but as Sen (2008:627) notices, to check whether a prediction actually occurs, “there surely must be some idea of descriptive accuracy ... and this has to come before the concept of predictive accuracy can be entertained.” Prediction depends on description, not the other way round.

One of the major problems of economics, even today, is to establish an empirical discipline that connects our theories and models to the actual world we live in. In that perspective I think it’s necessary to replace both the theory and methodology of the predominant neoclassical paradigm. Giving up the neoclassical creed doesn’t mean that we’ll have complete theoretical chaos.

The essence of neoclassical economic theory is its exclusive use of a deductivist Euclidean methodology. A methodology – which Arnsperger & Varoufakis [2006:12] calls the neoclassical meta-axioms of “methodological individualism, methodological instrumentalism and methodological equilibration” – that is more or less imposed as *constituting* economics, and, usually, without a smack of argument. Hopefully this essay will manage to convey the need for an articulate feasible alternative – an alternative grounded on a relevant and realist open-systems ontology and a non-axiomatic methodology where social atomism and closures are treated as far from ubiquitous.

At best unhelpful, if not outright harmful, present day economic theory has come to way’s end [cf. Pålsson Syll 2010:145-48]. We need to shunt the train of economics onto a relevant and realist track. This could be done with the help of some under-labouring by critical realism and the methodological ideas presented in the works of the philosophers and economists such as for example Nancy Cartwright, John Maynard Keynes, Tony Lawson, Peter Lipton and Uskali Mäki.

But before dwelling on that theme, allow me to start by offering some comments on economics and the basic conditions for its feasibility from the perspective of methodology and science theory – in order that I can return later to the future of economics.

I'll argue from a realist perspective for a science directed towards finding deep structural explanations and shed light on why standard economic analysis, founded on unrealistic and reductionist premises, is frequently found to have a rather limited applicability.

There is a tendency in mainstream economics to generalize its findings, as though the theoretical *model* applies to all societies at all times. I would argue that a critical realist perspective can work as a healthy antidote to over-generalized and a-historical economics.

One of the most important tasks of social sciences is to explain the events, processes, and structures that take place and act in society. In a time when scientific relativism (social constructivism, postmodernism, de-constructivism etc) is expanding, it's important to guard against reducing science to a pure discursive level [cf Pålsson Syll 2005]. We have to maintain the Enlightenment tradition of thinking of reality as principally independent of our views of it and of the main task of science as studying the structure of this reality. Perhaps the most important contribution a researcher can make is to reveal what this reality actually looks like. This is after all the object of science.

Science is made possible by the fact that there are structures that are durable and independent of our knowledge or beliefs about them. There exists a reality beyond our theories and concepts of it. It is this independent reality that is in some senses dealt with by our theories. Contrary to positivism, I cannot see that the main task of science is to detect event-regularities between observed facts. Rather, the task must be conceived as identifying the underlying structure and forces that produce the observed events.

The problem with positivist social science is not that it gives the wrong answers, but rather that it does not, in a strict sense, give any answers at all. Its explanatory models presuppose that the social reality is "closed". Since social reality is fundamentally "open," models of that kind cannot explain what happens in such a universe.

In face of the kind of methodological individualism and rational choice theory that dominate positivist social science we have to admit that even if knowledge of the aspirations and intentions of individuals could be considered to be *necessary* prerequisites for providing explanations of social events, this knowledge is far from *sufficient*. Even the most elementary "rational" actions presuppose the existence of social forms that are irreducible to the intentions of individuals.

The overarching flaw with methodological individualism and rational choice theory, in their different guises, is basically that they reduce social explanations to purportedly individual characteristics. However, many of the characteristics and actions of the individual originate in and are only made possible through society and its relations. Even though society is not an individual following his own volition, and the individual is not an entity given outside of society, the actor and the structure have to be kept analytically distinct. They're tied together through the individual's reproduction and transformation of already given social structures.

It is here that I think that some social theorists falter. In economics, the economy is treated as a sphere that can be analyzed as if it were outside the community.

What makes knowledge in social sciences possible is the fact that society consists of social structures and positions that influence the individuals, partly since they create the necessary prerequisites for the actions of individuals, but also because they predispose individuals to act in a certain way.

Even if we have to acknowledge that the world is mind-independent, this doesn't in any way reduce the epistemological fact that we can only know what the world is like from

within our languages, theories, or discourses. But that the world is epistemologically *mediated* by theories does not mean that it is the *product* of them.

Our observations and theories are concept-*dependent* without therefore necessarily being concept-*determined*. There is a reality that exists independently of our knowledge and theories. Although we cannot comprehend it without using our concepts and theories, these are not the same as reality itself.

Social science is relational. It studies and uncovers the social structures in which individuals participate and position themselves. It is these relations that have sufficient continuity, autonomy, and causal power to endure in society and provide the real object of knowledge in social science. It is also only in their capacity as social relations and positions that individuals can be given power or resources - or the lack of them. To be a capital-owner or a slave is not an individual property, but can only come about when individuals are integral parts of certain social structures and positions. Just as a check presupposes a banking system and tribe-members presuppose a tribe - social relations and contexts cannot be reduced to individual phenomena.

2. What should we demand of economic models?

Most models in science are representations of something else. Models “stand for” or “depict” specific parts of a “target system” (usually the real world). A model that has neither surface nor deep resemblance to important characteristics of real economies ought to be treated with *prima facie* suspicion. How could we possibly learn about the real world if there are no parts or aspects of the model that have relevant and important counterparts in the real world target system? The burden of proof lays on the theoretical economists thinking they have contributed anything of scientific relevance without even hinting at any bridge enabling us to traverse from model to reality. All theories and models have to use sign vehicles to convey some kind of content that may be used for saying something of the target system. But purpose-built assumptions, like invariance, made solely to secure a way of reaching deductively validated results in mathematical models, are of little value if they cannot be validated outside of the model.

All empirical sciences use simplifying or unrealistic assumptions in their modeling activities. That is (no longer) the issue. Theories are difficult to directly confront with reality. Economists therefore build models of their theories. Those models are *representations* that are *directly* examined and manipulated to *indirectly* say something about the target systems.

The problem is however that the assumptions made in economic theories and models simply are unrealistic in the wrong way and for the wrong reasons.

There are economic methodologists and philosophers that argue for a less demanding view on modeling and theorizing in economics. And to some theoretical economists, as for example Robert Sugden, it is deemed quite enough to consider economics as a mere “conceptual activity” where “the model is not so much an abstraction from reality as a *parallel reality*” [2002:131]. By considering models as such *constructions*, Sugden distances the model from the intended target, for although “the model world is *simpler* than the real world, the one is not a *simplification* of the other” [2002:131]. The models only have to be *credible*, thereby enabling the economist to make inductive inferences to the target systems.

But what gives license to this leap of faith, this “inductive inference”? Within-model inferences in formal-axiomatic models are usually deductive but that does not come with a

warrant of reliability for inferring conclusions about specific target systems. Since all models in a strict sense are false (necessarily building in part on false assumptions) deductive validity cannot guarantee epistemic truth about the target system (cf. [Mäki 2008] on the relation between “truth bearer” in the model and “truth maker” in the real world target system). To argue otherwise would surely be an untenable overestimation of the epistemic reach of “surrogate models”.

Being able to model a credible world, a world that somehow could be considered real or *similar* to the real world, is not the same as investigating the real world. Even though all theories are false, since they simplify, they may still possibly serve our pursuit of truth. But then they cannot be unrealistic or false in *any* way. The falsehood or unrealisticness has to be qualified (in terms of resemblance, relevance etc). At the very least, the minimalist demand on models in terms of credibility has to give away to a stronger epistemic demand of “*appropriate similarity and plausibility*” [Pålsson Syll 2001:60]. One could of course also ask for a *sensitivity* or *robustness* analysis. But although Kuorikoski/Lehtinen [2009:130] considers “derivational robustness ... a way of seeing whether we can derive credible results from a set of incredible worlds”, the credible world, even after having tested it for sensitivity and robustness, can still be a far way from reality – and unfortunately often in ways we know are important.

Robustness of claims in a model does not *per se* give a warrant for exporting the claims to real world target systems. The same can be seen in experimental economics and the problem of what Smith [1982:936] calls *parallelism*. Experimental economists attempt to get control over a large variety of variables, and to that aim they have to specify the experimental situation in a specific and narrow ways. The more the experimentalist achieves control over the variables, the less the results they discover are applicable to the real world target systems. One would of course think it most likely that parallelism would hold for e. g. auctions, where we have a naturally demi-closed system in relative isolation and with a transparent and simple internal logic. As Alexandrova [2008:401] however shows, economic theory is unable to account even for this case, which the economists themselves consider to be a paradigm example of model application, the main reason being that “many more factors turned out to be relevant than was thought at first.”

And even if “the economic method is very model oriented” and “the ideal of economic theory is to explain as much as possible with as little as possible” [Torsvik 2006: 60], the simple fact of being in the laboratory or the economic theoretician's model does not necessarily cross any application domains. This (perhaps) sad conclusion reminds of Cartwright's [1999:37] view that if scientific laws “apply only in very special circumstances, then perhaps they are true just where we see them operating so successfully – in the artificial environment of our laboratories, our high-tech firms, or our hospitals.”

Anyway, robust theorems are exceedingly rare or non-existent in economics. Explanation, understanding and prediction of real world phenomena, relations and mechanisms therefore cannot be grounded (solely) on robustness analysis. And as Cartwright [1989] forcefully has argued, some of the standard assumptions made in neoclassical economic theory - on rationality, information-handling and types of uncertainty – are not possible to make more realistic by “de-idealization” or “successive approximations” without altering the theory and its models fundamentally.

If we cannot show that the mechanisms or causes we isolate and handle in our models are stable – in the sense that what when we export them from are models to our target systems they do not change – then they only hold under *ceteris paribus* conditions and

a fortiori are of limited value for our understanding, explanation and prediction of our real world target system. As Keynes [1973(1921):276-468] writes:

The kind of fundamental assumption about the character of material laws, on which scientists appear commonly to act, seems to me to be [that] the system of the material universe must consist of bodies ... such that each of them exercises its own separate, independent, and invariable effect, a change of the total state being compounded of a number of separate changes each of which is solely due to a separate portion of the preceding state ... Yet there might well be quite different laws for wholes of different degrees of complexity, and laws of connection between complexes which could not be stated in terms of laws connecting individual parts ... If different wholes were subject to different laws *qua* wholes and not simply on account of and in proportion to the differences of their parts, knowledge of a part could not lead, it would seem, even to presumptive or probable knowledge as to its association with other parts ... These considerations do not show us a way by which we can justify induction ... /427 No one supposes that a good induction can be arrived at merely by counting cases. The business of strengthening the argument chiefly consists in determining whether the alleged association is *stable*, when accompanying conditions are varied ... /468 In my judgment, the practical usefulness of those modes of inference ... on which the boasted knowledge of modern science depends, can only exist ... if the universe of phenomena does in fact present those peculiar characteristics of atomism and limited variety which appears more and more clearly as the ultimate result to which material science is tending.

Haavelmo [1944:28] basically says the same when discussing the stability preconditions for successful application of econometric methods in terms of autonomy:

If we should make a series of speed tests with an automobile, driving on a flat, dry road, we might be able to establish a very accurate functional relationship between the pressure on the gas throttle ... and the corresponding maximum speed of the car ... But if a man did not know anything about automobiles, and he wanted to understand how they work, we should not advise him to spend time and effort in measuring a relationship like that. Why? Because (1) such a relation leaves the whole inner mechanism of a car in complete mystery, and (2) such a relation might break down at any time, as soon as there is some disorder or change in any working part of the car ... We say that such a relation has very little *autonomy*, because its existence depends upon the simultaneous fulfillment of a great many other relations, some of which are of a transitory nature.

If the world around us is heterogeneous and organic, mechanisms and causes do not follow the general law of composition. The analogy of vector addition in mechanics simply breaks down in typical economics cases. The postulated stability just is not there since there are “interactive effects” between causes.

Uskali Mäki has repeatedly over the years argued for the necessity of “isolating by idealization” by which the theoretical economist can close the system (model) and “control for noise so as to isolate some important fact, dependency relation, causal factor or mechanism” [2009:31]. Sugden’s “surrogate systems” view downplays the role of “sealing off” by *isolation* and rather emphasizes the *construction* part of modeling. The obvious ontological shortcoming of this epistemic approach is that “similarity” or “resemblance” *tout court* do not guarantee that the correspondence between model and target is interesting, relevant, revealing or somehow adequate in terms of mechanisms, causal powers, capacities or tendencies. No matter how many convoluted refinements of general equilibrium concepts made in the model, if the model is not similar in the appropriate respects (such as structure,

isomorphism etc), the surrogate system becomes a *substitute* system that does not bridge to the world but rather misses its target.

To give up the quest for truth and to merely study the internal logic of credible worlds is not compatible with scientific realism. To argue – as Kuorikoski/Lehtinen [2009:126] – that modeling can be conceived as “extended cognition” that may “legitimately change our beliefs about the world” may possibly be true, but is too modest a goal for science to go for. It is not even enough demanding inference from models to conclusions about the real world. One has to – as Mäki [2009:41] argues – “infer to conclusions about the world that are true or are likely to be true about the world ... Justified model-to-world inference requires the model to be a credible surrogate system in being conceivable and perhaps plausible insofar as what it isolates – the mechanism – is concerned.”

Modeling may – as argued by [Weisberg 2007:209] - be conceived of as a three stage enterprise. “In the first stage, a theorist constructs a model. In the second, she analyzes, refines, and further articulates the properties and dynamics of the model. Finally, in the third stage, she assesses the relationship between the model and the world if such an assessment is appropriate.”

There are however philosophers and theoretical economists, like Gibbard and Varian [1978], who may be considered *outré* constructivist modelers, skipping the third stage and giving up all pretence of their *caricature* models and theories – built on a “deliberate distortion of reality” [671] and for which there is “no standard independent of the accuracy of the conclusions of the applied model for when its assumptions are sufficiently realistic” [671] - representing any *real* target systems. But if so, why should we invest time in studying purely hypothetical imaginary entities? If our theorizing does not consist in “forming explicit hypotheses about situations and testing them,” how could it be that the economist “thinks the model will help to explain something about the world” [676]? What is it that caricature models can establish? As noted by, e.g., Rosenberg [1978:683], it is hard to come up with justifiable reasons to treat *fictionalism* a feasible modeling strategy in social science.

Weisberg [2007:224] says that even though “no assessment of the model-world relationship” is made, the insights gained from the analysis “may be useful in understanding real phenomena.” That may be, but is – if viewed as an acceptable aspiration-level for scientific activity – too undemanding. And assessing the adequacy of a theory or model *solely* in terms of “the interests of the theorist” [Weisberg 2007:225] or “on purely aesthetic grounds” [Varian 1998: 241] does not seem to be a warranted scientific position. That would be lowering one’s standards of fidelity beyond reasonable limits. Theories and models must be justified on *more* grounds than their intended scope or the fact that “most economic theorists admit that they do economics because it is fun” [Varian 1998:241]. Scientific theories and models must have ontological constraints and the most non-negotiable of these is – at least from a realist point of view – that they have to be coherent to the way the worlds is.

Even though we might say that models are devised “to account for stylized facts or data” [Knuutila 2009:75] and that “if conditions of the real world approximate sufficiently well the assumptions ... the derivations from these assumptions will be approximately correct [Simon 1963:230] – as Lawson [1997:208] aptly puts it, “a supposed ‘stylized fact’ is intended to express a partial regularity reformulated as a strict one, in the form of a law.” I cannot but concur. Models as “stylized facts” or “stylized pictures” somehow “approximating” reality are rather unimpressive attempts at legitimizing using fictitious idealizations for reasons more to do with model tractability than with a genuine interest of understanding and explaining features of real economies. Many of the model-assumptions standard made by neoclassical

economics are *restrictive* rather than *harmless* and could *a fortiori* anyway not in any sensible meaning be considered approximations at all.

Knuuttila [2009:86] notices that most economic models fall short of representing real systems. I agree. Neoclassical economic theory employs very few principles, and among those used, bridge principals are as a rule missing. But instead of criticizing this (as I would) she rather apologetically concludes that “the connections between the models and the data, or what is known about economies more generally, are just looser than what is traditionally assumed” [2009:76]. To my ears this sounds like trying to turn failure into virtue. Why should we be concerned with economic models that are “purely hypothetical constructions” [2009:76]? Even if the constructionist approach should be able to accommodate the way we learn from models, it is of little avail to treat models as some kind “artifacts” or “heuristic devices” that produce claims, if they do not also connect to real world target systems.

Constructing “minimal economic models” may – even though they are without “world-linking conditions” [Grüne-Yanoff 2009:81] – affect our confidence in conjectures about the real world. And being able to explain relations between imaginary entities in “analogue” or “fictitious” models may increase our confidence in “inferential links to other bodies of knowledge” [Knuuttila 2009:77]. But this does not justify the conclusion that “correctly judging models to be credible does neither imply that they are true, nor that they resemble the world in certain ways, nor that they adhere to relevant natural laws” [Grüne-Yanoff 2009:95]. The final court of appeal for economic models is the real world, and as long as no convincing justification is put forward for how the confidence-enhancing takes place or the inferential bridging *de facto* is made, credible counterfactual worlds is little more than “hand waving” that give us rather little warrant for making inductive inferences from models to real world target systems. Inspection of the models shows that they have features that strongly influence the results obtained in them and that will not be shared by the real world target systems. Economics becomes exact but exceedingly narrow since “the very special assumptions do not fit very much of the contemporary economy around us” [Cartwright 1999:149]. Or as Krugman [2000:41] noted on an elaboration of the Mundell-Fleming macro model: “it is driven to an important extent by the details of the model, and can quite easily be undone. The result offers a tremendous clarification of the issues; it’s not at all clear that it offers a comparable insight into what really happens.”

If substantive questions about the real world are being posed, it is the formalistic-mathematical representations utilized to analyze them that have to match reality, not the other way around. “Economics is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world. It is compelled to be this, because, unlike the natural science, the material to which it is applied is, in too many respects, not homogeneous through time” [Keynes 1971-89 vol XIV: 296].

Taking lessons from models to the real world is demanding. To think that we are “invited to infer the likelihood of similar causes” [Sugden 2009:10] from the similarity of effects is overly optimistic. Abduction is not just inference to a *possible* explanation. To cut ice it has to be an inference to the *best* explanation. “Of course, there is always more than one possible explanation for any phenomenon ... so we cannot infer something simply because it is a possible explanation. It must somehow be the best of competing explanations” [Lipton 2004:56].

Sugden’s rather – at least among present-day economists – typical view is far from sufficing. Economists also have to ask questions of how the models and theories contribute to explaining and understanding the real world target system.

The theories and models that economists construct describe imaginary worlds using a combination of formal sign systems such as mathematics and ordinary language. The descriptions made are extremely thin and to a large degree disconnected to the specific contexts of the targeted system than one (usually) wants to (partially) represent. This is not by chance. These closed formalistic-mathematical theories and models are constructed for the purpose of being able to deliver purportedly rigorous deductions that may somehow be exportable to the target system. By analyzing a few causal factors in their “laboratories” they hope they can perform “thought experiments” and observe how these factors operate on their own and without impediments or confounders.

Unfortunately, this is not so. The reason for this is that economic causes never act in a socio-economic vacuum. Causes have to be set in a contextual structure to be able to operate. This structure has to take some form or other, but instead of incorporating structures that are true to the target system, the settings made in economic models are rather based on formalistic mathematical tractability. In the models they appear as unrealistic assumptions, usually playing a decisive role in getting the deductive machinery deliver “precise” and “rigorous” results. As noted by Frank Hahn [1994:246] – one of the icons of neoclassical mathematical economics – “the assumptions are there to enable certain results to emerge and not because they are to be taken descriptively.” This, of course, makes exporting to real world target systems problematic, since these models – as part of a deductivist covering-law tradition in economics – are thought to deliver general and far-reaching conclusions that are externally valid. But how can we be sure the lessons learned in these theories and models have external validity, when based on highly specific unrealistic assumptions? As a rule, the more specific and concrete the structures, the less generalizable the results. Admitting that we *in principle* can move from (partial) falsehoods in theories and models to truth in real world target systems does not take us very far, unless a thorough explication of the relation between theory, model and the real world target system is made. If models *assume* representative actors, rational expectations, market clearing and equilibrium, and we *know* that real people and markets cannot be expected to obey these assumptions, the warrants for supposing that conclusions or hypothesis of causally relevant mechanisms or regularities can be bridged, are obviously non-justifiable. To have a deductive warrant for things happening in a closed model is no guarantee for them being preserved when applied to an open real world target system.

Economic theorists ought to do some ontological reflection and heed Keynes' [1936: 297] warnings on using laboratory thought-models in economics:

The object of our analysis is, not to provide a machine, or method of blind manipulation, which will furnish an infallible answer, but to provide ourselves with an organized and orderly method of thinking out particular problems; and, after we have reached a provisional conclusion by isolating the complicating factors one by one, we then have to go back on ourselves and allow, as well as we can, for the probable interactions of the factors amongst themselves. This is the nature of economic thinking. Any other way of applying our formal principles of thought (without which, however, we shall be lost in the wood) will lead us into error.

3. Paradigmatic examples

To get a more particularized and precise picture of what neoclassical economic theory is today, it is indispensable to complement the perhaps rather “top-down” approach hitherto used with a more “bottom-up” approach. To that end I will below present – with

emphasis on the chosen model-building strategy - three paradigmatic examples to exemplify and diagnose neoclassical economic theory as practiced nowadays.

1. Lucas understanding of business cycles

Economic theory is nowadays, as we have seen, in the story-telling business whereby economic theorists create make-believe analogue models of the target system – usually conceived as the real economic system. This modeling activity is considered useful and essential. Since fully-fledged experiments on a societal scale as a rule are prohibitively expensive, ethically indefensible or unmanageable, economic theorists have to substitute experimenting with something else. To understand and explain relations between different entities in the real economy the predominant strategy is to build models and make things happen in these “analogue-economy models” rather than engineering things happening in real economies.

In business cycles theory these models are constructed with the purpose of showing that changes in the supply of money “have the capacity to induce depressions or booms” [1988:3] not just in these models, but also in real economies. To do so economists are supposed to imagine subjecting their models to some kind of “operational experiment” and “a variety of reactions”. “In general, I believe that one who claims to understand the principles of flight can reasonably be expected to be able to make a flying machine, and that understanding business cycles means the ability to make them too, in roughly the same sense” [1981:8]. To Lucas models are the *laboratories* of economic theories, and after having made a simulacrum-depression Lucas hopes we find it “convincing on its own terms – that what I said would happen in the [model] as a result of my manipulation would in fact happen” [1988:4]. The clarity with which the effects are seen is considered “the key advantage of operating in simplified, fictional worlds” [1988:5].

On the flipside lies the fact that “we are not really interested in understanding and preventing depressions in hypothetical [models]. We are interested in our own vastly more complicated society” [1988:5]. But how do we bridge the gulf between model and “target system”? According to Lucas we have to be willing to “argue by analogy from what we know about one situation to what we would like to know about another, quite different situation” [1988:5]. Progress lies in the pursuit of the ambition to “tell better and better stories” [1988:5], simply because that is what economists do.

We are storytellers, operating much of the time in worlds of make believe. We do not find that the realm of imagination and ideas is an alternative to, or retreat from, practical reality. On the contrary, it is the only way we have found to think seriously about reality. In a way, there is nothing more to this method than maintaining the conviction ... that imagination and ideas matter ... there is no practical alternative” [1988:6].

Lucas has applied this mode of theorizing by constructing “make-believe economic systems” to the age-old question of what causes and constitutes business cycles. According to Lucas the standard for what that means is that one “exhibits understanding of business cycles by constructing a *model* in the most literal sense: a fully articulated artificial economy, which behaves through time so as to imitate closely the time series behavior of actual economies” [1981:219].

To Lucas, business cycles are an inherently systemic phenomenon basically characterized by conditional co-variations of different time series. The vision is “the possibility of a unified explanation of business cycles, grounded in the general laws governing market economies, rather than in political or institutional characteristics specific to particular countries

or periods" [1981:218]. To be able to sustain this view and adopt his "equilibrium approach" he has to define the object of study in a very constrained way [cf. Vercelli 1991:11-23]. Lucas asserts, e.g., that if one wants to get numerical answers "one needs an explicit, equilibrium account of the business cycles" [1981:222]. But his arguments for why it necessarily has to be an *equilibrium* is not very convincing, but rather confirms Hausman's view [2001:320] that faced with the problem of explaining adjustments to changes, economists "have become complacent about this inadequacy – they have become willing prisoners of the limitations of their theories." The main restriction is that Lucas only deals with purportedly invariable regularities "common to all decentralized market economies" [1981:218]. Adopting this definition he can treat business cycles as all alike "with respect to the qualitative behavior of the co-movements among series" [1981:218]. As noted by Hoover [1988:187]:

Lucas's point is not that all estimated macroeconomic relations are necessarily not invariant. It is rather that, in order to obtain an invariant relation, one must derive the functional form to be estimated from the underlying choices of individual agents. Lucas supposes that this means that one must derive aggregate relations from individual optimization problems taking only tastes and technology as given.

Postulating invariance paves the way for treating various economic entities as stationary stochastic processes (a standard assumption in most modern probabilistic econometric approaches) and the possible application of "economic equilibrium theory." The result is that Lucas business cycle is a rather watered-down version of what is usually connoted when speaking of business cycles.

Based on the postulates of "self-interest" and "market clearing" Lucas has repeatedly stated that a pure equilibrium method is a necessary intelligibility condition and that disequilibria are somehow "arbitrary" and "unintelligible" [1981:225]. Although this might (arguably) be requirements put on models, these requirements are irrelevant and totally without justification vis-à-vis the real world target system. Why should involuntary unemployment, for example, be considered an unintelligible disequilibrium concept? Given the lack of success of these models when empirically applied (cf. Ball [1999], Estrella & Fuhrer [2002] and Seidman [2005]), what is unintelligible, is rather to pursue in this reinterpretation of the ups and downs in business cycles and labour markets as equilibria. To Keynes involuntary unemployment is not equitable to actors on the labour market becoming irrational non-optimizers. It is basically a reduction in the range of working-options open to workers, regardless of any volitional optimality choices made on their part. Involuntary unemployment is excess supply of labour. That unemployed in Lucas business cycles models only can be conceived of as having chosen leisure over work is not a substantive argument about real world unemployment.

The point at issue [is] whether the concept of involuntary unemployment actually delineates circumstances of economic importance ... If the worker's reservation wage is higher than all offer wages, then he is unemployed. This is his preference given his options. For the new classicals, the unemployed have placed and lost a bet. It is sad perhaps, but optimal [Hoover 1988:59].

Sometimes workers are not employed. That is a real phenomenon and not a "theoretical construct ... the task of modern theoretical economics to 'explain'" [Lucas 1981:243].

All economic theories have to somehow deal with the daunting question of uncertainty and risk. It is "absolutely crucial for understanding business cycles" [1981:223]. To be able to practice economics at all, "we need some way ... of understanding which decision problem agents are solving" [1981:223]. Lucas – in search of a "technical model-building

principle” [1981:1] – adapts the rational expectations view, according to which agents’ subjective probabilities are identified “with observed frequencies of the events to be forecast” are coincident with “true” probabilities. This hypothesis: [1981:224]

will *most* likely be useful in situations in which the probabilities of interest concern a fairly well defined recurrent event, situations of ‘risk’ [where] behavior may be explainable in terms of economic theory ... In cases of uncertainty, economic reasoning will be of no value ... Insofar as business cycles can be viewed as repeated instances of essentially similar events, it will be reasonable to treat agents as reacting to cyclical changes as ‘risk’, or to assume their expectations are *rational*, that they have fairly stable arrangements for collecting and processing information, and that they utilize this information in forecasting the future in a stable way, free of systemic and easily correctable biases.

To me this seems much like putting the cart before the horse. Instead of adapting the model to the object – which from both ontological and epistemological considerations seem the natural thing to do – Lucas proceeds in the opposite way and chooses to define his object and construct a model solely to suit own methodological and theoretical preferences. All those – interesting and important - features of business cycles that have anything to do with model-theoretical openness, and a *fortiori* not possible to squeeze into the closure of the model, are excluded. One might rightly ask what is left of that we in a common sense meaning refer to as business cycles. Einstein’s dictum – “everything should be made as simple as possible but not simpler” falls to mind. Lucas – and neoclassical economics at large – does not heed the implied apt warning.

The development of macro-econometrics has according to Lucas supplied economists with “detailed, quantitatively accurate replicas of the actual economy” thereby enabling us to treat policy recommendations “as though they had been experimentally tested” [1981:220]. But if the goal of theory is to be able to make accurate forecasts this “ability of a model to imitate actual behavior” does not give much leverage. What is required is “invariance of the structure of the model under policy variations”. Parametric invariance in an economic model cannot be taken for granted, “but it seems reasonable to hope that neither tastes nor technology vary systematically” [1981:220].

The model should enable us to posit contrafactual questions about what would happen if some variable was to change in a specific way. Hence the assumption of structural invariance, that purportedly enables the theoretical economist to do just that. But does it? Lucas appeals to “reasonable hope”, a rather weak justification for a modeler to apply such a far-reaching assumption. To warrant it one would expect an argumentation that this assumption – whether we conceive of it as part of a strategy of “isolation”, “idealization” or “successive approximation” – really establishes a useful relation that we can export or bridge to the target system, the “actual economy.” That argumentation is neither in Lucas, nor – to my knowledge – in the succeeding neoclassical refinements of his “necessarily artificial, abstract, patently ‘unreal’” analogue economies [1981:271]. At most we get what Lucas himself calls “inappropriately maligned” casual empiricism in the form of “the method of keeping one’s eyes open.” That is far from sufficient to warrant any credibility in a model pretending to explain the complex and difficult recurrent phenomena we call business cycles. To provide an empirical “illustration” or a “story” to back up your model do not suffice. There are simply too many competing illustrations and stories that could be exhibited or told.

As Lucas has to admit – complaining about the less than ideal contact between theoretical economics and econometrics – even though the “stories” are (purportedly) getting

better and better, “the necessary interaction between theory and fact tends not to take place” [1981:11].

The basic assumption of this “precise and rigorous” model therefore cannot be considered anything else than an unsubstantiated conjecture as long as it is not supported by evidence from outside the theory or model. To my knowledge no in any way decisive empirical evidence have been presented. This is the more tantalizing since Lucas himself stresses that the presumption “seems a sound one to me, but it must be defended on empirical, not logical grounds” [1981:12].

And applying a “Lucas critique” on Lucas own model, it is obvious that it too fails. Changing “policy rules” cannot just be presumed not to influence investment and consumption behavior and *a fortiori* technology, thereby contradicting the invariance assumption. Technology and tastes cannot live up to the status of an economy’s deep and structurally stable Holy Grail. They too are part and parcel of an ever-changing and open economy. Lucas hope of being able to model the economy as “a FORTRAN program” and “gain some confidence that the component parts of the program are in some sense reliable prior to running it” [1981:288] therefore seems – from an ontological point of view – totally misdirected. The failure in the attempt to anchor the analysis in the alleged stable deep parameters “tastes” and “technology” shows that if you neglect ontological considerations pertaining to the target system, ultimately reality kicks back when at last questions of bridging and exportation of model exercises are laid on the table. No matter how precise and rigorous the analysis is, and no matter how hard one tries to cast the argument in “modern mathematical form” [1981:7] they do not push science forwards one millimeter if they do not stand the acid test of relevance to the target. No matter how clear, precise, rigorous or certain the inferences delivered inside these models are, they do not *per se* say anything about external validity.

Formalistic deductive “Glasperlenspiel” can be very impressive and seductive. But in the realm of science it ought to be considered of little or no value to simply make claims about the model and lose sight of the other part of the model-target dyad.

II. Representative-agent models

Without export certificates models and theories should be considered unsold. Unfortunately this understanding has not informed modern economics, as can be seen by the profuse use of so called representative-agent models.

A common feature of economics is to use simple general equilibrium models where representative actors are supposed to have complete knowledge, zero transaction costs and complete markets.

In these models, the actors are all identical. For someone holding the view that “economics is based on a superficial view of individual and social behavior” and thinks “it is exactly this superficiality that gives economics much of the power that it has: its ability to predict human behavior without knowing very much about the makeup and lives of the people whose behavior we are trying to understand ” [Lucas1986:241], it is natural to consider it “helpful” to elaborate his theory with the help of a “representative agent” and build an “abstract model economy” with “N identical individuals” [1981:68] operating in “two markets” that are “structurally identical” and have “no communication between them” [1981:72] within each trading period.

This has far-reaching analytical implications. Situations characterized by asymmetrical information – situations most of us consider to be innumerable – cannot arise in such models. If the aim is to build a macro-analysis from micro-foundations in this manner, the relevance of the procedure is highly questionable. Solow (2010:2) – in the congressional hearing referred to in the prologue – even considers the claims made by protagonists of rational agent models “generally phony”.

One obvious critique is that representative-agent models do not incorporate distributional effects – effects that often play a decisive role in macroeconomic contexts. Investigations into the operations of markets and institutions usually find that there are overwhelming problems of coordination. These are difficult, not to say impossible, to analyze with the kind of Robinson Crusoe models that, e. g., real business cycle theorists employ and which exclude precisely those differences between groups of actors that are the driving force in many non-neoclassical analysis.

The choices of different individuals have to be shown to be coordinated and consistent. This is obviously difficult if the economic models don't give room for heterogeneous individuals (this lack of understanding the importance of heterogeneity is perhaps especially problematic for the modeling of real business cycles in dynamic stochastic general equilibrium models, cf. [Hansen & Heckman 1996]). Representative-agent models are certainly more manageable, however, from a realist point of view, they are also less relevant and have a lower explanatory potential.

Both the “Lucas critique” and Keynes' critique of econometrics [cf. Pålsson Syll 2007b:20-25] argued that it was inadmissible to project history on the future. Consequently an economic policy cannot presuppose that what has worked before, will continue to do so in the future. That macroeconom(etr)ic models could get hold of correlations between different “variables” was not enough. If they could not get at the causal structure that generated the data, they were not really “identified”. Lucas himself drew the conclusion that the problem with unstable relations was to construct models with clear microfoundations where forward-looking optimizing individuals and robust, deep, behavioural parameters are seen to be stable even to changes in economic policies.

To found macroeconomics on the actions of separate individuals, is an example of methodological reductionism, implying that macro-phenomena can be uniquely inferred from micro-phenomena. Among science-theoreticians this is a contested standpoint. Even though macro-phenomena somehow *presuppose* micro-phenomena, it is far from certain that they can be *reduced to* or *deduced from* them.

In microeconomics we know that aggregation really presupposes homothetic and identical preferences, something that almost never exist in real economies. The results given by these assumptions are therefore not robust and do not capture the underlying mechanisms at work in any real economy. And as if this was not enough, there are obvious problems also with the kind of microeconomic equilibrium that one tries to reduce macroeconomics to. Decisions of consumption and production are described as choices made by a single agent. But then, who sets the prices on the market? And how do we justify the assumption of universal consistency between the choices?

Kevin Hoover [2008:27-28] has argued that the representative-agent models also introduce an improper idealization:

The representative agent is held to follow the rule of perfect competition, price-taking, which is justified on the idealizing assumptions that $n \Rightarrow \infty$; yet the representative agent is itself an idealization in which $n \Rightarrow 1$. The representative agent is –

inconsistently – simultaneously the whole market and small relative to market. The problem can be summed by the question: with whom does the representative agent trade?

Models that are critically based on particular and odd assumptions – and are neither robust nor congruent to real world economies – are of questionable value.

And is it really possible to describe and analyze all the deliberations and choices made by individuals in an economy? Does not the choice of an individual presuppose knowledge and expectations about choices of other individuals? It probably does, and this presumably helps to explain why representative-agent models have become so popular in modern macroeconomic theory. They help to make the analysis more tractable.

One could justifiably argue that one might just as well accept that it is not possible to coherently reduce macro to micro, and accordingly that it is perhaps necessary to forswear microfoundations and the use of rational-agent models all together. Microeconomic reasoning has to build on macroeconomic presuppositions. Real individuals do not base their choices on operational general equilibrium models, but rather use simpler models. If macroeconomics needs *microfoundations* it is equally necessary that microeconomics needs *macrofoundations*.

The philosopher John Searle [1995] has asserted that there might exist something he calls “collective intentionality”. Given the existence of the latter, one might be able to explain to economists the enigmatic behaviour of for example people who vote in political elections. The aggregate outcome is decided by the collective intentions of the citizens, such as “it is your duty as citizen to vote”. To deduce this outcome from a representative actor’s behaviour without taking account of such intentions or institutions, is simply not possible.

The microeconomist Alan Kirman [1992] has maintained that the use of representative-agent models is unwarranted and leads to conclusions that are usually both misleading and false. It’s a fiction basically used by some macroeconomists to justify the use of equilibrium analysis and a kind of pseudo-microfoundations. Microeconomists are well aware that the conditions necessary to make aggregation to representative actors possible, are not met in actual economies. As economic models become increasingly complex, their use also becomes less credible.

Even if economies naturally presuppose individuals, it does not follow that we can *infer* or *explain* macroeconomic phenomena solely from knowledge of these individuals. Macroeconomics is to a large extent *emergent* and cannot be reduced to a simple summation of micro-phenomena. Moreover, even these microfoundations aren’t immutable. Lucas and the new classical economists’ deep parameters – “tastes” and “technology” – are not really the bedrock of constancy that they believe (pretend) them to be.

Now I do not think there is an unbridgeable gulf between micro and macro. We just have to accept that micro-macro relations are so complex and manifold, that the former cannot somehow be *derived* from the latter.

For Marshall [1951:171] economic theory was “an engine for the discovery of concrete truth”. But where Marshall tried to describe the behaviour of a typical business with the concept “representative firm”, his modern heirs don’t at all try to describe how firms interplay with other firms in an economy. The economy is rather described “as if” consisting of one single giant firm - either by inflating the optimization problem of the individual to the scale of a whole economy, or by assuming that it’s possible to aggregate different individuals’ actions by a simple summation, since every type of actor is identical. But do not we just have

to face that it is difficult to describe interaction and cooperation when there is essentially only *one* actor?

To economists for whom macroeconomic analysis is largely geared to trying to understand macroeconomic externalities and coordination failures, representative-agent models are particularly ill-suited. In spite of this, these models are frequently used, giving rise to a neglect of the aggregation-problem. This highlights the danger of letting the model, rather than the method, become the message.

III. Econometrics

Economists often hold the view that criticisms of econometrics are the conclusions of sadly misinformed and misguided people who dislike and do not understand much of it. This is really a gross misapprehension. To be careful and cautious is not the same as to dislike. And as any perusal of the mathematical-statistical and philosophical works of people like for example Nancy Cartwright, Chris Chatfield, Kevin Hoover, Hugo Keuzenkamp, John Maynard Keynes, Tony Lawson or Arios Spanos would show, the critique is put forward by respected authorities. I would argue, against “common knowledge”, that they do not misunderstand the crucial issues at stake in the development of econometrics. Quite the contrary. They know them all too well - and are not satisfied with the validity and philosophical underpinning of the assumptions made for applying its methods.

Let me try to do justice to the critical arguments on the logic of probabilistic induction and shortly elaborate – mostly from a philosophy of science vantage point - on some insights critical realism gives us on econometrics and its methodological foundations.

The methodological difference between an empiricist and a deductivist approach, on which we have already commented, can also clearly be seen in econometrics. The ordinary deductivist “textbook approach” views the modeling process as foremost an estimation problem, since one (at least implicitly) assumes that the model provided by economic theory is a well-specified and “true” model. The more empiricist, general-to-specific-methodology (often identified as “the LSE approach”) on the other hand view models as theoretically and empirically adequate representations (approximations) of a data generating process (DGP). Diagnostics tests (mostly some variant of the F-test) are used to ensure that the models are “true” – or at least “congruent” – representations of the DGP (cf. Chao [2002]). The modeling process is here more seen as a specification problem where poor diagnostics results may indicate a possible misspecification requiring re-specification of the model. The standard objective is to identify models that are structurally stable and valid across a large time-space horizon. The DGP is not seen as something we already know, but rather something we discover in the process of modeling it. Considerable effort is put into testing to what extent the models are structurally stable and generalizable over space and time.

Although I have sympathy for this approach in general, there are still some unsolved “problematics” with its epistemological and ontological presuppositions [cf. Lawson 1989, Keuzenkamp 2000 and Pratten 2005]. There is, e. g., an implicit assumption that the DGP fundamentally has an invariant property and that models that are structurally unstable just have not been able to get hold of that invariance. But, as already Keynes maintained, one cannot just presuppose or take for granted that kind of invariance. It has to be argued and justified. Grounds have to be given for viewing reality as satisfying conditions of model-closure. It is as if the lack of closure that shows up in the form of structurally unstable models somehow could be solved by searching for more autonomous and invariable “atomic

uniformity". But if reality is "congruent" to this analytical prerequisite has to be argued for, and not simply taken for granted.

Even granted that closures come in degrees, we should not compromise on ontology. Some methods simply introduce improper closures, closures that make the disjuncture between models and real world target systems inappropriately large. "Garbage in, garbage out."

Underlying the search for these immutable "fundamentals" lays the implicit view of the world as consisting of material entities with their own separate and invariable effects. These entities are thought of as being able to be treated as separate and addible causes, thereby making it possible to infer complex interaction from knowledge of individual constituents with limited independent variety. But, again, if this is a justified analytical procedure cannot be answered without confronting it with the nature of the objects the models are supposed to describe, explain or predict. Keynes himself thought it generally inappropriate to apply the "atomic hypothesis" to such an open and "organic entity" as the real world. As far as I can see these are still appropriate strictures all econometric approaches have to face. Grounds for believing otherwise have to be provided by the econometricians.

Trygve Haavelmo, the "father" of modern probabilistic econometrics, wrote that he and other econometricians could not "build a complete bridge between our models and reality" by logical operations alone, but finally had to make "a non-logical jump" [1943:15]. A part of that jump consisted in that econometricians "like to believe ... that the various a priori possible sequences would somehow cluster around some typical time shapes, which if we knew them, could be used for prediction" [1943:16]. But since we do not know the true distribution, one has to look for the mechanisms (processes) that "might rule the data" and that hopefully persist so that predictions may be made. Of possible hypothesis on different time sequences ("samples" in Haavelmo's somewhat idiosyncratic vocabulary) most had to be ruled out a priori "by economic theory", although "one shall always remain in doubt as to the possibility of some ... outside hypothesis being the true one" [1943:18].

To Haavelmo and his modern followers, econometrics is not really in the truth business. The explanations we can give of economic relations and structures based on econometric models are "not hidden truths to be discovered" but rather our own "artificial inventions". Models are consequently perceived not as true representations of DGP, but rather instrumentally conceived "as if"-constructs. Their "intrinsic closure" is realized by searching for parameters showing "a great degree of invariance" or relative autonomy and the "extrinsic closure" by hoping that the "practically decisive" explanatory variables are relatively few, so that one may proceed "as if ... natural limitations of the number of relevant factors exist" [Haavelmo 1944:29].

Just like later Lucas, Haavelmo seems to believe that persistence and autonomy can only be found at the level of the individual, since individual agents are seen as the ultimate determinants of the variables in the economic system.

But why the "logically conceivable" really should turn out to be the case is difficult to see. At least if we are not satisfied by sheer hope. As we have already noted Keynes reacted against using unargued for and unjustified assumptions of complex structures in an open system being reducible to those of individuals. In real economies it is unlikely that we find many "autonomous" relations and events. And one could of course, with Keynes and from a critical realist point of view, also raise the objection that to invoke a probabilistic approach to econometrics presupposes, e. g., that we have to be able to describe the world in terms of risk rather than genuine uncertainty.

And that is exactly what Haavelmo [1944:48] does: “To make this a rational problem of statistical inference we have to start out by an axiom, postulating that every set of observable variables has associated with it one particular ‘true’, but unknown, probability law.”

But to use this “trick of our own” and just assign “a certain probability law to a system of observable variables”, however, cannot – just as little as hoping – build a firm bridge between model and reality. Treating phenomena *as if* they essentially were stochastic processes is not the same as showing that they essentially *are* stochastic processes. Rigour and elegance in the analysis does not make up for the gap between reality and model. It is the distribution of the phenomena in itself and not its estimation that ought to be at the centre of the stage. A crucial ingredient to any economic theory that wants to use probabilistic models should be a convincing argument for the view that “there can be no harm in considering economic variables as stochastic variables” [Haavelmo 1943:13]. In most cases no such arguments are given.

Hendry acknowledges that there is a difference between the actual DGP and the models we use trying to adequately capture the essentials of that real world DGP. He also criticizes forecasting procedures based on the assumption that the DGP is constant. That kind of closure just is not there in the world as we know it. When “we don’t know what we don’t know” it is preposterous to build models assuming an ergodic DGP. It’s like assuming that there does exist a “correct” model and that this is the actual DGP whose constant parameters we just have to estimate. That is hard to take seriously. If such invariant parameters and concomitant regularities exist, has to be assessed *ex post* and not be assumed as an axiom in model-construction. This has to be an empirical question. The proof of the pudding is in the eating.

Like Haavelmo, Hendry assumes that what we observe are random variables which we can treat *as if* produced in accordance with a complex joint probability distribution. If we are performing a fully-controlled experiment or a Monte Carlo simulation this is of course true, since we control the characteristics of the DGP ourselves. But in the time series we work with in applied econometrics, is that really a tenable position? Can we really come to identify, know and access the DGP outside experiment-like situations? Hendry would insist that even if the answer to these questions is no, constructing useful models and theories of econometrics is still possible. From an instrumentalist point of view you may have good reasons for wanting to design a useful model that bridges the gap between “theory and empirical evidence” [Hendry 1995:359]. You may even persist in the hope that there exist “invariant features of reality” since otherwise “neither theories nor econometric models would be of much practical value” [Hendry 2000:474]. But it’s a slippery slope. Hendry and other econometricians sometimes have a tendency to conflate the DGP as a hypothesis and as an actual reality. This placing model on a par with reality is an example of what Marx called reification and is from a methodological and scientific-theoretic point of view an untenable equivocation. But where some methodologists of econometrics, like Hugo Keuzenkamp [2000:154], wants to get rid of the ambiguity by dropping the idea of the DGP as an actual process and treat it solely as an invention of our mind, one could rather argue that we have to drop the idea that we in our models ever can be sure that we have got hold of the Holy Grail of econometrics – the DGP.

Of course you are entitled – like Haavelmo and his modern probabilistic followers – to express a hope “at a metaphysical level” that there are invariant features of reality to uncover and that also show up at the empirical level of observations as some kind of regularities.

But is it a *justifiable* hope? I have serious doubts. The kind of regularities you may hope to find in society is not to be found in the domain of surface phenomena, but rather at

the level of causal mechanisms, powers and capacities. Persistence and generality has to be looked out for at an underlying deep level. Most econometricians don't want to visit that playground. They are content with setting up theoretical models that give us correlations and eventually "mimic" existing causal properties. The focus is on measurable data, and one even goes so far as defining science as "a public approach to the measurement and analysis of observable phenomena" [Hendry 1997:167]. Econometrics is basically made for *modeling* the DGP, and not to account for unobservable aspects of the real world target system (DGP).

We have to accept that reality has no "correct" representation in an economic or econometric model. There is no such thing as a "true" model that can capture an open, complex and contextual system in a set of equations with parameters stable over space and time, and exhibiting invariant regularities. To just "believe", "hope" or "assume" that such a model *possibly* could exist is not enough. It has to be justified in relation to the ontological conditions of social reality. And as Toulmin [2003:34] so neatly puts it:

In order for a suggestion to be a 'possibility' in any context ... it must 'have what it takes' in order to be entitled to genuine consideration *in that context*. To say, in any field, 'Such-and-such is a possible answer to our question', is to say that, bearing in mind the nature of the problem concerned, such-and-such an answer deserves to be considered. This much of the meaning of the term 'possible' is field-invariant. The criteria of possibility, on the other hand, are field-dependent, like the criteria of impossibility or goodness. The things we must point to in showing that something is possible will depend entirely on whether we are concerned with a problem in pure mathematics, a problem of team-selection, a problem in aesthetics, or what; and features which make something a possibility from one standpoint will be totally irrelevant from another.

In contrast to those who want to give up on (fallible, transient and transformable) "truth" as a relation between theory and reality and content themselves with "truth" as a relation between a model and a probability distribution, I think it is better to really scrutinize if this latter attitude is feasible. To just say "all models are wrong ... some, however, are useful" [Keuzenkamp 2000:116] is to defeatist. That is to confuse social engineering with science. To abandon the quest for truth and replace it with sheer positivism would indeed be a sad fate of econometrics. It is more rewarding to stick to truth as a regulatory ideal and keep on searching for theories and models that in relevant and adequate ways express those parts of reality we want to describe and explain.

Econometrics may be an informative tool for research. But if its practitioners do not investigate and make an effort of providing a justification for the credibility of the assumptions on which they erect their building, it will not fulfill its tasks. There is a gap between its aspirations and its accomplishments, and without more supportive evidence to substantiate its claims, critics will continue to consider its ultimate argument as a mixture of rather unhelpful metaphors and metaphysics. Maintaining that economics is a science in the "true knowledge" business, I remain a skeptic of the pretences and aspirations of econometrics. So far, I cannot really see that it has yielded very much in terms of relevant, interesting economic knowledge.

The marginal return on its ever higher technical sophistication in no way makes up for the lack of serious under-labouring of its deeper philosophical and methodological foundations that already Keynes complained about. The rather one-sided emphasis of usefulness and its concomitant instrumentalist justification cannot hide that neither Haavelmo [cf. 1944:10] nor Hendry [cf. 2000:276] give supportive evidence for their considering it "fruitful to believe" in the possibility of treating unique economic data as the observable results of random drawings from an imaginary sampling of an imaginary population. After having analyzed some of its ontological and epistemological foundations, I cannot but conclude that

econometrics on the whole has not delivered “truth”. And I doubt if it has ever been the intention of its main protagonists.

Our admiration for technical virtuosity should not blind us to the fact that we have to have a more cautious attitude towards probabilistic inference of causality in economic contexts. Science should help us penetrate to “the true process of causation lying behind current events” and disclose “the causal forces behind the apparent facts” [Keynes 1971-89 vol XVII:427]. We *should* look out for causal relations, but econometrics can never be more than a starting point in that endeavour, since econometric (statistical) explanations are not explanations in terms of mechanisms, powers, capacities or causes [cf Sayer 2000:22]. Firmly stuck in an empiricist tradition, econometrics is only concerned with the *measurable* aspects of reality, But there is always the possibility that there are other variables – of vital importance and although perhaps unobservable and non-additive not necessarily epistemologically inaccessible - that were not considered for the model. Those who *were* can hence never be *guaranteed* to be more than potential causes, and not real causes. As science-philosopher Mario Bunge [1979:53] once stated – “the reduction of causation to regular association ... amounts to mistaking causation for one of its tests.”

A rigorous application of econometric methods in economics really presupposes that the phenomena of our real world economies are ruled by stable causal relations between variables. Contrary to allegations of both Hoover [2002:156] and Granger [2004:105] I would say that a perusal of the leading econom(etr)ic journals shows that most econometricians still concentrate on fixed parameter models and that parameter-values estimated in specific spatio-temporal contexts are *presupposed* to be exportable to totally different contexts. To warrant this assumption one, however, has to convincingly establish that the targeted acting causes are stable and invariant so that they maintain their parametric status after the bridging. The endemic lack of predictive success of the econometric project indicates that this hope of finding fixed parameters is a hope for which there really is no other ground than hope itself.

This is a more fundamental and radical problem than the celebrated “Lucas critique” have suggested. This is not the question if deep parameters, absent on the macro-level, exist in “tastes” and “technology” on the micro-level. It goes deeper. Real world social systems are not governed by stable causal mechanisms or capacities. It is the criticism that Keynes [1951(1926): 232-33] first launched against econometrics and inferential statistics already in the 1920s:

The atomic hypothesis which has worked so splendidly in Physics breaks down in Psychics. We are faced at every turn with the problems of Organic Unity, of Discreteness, of Discontinuity – the whole is not equal to the sum of the parts, comparisons of quantity fails us, small changes produce large effects, the assumptions of a uniform and homogeneous continuum are not satisfied. Thus the results of Mathematical Psychics turn out to be derivative, not fundamental, indexes, not measurements, first approximations at the best; and fallible indexes, dubious approximations at that, with much doubt added as to what, if anything, they are indexes or approximations of.

The kinds of laws and relations that econom(etr)ics has established, are laws and relations about entities in models that presuppose causal mechanisms being atomistic and additive (for an argumentation that this is also the case for experimental economics, cf. Siakantaris [2000:270]). When causal mechanisms operate in real world social target systems they only do it in ever-changing and unstable combinations where whole is more than a mechanical sum of parts. If economic regularities obtain they do it (as a rule) only because we

engineered them for that purpose. Outside man-made “nomological machines” they are rare, or even non-existent. Unfortunately that also makes most of the achievements of econometrics – as most of contemporary endeavours of economic theoretical modeling – rather useless.

4. Why neoclassical economic theory is a dead end

The failures of mainstream macroeconomics are largely attributable to its use of deductivist theory and method. Its foundations are not as strong as Lucas and other neoclassical economists assume them to be. There’s a huge gap between the purported ideal of building economics from the behaviour of individual actors and the fact that what one accomplishes has very little to do with the behaviour of real individuals. As Toulmin [2003:236] notes:

If we ask about the validity, necessity, rigour or impossibility of arguments or conclusions, we must ask these questions within the limits of a given field, and avoid, as it were, condemning an ape for not being a man or a pig for not being a porcupine.

A realist and relevant economic theory has to do better. Even though there may be no royal road to success, I would contend neoclassical economics has definitely come to the end of the road.

Let me just give some hints of the kind of ontological and methodological building stones that are missing in neoclassical economics and what a viable alternative for economic theory would be.

1. Relevance, realism and the search for deep causal explanations

Instead of taking for granted that we are in possession of the one “correct” model, we have to have a more humble attitude. We know certain things and to know more we dig. We don’t content ourselves with surface appearances and correlations between observable variables. We dig deep. Correlations between observables are clues and form the starting points in our search for deeper causal structures in economy and society. But they aren’t invariant parameters à la “tastes” and “technology” in Lucas analysis of business cycles. As a famous philosopher once put it - “all that is solid melts into air”. That goes for the alleged “deep parameters” too.

Economics can’t be a “Euclidean” science. It reduces it to a logical axiomatic system in applied mathematics, with little bearing on real economies. As Keynes stated, we should use a more “Babylonian” approach and aim for less universal theories and accept that there will always be binding spatio-temporal restrictions to the validity of our theories. The real economy is – to use the words of Cartwright [1999] - no “nomological machine”, but rather a “dappled” world.

As Wesley Salmon [1971:34] famously noted, one can *deduce* that a male person who takes birth-control pills will not get pregnant, but that surely does not *explain* why that person does not get pregnant. Economics should definitely be in the explanation business, and deductions, though not useless, is less helpful than citing relevant causes.

Paul Samuelson [1964:737] once wrote that to describe “how” was to explain, and that “economists as scientists shouldn’t waste their time with unfruitful questions of “why?” To pose questions regarding underlying causes was considered metaphysical.” As a critical

realist I would rather say that a social science that doesn't pose "why-questions" can hardly count as a science at all.

Explanation and prediction are not the same. To explain something is to uncover the generative mechanisms behind an event, while prediction only concerns actual events and does not have anything to say about the underlying causes of the events in question. The barometer may be used for predicting today's weather changes. But these predictions are not explanatory, since they say nothing of the underlying causes.

Every social phenomenon is determined by a host of both necessary and contingent relations. It's also for this reason that we can never confidently predict them. As Maxine Singer [1997:39] has put it: "Because of the things we don't know that we don't know, the future is largely unpredictable."

If we want the knowledge we produce to have practical relevance, our knowledge-aspirations and methods have to adapt to our object of study. In social sciences – such as economics – we will never reach *complete* explanations. Instead we have to aim for *satisfactory* and *adequate* explanations.

As is well known, there is no unequivocal criterion for what should be considered a *satisfactory* explanation. All explanations (with the possible exception of those in mathematics and logic) are fragmentary and incomplete; self-evident relations and conditions are often left out so that one can concentrate on the nodal points. Explanations must, however, be real in the sense that they are "congruent" to reality and are capable of being used.

The *relevance* of an explanation can be judged only by reference to a given *aspect* of a problem. An explanation is then relevant if, for example, it can point out the generative mechanisms that rule a phenomenon or if it can illuminate the aspect one is concerned with. To be relevant from the explanatory viewpoint, the adduced theory has to provide a good basis for believing that the phenomenon to be explained really does or did take place. One has to be able to say: "That's right! That explains it. Now I understand why it happened."

While deductivist approaches try to develop a general *a priori* criterion for evaluation of scientific explanations, it would be better to realize that all we can expect to establish are *adequate* explanations, which it is not possible to disconnect from the specific, contingent circumstances that are always incident to what is to be explained.

Here I think that neoclassical economists go wrong in that they – at least implicitly - think their general models and theories are applicable to all kinds of societies and economies. But the insistence that all known economies have had to deal with scarcity in some form or other does not take us very far. I think we have to be more modest and acknowledge that our models and theories are time-space relative.

Besides being an aspect of the situation in which the event takes place, an explanatory factor ought also to be causally *effective* - that is, one has to consider whether the event would have taken place even if the factor did not exist. And it also has to be causally *deep*. If event *e* would have happened without factor *f*, then this factor is not deep enough. Triggering factors, for instance, often do not have this depth. And by contrasting different factors with each other we may find that some are irrelevant (without causal depth).

Without the requirement of depth, explanations most often do not have practical significance. This requirement leads us to the nodal point against which we have to take measures to obtain changes. If we search for and find fundamental structural causes for unemployment, we can hopefully also take effective measures to remedy it.

Relevant scientific theories do more than just describe (purported) event-regularities. They also analyze and describe the mechanisms, structures, and processes that exist. They try to establish what relations exist between these different phenomena and the systematic forces that operate within the different realms of reality.

Explanations are important within science, since the choice between different theories hinges in large part on their explanatory powers. The most reasonable explanation for one theory's having greater explanatory power than others is that the mechanisms, causal forces, structures, and processes it talks of, really do exist.

When studying the relation between different factors, a neoclassical economist is usually prepared to admit the existence of a reciprocal interdependence between them. One is seldom prepared, on the other hand, to investigate whether this interdependence might follow from the existence of an underlying causal structure. This is really strange. The actual configurations of a river, for instance, depend of course on many factors. But one cannot escape the fact that it flows downhill and that this fundamental fact influences and regulates the other causal factors. Not to come to grips with the underlying causal power that the direction of the current constitutes can only be misleading and confusing.

All explanations of a phenomenon have preconditions that limit the number of alternative explanations. These preconditions significantly influence the ability of the different potential explanations to really explain anything. If we have a system where underlying structural factors control the functional relations between the parts of the system, a satisfactory explanation can never disregard this precondition. Explanations that take the micro-parts as their point of departure may well *describe* how and through which mechanisms something takes place, but without the macro-structure we cannot *explain* why it happens.

But could one not just say that different explanations – such as individual (micro) and structural (macro) – are different, without a need to grade them as better or worse? I think not. That would be too relativistic. For although we are dealing with two different kinds of explanations that answer totally different questions, I would say that it is the structural explanation that most often answers the more relevant questions. In social sciences we often search for explanations because we want to be able to avoid or change certain outcomes. Giving individualistic explanations does not make this possible, since they only state sufficient but not necessary conditions. Without knowing the latter we cannot prevent or avoid these undesirable social phenomena.

All kinds of explanations in empirical sciences have a pragmatic dimension. We cannot just say that one type is *false* and another is *true*. Explanations have a function to fulfill, and some are *better* and others *worse* at this. Even if individual explanations can show the existence of a pattern, the pattern as such does not constitute an explanation. We want to be able to explain the pattern *per se*, and for that we usually require a structural explanation. By studying statistics of the labor market, for example, we may establish the fact that everyone who is at the disposal of the labor market does not have a job. We might even notice a pattern, that people in rural areas, old people, and women are often jobless. But we cannot explain with these data why this is a fact and that it may even be that a certain amount of unemployment is a functional requisite for the market economy. The individualistic frame of explanation gives a false picture of what kind of causal relations are at hand, and *a fortiori* a false picture of what needs to be done to enable a change. For that, a structural explanation is required.

II. Taking complexity seriously

With increasing complexity comes a greater probability of systemic instability. Real economies are complex systems and they have to be analyzed with an eye to instability. Macroeconomics has to be founded on analyses of the behaviour of agents in disequilibrium. Stability considerations have to be made. Otherwise we are shadow-boxing. Just as increasing returns to scale, dynamic instability can no longer be ruled out just because it doesn't fit some preferred theoretical preconceptions or models. In moving equilibrium systems, the interesting things usually take place in-between, in the transitional phases.

A fallacy often made in neoclassical economics is the (implicit) assumption made, that the structure of the real system of which the model is supposed to be a (partial) representation of, is invariant. Structural changes, breaks, regime-switches and innovations are continually taking place and we cannot simply *assume* that the system is dynamically stable. It has to be justified and not just treated as "infinitely improbable".

With increasing complexity comes a greater probability of systemic instability. Real economies are complex systems and they have to be analyzed with an eye to instability. Macroeconomics has to be founded on analysis of behaviour of agents in disequilibrium. Stability considerations have to be made. Just as increasing returns to scale, dynamic instability can no longer be ruled out just because they do not fit some preferred theoretical preconceptions or models. Even though not sufficient in itself, sensibility analysis ought to be self-evident, since eventual equilibria without robustness are uninteresting coincidences in dynamically open systems. In continually moving equilibrium systems the interesting things take place in between, in the transitional phases.

The methodological implications of the awareness of these considerations are far-reaching. If the plausibility of analyzing the economy as a structurally stable system (partly) hinges on its degree of complexity, it is of cause of the outmost importance to use models and theories that are open to and able to reflect an ontologically complex economic system. Simply assuming structural stability without justification is unacceptable. It has to be convincingly argued that the real counterparts of our macroeconomic models and theories are in line with these assumptions. At least if the aim of our scientific endeavours is more than predictive, also aspiring to explain the deeper mechanisms at work in the economy and having instruments to affect it.)

Rational expectations are used in new classical economics to analyze macroeconomic equilibria, and it does not really bother to really found it in actors dynamic behaviour out-of-equilibrium. Lucas and other neoclassical economists just *assume* that the distribution of the possibilities of economic actors coincide with the distribution holding for the "real" data generating process. This implies the well-known description of actors as not committing systematic errors when predicting the future.

This kind of model presupposes - if it is to be applicable – that the stochastic economic processes are stationary. This in its turn means that the equilibrium is permanent and that the future is perfectly predictable. This kind of *ergodicity* is impossible to reconcile with history, irreversible time and actors learning by doing. How do you justify such a far-reaching assumption? Is it a self-evident axiom, a reasonable assumption describing real actors, empirically corroborated, an as-if assumption in the spirit of Friedmanian instrumentalism, or is it the only hypothesis of expectations formation that happens to be compatible with neoclassical axiomatic deductivist general equilibrium theory? I would take my bet on the last. The problem with this is that it is rather unenlightening from a realist viewpoint. What has to be argued is that actors that realize *ex post* that they have misjudged

the situation and formed inadequate expectations, do learn from this and swiftly adapt their expectations so to instantly move towards a new (possibly permanent) equilibrium.

All *ad hoc* arguments for this view cannot do away with the obvious fact that once you allow for instability you also have to accept a certain degree of indeterminacy and the non-existence of event regularities. This is the only tenable way out of the model-conundrums that the hypothesis of rational expectations gets us into. If reality is to a large extent indeterminate, uncertain and instable, our model-assumptions have to reflect these ontological facts. There are regularities in the economy, but they are typically contextual, conditional and partial.

If we follow that path we, of course, have to give up the Euclidean hope of analyzing the economy as an axiomatic, deductively closed system. This is necessary. It is better to admit there are “things we don’t know we don’t know” and that therefore the future is uncertain in ways we don’t know. Some economic factors are inherently unpredictable (as e. g. stock-market prices, foreign exchange rates etc) and give rise to structural breaks, shifts and non-linearities and genuinely unanticipated events that disrupts any eventual equilibrium.

When the relation between map and reality is poor, we have to redraw the map. An economic model is only relevant to the economy if it somehow *resembles* it. Real economies are evolving over time and are intermittently subject to large and unanticipated shocks. They are non-stationary and over time they sometimes show great changes in all the moments of the distribution of its constituent variables.

Models based on the hypothesis of rational expectations are, to say the least, far from ideal representations of macroeconomic behaviour in such systems. If economists want to say something relevant of real economies and not only of “thought-of-economies” they have to develop other models and methods.

III. The need for methodological pluralism and abduction

Criticizing neoclassical economics is no license for a post-modern and social constructivist attitude of “anything goes”. Far from it. There are limits to feasible methods and we *do* have criteria for choosing between them. As a critical realist, I’m acutely aware of the danger of sliding down the slippery slope of relativism. On the other hand, however, I think there’s need for a large amount of open-mindedness when it comes to the choice of relevant methods [cf. Danermark et al. 2002:150-176]. As long as those choices reflect an argued and justified position vis-a-vis ontology we have to admit that different contexts may call for more than one method. Contrary to the beliefs of deductivist-axiomatic theorists - one size doesn’t fit all.

Keynes [1936:297] maintained that “the object of our analysis is not to provide a machine, or method of blind manipulation, which will furnish an infallible answer.” Strictly deductive argumentation is possible only in logic. “In ... science, and in conduct, most of the arguments, upon which we habitually base our rational beliefs, are admitted to be inconclusive in a greater or less degree” [Keynes 1973(1921):3]. In economics you can’t “convict your opponent of error” but only “convince him of it”. Hence, the aim of economic reasoning can only be to “persuade a rational interlocutor” [Keynes 1971-89 vol XIII :470]. Economics is an *argumentative* science. Since you can’t really prove things, you have to argue and justify. And if one does use deductive arguments, one has to be aware of the limits of their validity and justify their use.

If this is the case, what kind of inferences should we aim for in economics? Arguably the most promising method is abduction - or inference to the best explanation as it is also called.

In abduction one infers “from the fact that a certain hypothesis would explain the evidence, to the truth of that hypothesis” [Harman 1965:89]. Or more schematically:

e is a collection of evidence

H would, if true, explain e

No other hypothesis can *explain* e as well as H does

Therefore, H is (probably) true

In contradistinction to deduction and induction it's neither logically necessary, nor an empirical generalization. It's rather reminiscent of Sherlock Holmes. Different frames of interpretation are tentatively deliberated, the problem is re-contextualized and with a little help from creativity and imagination, new connections and meanings are discovered, helping to solve the puzzle or explain the event or process. We don't know for sure that the new connections and meanings constitute true knowledge, but it's possible that they constitute better or deeper knowledge.

The scientific method should preferably be both *ampliative* – increase our knowledge – and also increase our *epistemic warrant* in the results it gives us. The best balance between these goals is given by abduction.

That the scientific method should extend our knowledge is a self-evident starting-point for a scientific realist. But it is not always easy to combine ampliation and epistemic warrant. What is it that gives warrant to one hypothesis rather than others when we go beyond our sensory impressions? A purely deductive method would ensure us that conclusions were as probative as the premises on which they build. But deduction is totally unampliative. Its output is in its truth-transmitting input. If we are to use content-increasing methods we therefore have to accept that they can't be of a deductive caliber. Our data never guarantees that only *one* hypothesis is valid. But on the other hand it doesn't follow that they possess *the same degree* of validity. All cats aren't necessarily grey. If a standpoint is tenable can't be decided solely on formal-logic considerations but has to take into account consideration of what the world is and how it is structured. That a method isn't the best in all possible worlds doesn't preclude it being the best in the world in which we happen to live. To hold the view that abduction is not an inference “can be upheld only if one entertains the implausible views that to infer is to deduce and that to infer is to have ‘an automatic warrant’ for the inference” [Psillos 2002:619].

What we infer with ampliative methods will always be more or less defeasible. In contrast to the either/or of Kierkegaard and deductivism, the inferences of an ampliative method can always be changed, modified or rejected as a result of more and new information or by having conducted better analysis.

The problem of induction is that its ampliation is narrow and builds on going from “some” instances to “all” via generalization. This “more of the same” method enhances our knowledge in a purely horizontal manner. No new entities, relations or structures emerge. In that regard, induction signifies a minimal ampliation of knowledge, based on an underlying assumption of the world as ruled by event-regularities. Its short-comings are obvious. What we gain in epistemic warrant we lose in strength of the ampliation. It's restrictive to give us hypotheses or explanations of the causes behind observed phenomena.

In science, the hypothetic-deductive method makes possible a forceful ampliation through confirmation of posited hypothesis and opens up for using unobservable causes. As the Duhem-Quine problem exemplifies, it however, does not help us in discriminating which of the assumptions or hypothesis that is wrong when the theory can't be confirmed. If both hypotheses A and B may explain X, the hypothetic-deductive method doesn't give us any means to discriminate between them. What we gain in ampliation, we lose in epistemic warrant. The hypothetic-deductive method simply is too permitting, since it doesn't enable us to discriminate between different hypotheses that are compatible with the evidence. A method that can't rank hypotheses such as "contemporary Swedish unemployment is a result of Swedish workers being lazy" or "contemporary unemployment is a result of globalization, technological development and economic policy" simply isn't an adequate method.

Abduction, on the other hand, can rank competing hypothesis and tackles the Duhem-Quine problem, since it urges us to look beyond the properties and implications of single hypotheses and also judges and ranks their explanatory power. Abduction is both a logic of justification and a logic of discovery.

The trade-off between ampliation and epistemic warrant results from a kind of risk present in all ampliation, and the more risk we are willing to take the less epistemic warrant we have to live with. We get to know more, but are less sure of that which we know. If we want to have a larger degree of confidence in our knowledge we are usually forced to forgo new knowledge and its accompanying risks.

Then, having argued for abduction as striking the best balance between ampliation and epistemic warrant, what does a good abduction look like? A natural demand for a critical realist to posit is that it should establish a causal relation between explanandum and explanans. To say that H is the best explanation of X is simultaneously to say that of the hypothesis we are comparing, the causal story H paints is in best concordance with our background knowledge. The *contrastive* character of explanation [cf. Garfinkel 1981] is thereby emphasized since it is not possible to decide which explanation - out of many potential explanations - is the best, without taking account of relevant background knowledge.

Of course there are other criteria that are mentioned when one tries to describe explanatory merit: consilience, depth, simplicity, precision. But even if these criteria often are desirable, they are not self-evident or even decisive for our evaluation of potential explanations. To a large extent they are pragmatic virtues and domain-specific in character.

If explanatory power in the shape of simplicity, unification, coherence etc, has to do with truth is a matter you have to argue for. They *may* be criteria for theory-choice, but they *need* not be. These criteria chiefly express the more or less idiosyncratic preferences of different scientists. *Ceteris paribus* it is as a rule preferable to have a more unified, simpler or coherent theory. This you can defend from purely thought- and cognition-economic or esthetic considerations. But you can't *a priori* maintain that they have to be better, more probable or truer than their rivals.

IV. Why it is better to be vaguely right than precisely wrong

When applying deductivist thinking to economics, the neoclassical economist usually sets up an "as if"-model based on a set of tight axiomatic assumptions from which consistent and precise inferences are made. The beauty of this procedure is, of course, that if the axiomatic premises are true, the conclusions necessarily follow. The snag is that if the models are to be relevant, we also have to argue that their precision and rigour still holds when they

are applied to real-world situations. They often don't. When addressing real economies, the idealizations necessary for the deductivist machinery to work, simply don't hold.

So how should we evaluate the search for ever greater precision and the concomitant arsenal of mathematical and formalist models? To a large extent, the answer hinges on what we want our models to perform and how we basically understand the world.

For Keynes the world in which we live is inherently uncertain and quantifiable probabilities are the exception rather than the rule. To every statement about it is attached a "weight of argument" that makes it impossible to reduce our beliefs and expectations to a one-dimensional stochastic probability distribution. If "God does not play dice" as Einstein maintained, Keynes would add "nor do people". The world as we know it, has limited scope for certainty and perfect knowledge. Its intrinsic and almost unlimited complexity and the interrelatedness of its organic parts prevent the possibility of treating it as constituted by "legal atoms" with discretely distinct, separable and stable causal relations. Our knowledge accordingly has to be of a rather fallible kind.

To search for precision and rigour in such a world is self-defeating, at least if precision and rigour are supposed to assure external validity. The only way to defend such an endeavour is to take a blind eye to ontology and restrict oneself to prove things in closed model-worlds. Why we should care about these and not ask questions of relevance is hard to see. We have to at least justify our disregard for the gap between the nature of the real world and the theories and models of it.

Keynes [1971-89 vol XIV:296] once wrote that economics "is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world." Now, if the real world is fuzzy, vague and indeterminate, then why should our models build upon a desire to describe it as precise and predictable? Even if there always has to be a trade-off between theory-internal validity and external validity, we have to ask ourselves if our models are relevant.

Models preferably ought to somehow reflect/express/partially represent/resemble reality. The answers are not self-evident, but at least one has to do some philosophical underlabouring to rest one's case. Too often that is wanting in modern economics, just as it was when Keynes in the 1930s complained about the econometricians' lack of justifications of the chosen models and methods.

"Human logic" has to supplant the classical, formal, logic of deductivism if we want to have anything of interest to say of the real world we inhabit. Logic is a marvelous tool in mathematics and axiomatic-deductivist systems, but a poor guide for action in real-world systems, in which concepts and entities are without clear boundaries and continually interact and overlap. In this world I would say we are better served with a methodology that takes into account that "the more we know the more we know we don't know".

The models and methods we choose to work with have to be in conjunction with the economy as it is situated and structured. Epistemology has to be founded on ontology. Deductivist closed-system theories, as neoclassical economic theory, could perhaps adequately represent an economy showing closed-system characteristics. But since the economy clearly has more in common with an open-system ontology we ought to look out for other theories - theories who are rigorous and precise in the meaning that they can be deployed for enabling us to detect important causal mechanisms, capacities and tendencies pertaining to deep layers of the real world.

Rigour, coherence and consistency have to be defined relative to the entities for which they are supposed to apply. Too often they have been restricted to questions internal to

the theory or model. Even if “the main role of deductive approaches is to guarantee consistency” [Moses & Knutsen 2007:282], clearly the nodal point has to concern external questions, such as how our theories and models relate to real-world structures and relations. Applicability rather than internal validity ought to be the arbiter of taste. There is no need to abolish economic theory altogether. But as Hicks (1984:?) noted, it needs to be carried on in a different way, “less abstract, more history-friendly, less technical, more concerned with real economic phenomena, less reductionist and more open to taking advantage of the contributions coming from other social and moral Sciences.”

V. Open systems, equilibrium, expectations and uncertainty

Expectations have to be treated in a context of real, *historical* time. Real individuals don't settle their accounts at the end of periods in general equilibrium *mechanical* time. Actors have to make decisions, plans and act in the absence of equilibrium. Most importantly, firms have to plan their investments in the light of a more or less uncertain future, where there may even not yet exist a market for their products and where the present economic outlook offers few guidelines. Output and employment – ruled by expectations – are largely indeterminate and the structure of the economy changes continually and in complex ways, making it extremely difficult to predict or model.

Since the alternative non-neoclassical framework is not restricted to *individuals*, there is an open possibility for investigating expectations-formation in different *groups*. Mores, conventions and norms differ between consumers, firms and governments. If they are strong, there might be a possibility to detect certain kinds of *demi-regularities* in their formation [cf. Lawson 1997:204-231].

It's also a fact that different groups have to tackle different *kinds* of uncertainty. For macroeconomics, the expectations of investors are as a rule the most important. Unfortunately these are strongly influenced by Keynes “animal spirits” which are extremely tricky to handle in analysis. Shocks and surprises repeatedly make it impossible to predict the shifting moods in spirit. No matter what the interest rates, animal spirits can suddenly shift and affect plans to invest. This increases the uncertainty in the sense of Keynes “weight of argument” view – confidence in our predictions fall.

This applies to both long-run predictions of the price of gold five years hence and to short-term predictions of exactly on which day and minute the asset markets turn and we need to cash in on our position.

This is also one of the main reasons why *money* plays such an important role in real economies. Money makes it possible to postpone investments and not commit ourselves until we are more confident in our expectations and predictions.

All this confirms the basic “problem” – the economy is an open system. This has to be reflected by our analytical aspirations. Anything else will only lead to continual frustration. Markets are not usually totally chaotic. However, when it comes to expectations and the future, Keynes *dictum* still stands – often “we simply don't know”.

Individuals in neoclassical economics are usually assumed to be in a behavioural equilibrium and to have rational expectations. This assumption presupposes - if it's to be applicable – that the stochastic economic processes are stationary. This in turn means that the equilibrium is permanent and that the future is perfectly predictable. From a critical realist point of view, this is dubious. This kind of ergodicity is impossible to reconcile with history, irreversible time and actors learning by doing.

Once you allow for instability you also have to accept a certain degree of indeterminacy and the non-existence of event regularities. This is the only tenable way out of the model-conundrums that the hypothesis of rational expectations gets us into. If reality is indeterminate, uncertain and unstable, our model-assumptions have to reflect these facts. There are regularities in the economy, but they are typically contextual, conditional and partial.

If we follow this path we have to give up the Euclidean hope of analyzing the economy as an axiomatic, deductively closed system. In my view this is essential.

Economic theory cannot just provide an economic model that *mimics* the economy. Theory is important but we can't start to question data when there is a discrepancy. This would presuppose an almost religious faith in the validity of the preferred theory. When the relation between map and reality is poor, we have to redraw the *map*.

When it comes to equilibrium a tenable non-neoclassical economic theory has to reject the mechanical time equilibrium used by mainstream macroeconomics since it is not possible to apply it to real world situations. Real-world phenomena such as creative destruction, new technologies and innovations are not really compatible with general equilibrium. Institutions, endogenous technology, increasing returns to scale, irreversible time, non-ergodicity and uncertainty are not – as has been repeatedly shown in history - easily incorporated within the neoclassical framework.

From an explanatory point of view, it is more feasible to use partial analysis and to try to give explanations in terms of what are deemed to be the most causally important variables in specific contexts, instead of trying to encapsulate everything in one single timeless interdependent general equilibrium model.

5. Epilogue

Let me round off with some remarks on where the great divide in economics is currently situated.

In the history of economics there have existed many different schools of economic thought. Some of them – especially neoclassical economics - we have touched upon here. They are usually contrasted in terms of the theories and models they use. However, the fundamental divide is really methodological. How we categorize these schools should basically refer to their underlying ontological and methodological preconceptions, and not, for example, to their policy implications, use of mathematics and the like.

Much analytical-philosophical efforts has lately been invested in untangling terminological a conceptual analysis of models and theories. I think this necessary and good. But it is certainly not sufficient. The use and misuse of different theoretical and modeling strategies also have to be evaluated and criticized.

To develop economics along critical realist lines it is necessary to give up the ill founded use of closed representative-agent models, since these eliminate the basic problem of uncertainty and coordination between individual actors and groups, and make conventional behaviour totally unintelligible.

Henry Louis Mencken [1917] once wrote that “[t]here is always an easy solution to every human problem – neat, plausible and wrong.” And neoclassical economics has indeed been wrong. Its main result, so far, has been to demonstrate the futility of trying to build a

satisfactory bridge between formalistic-axiomatic deductivist models and real world target systems. Assuming, for example, perfect knowledge, instant market clearing and approximating aggregate behaviour with unrealistically heroic assumptions of representative actors, just will not do. The assumptions made, surreptitiously eliminate the very phenomena we want to study: uncertainty, disequilibrium, structural instability and problems of aggregation and coordination between different individuals and groups.

The punch line of this is that most of the problems that neoclassical economics is wrestling with, issues from its attempts at formalistic modeling *per se* of social phenomena. Reducing microeconomics to refinements of hyper-rational Bayesian deductivist models is not a viable way forward. It will only sentence to irrelevance the most interesting real world economic problems. And as someone has so wisely remarked, murder is unfortunately the only way to reduce biology to chemistry - reducing macroeconomics to Walrasian general equilibrium microeconomics basically means committing the same crime.

If scientific progress in economics – as Lucas and other latter days neoclassical economists seem to think – lies in our ability to tell “better and better stories” *without* considering the realm of imagination and ideas a retreat from real world target systems reality, one would of course think our economics journal being filled with articles supporting the stories with empirical evidence. However, the journals show a striking and embarrassing paucity of empirical studies that (try to) substantiate these theoretical claims. Equally amazing is how little one has to say about the relationship between the model and real world target systems. It is as though thinking explicit discussion, argumentation and justification on the subject not required. Economic theory is obviously navigating in dire straits.

Recent events in the financial markets have, as rightly noticed by Paul Krugman [2009], “pretty decisively refuted the idea that recessions are an optimal response to fluctuations in the rate of technological progress” and that “unemployment is a deliberate decision by workers to take time off”. According to Krugman what went wrong was basically that “the economics profession went astray because economists, as a group, mistook beauty, clad in impressive-looking mathematics, for truth.” This is certainly true as far as it goes. But it is not deep enough. Mathematics is just a means towards the goal – modeling the economy as a closed deductivist system.

If the ultimate criteria of success of a deductivist system is to what extent it predicts and coheres with (parts of) reality, modern neoclassical economics seems to be a hopeless misallocation of scientific resources. To focus scientific endeavours on proving things in models, is a gross misapprehension of what an economic theory ought to be about. Deductivist models and methods disconnected from reality are not relevant to predict, explain or understand real world economic target systems. These systems do not conform to the restricted closed-system structure the neoclassical modeling strategy presupposes. If we do not just want to accept that “in the social sciences what is treated as important is often that which happens to be accessible to measurable magnitudes” [Hayek 1974], critical realism can help make it possible to reorient our endeavours in more constructive directions (in macroeconomics, e. g. Jespersen [2009] is a valuable contribution) and build a relevant and realist economics that can provide advances in scientific understanding of real world economies.

In this essay an attempt has been made to give an up-to-date coverage of recent research and debate on the highly contentious topic of the status and relevance of economic theory. It shows that what is wrong with economics is not that it employs models, but that it employs poor models. They are poor because they do not bridge to the real world target

system in which we live. Economic theory today consists mainly in investigating economic models.

Neoclassical economics has since long given up on the real world and contents itself with proving things about thought up worlds. Empirical evidence only plays a minor role in economic theory (cf. Hausman [1997]), where models largely functions as a substitute for empirical evidence. But “facts kick”, as Gunnar Myrdal used to say. Hopefully humbled by the manifest failure of its theoretical pretences, the one-sided, almost religious, insistence on mathematical deductivist modeling as the only scientific activity worthy of pursuing in economics will give way to methodological pluralism based on ontological considerations rather than formalistic tractability.

If not, we will have to keep on wondering - with Robert Solow and other thoughtful persons - what planet the economic theoretician is on.

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The case for international monetary reform

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Introduction

The conventional view on global imbalances is based on a few basic propositions: that (i) they are the ultimate cause of the financial crisis, and (ii) mainly the result of overspending in the US and currency manipulation in China; (iii) the overall policy objective should be to *rebalance* which requires that deficit countries should save more and surplus countries less, and (iv) that exchange rate flexibility should be enhanced. Traditionally, overspending used to be blamed on government budget deficits, so the policy prescription would call for reduced government spending. But since the crisis, regulatory failure appears to have emerged as a new culprit. Financial regulation failed to detect and stop excessive credit growth which in turn made it possible for US households to over-consume. Now that financial reform legislation has supposedly fixed that problem in the US, attention appears to have shifted onto global imbalances and exchange rate flexibility.

However, what is not discussed as much is the downside of raising savings to *rebalance* in the midst of an anemic recovery. Economists often talk from both sides of their mouths to deal with the problem: Spending should be raised in the short run to revive growth when in a slump, but needs to be curtailed in the long run when the economy recovers. But, the short run fix takes us further away from the long run objective and it is never clearly spelled out how one goes from the former to the latter without tripping along the way.

It is possible that the conventional view suffers from an even deeper problem, for it assumes a world that no longer exists. It implicitly presupposes an *international* economy consisting of distinct national economies with their own separate systems of financial intermediation tied to one another mainly through trade. But, in a world of free capital flows why should the net demand for national currencies and thus the market determination of exchange rates depend solely on trade balances? The conventional view would only make sense in a world where financial assets are traded mainly to move goods; where central banks control credit growth and where the current account rules the roost. Of course, none of this is consistent anymore with the increasingly *transnational* world we inhabit, a world that is interconnected through financial flows and global production networks; one where the notion of global financial intermediation is no longer an empty supposition.

All of this suggests looking at global imbalances from the capital account side, which provides a very different understanding of the nature of the problem we face. Think of Bernanke's "savings-glut" thesis—and, ignore its frequent Pollyanna-ish use. It basically says that the U.S. credit boom that led to overconsumption and thus the ballooning trade deficits was in turn caused by money flowing into the US from the rest of the world through its capital account. In other words, it was ultimately the capital inflows that fueled the credit expansion and brought long-term interest rates down, making it possible for U.S. households to overspend and thereby be the engine of world growth. In this view, what needs to be done to restore world growth is not as obvious as in the conventional view. Here, US overspending, along with the trade deficit it gave rise to, appears to have been a "solution" to a deeper

¹ We would like to thank Shari Spiegel, Manuel Montes, Rudi von Arnim and Lance Taylor for their helpful comments on an earlier version of this paper.

problem involving excessive savings in the global economy, where the US real estate boom was perversely functional in creating much needed demand. This implies that the trouble was not with global imbalances per se, but the unsustainable way they were recycled and what they were used to finance.

Now, global intermediation is in crisis. Its main fault lines were exposed as early as the Asian crisis and the US dot.com stock market debacle. As it progressively became harder to recycle funds back to the rest of the world from the US, intermediation could only be revived in a lopsided way by absorbing much of the incoming funds within the US, and that is exactly what the US housing bubble made possible. But, that in turn eventually wrecked the balance sheets of US households and banks, putting global intermediation in jeopardy anew. The short term fix not only wore off but ended up compounding the underlying problem by seriously injuring confidence in the reserve asset. The policy challenge today is therefore to revive global intermediation on a sound footing, and that is why in our view international currency reform is an imperative that is better addressed sooner than later. Whether it is on sound footing or not ultimately depends on what the recycled funds are used to finance. That is why the real challenge is to find a way to continue recycling dollar reserves such that they finance development in poor countries rather than speculation and overconsumption in the rich. An international currency reform not only can help achieve that but also restore confidence in the reserve asset, benefiting everyone including the rich. By contrast, pushing with the conventional policy prescription to *rebalance*, we are afraid, will cause the world to drift towards deglobalization, which implies a global economic slump comparable only to the Great Depression in length and depth.

Part I, below, focuses on the nature of the threat the world economy faces. Discussing how and why global intermediation has come under stress, it tries to make the case that reviving intermediation in a sustainable way requires that the international monetary system be reformed. In Part II, the different reform proposals that have so far been advanced are critically discussed in terms of both their real world relevance and their effectiveness in reviving intermediation on a sound footing. That is followed by a discussion of a set of proposals of our own which we believe are viable in the current environment. We end with a few concluding remarks.

I. The threat the world economy faces

I.1. Rise of global financial intermediation

Two distinct forms of intermediation at the global level can be distinguished in the early post WWII era. One involves long term US investment abroad with foreign borrowers owing debts directly or indirectly to US banks whose liabilities are held by US based creditors – the holders of bank deposits who would normally want to stay in dollars. Since banks' receipts and deposits are both denominated in dollars, currency mismatch was not then an issue. US short term borrowing throughout the same period is the second form of intermediation. Here the roles are reversed between foreigners and US entities. Debts are still denominated in dollars and banks receive dollar payments, but now creditors are foreigners who need to be induced to hold their deposits in dollars since they have no specific reason to do so. While the first form of intermediation was larger and more important than the latter during the early part of the post WWII era, the latter acquires an importance comparable to the former by the 1980s, turning currency mismatch in the banking system into a potential problem.

Beginning with the 1990s, the two forms of intermediation are intertwined as short term borrowing becomes increasingly the source of funds that finance a rising proportion of US long term investment in other countries. The US progressively begins to function like a *hedge fund*, issuing short term liabilities to foreigners to finance riskier, higher yielding long term investments in the rest of the world. During this time, the overall US current income account deteriorates as US entities begin to get an ever smaller share of interest income from total dollar denominated debts worldwide since much of this is now passed onto foreigners. Even though the US net asset position eventually turns negative in the new century, its net income flow in the current account remains positive - a fact consistent with its role as the world's banker/hedge fund - and even rises more recently.²

None of these changes imply a reduction in other countries' demand for dollars. On the contrary, they suggest that the rest of the world's need for dollars increased, not only to trade and service debt, but also to invest their surplus funds. But, now, foreign entities that have no special preference for dollars become the holders of the liabilities that finance the dollar-denominated long term debt held by borrowers in mostly developing economies. This means that currency mismatch, only a potential problem in the 1980s, turns into a pervasive one by the 1990s, increasing the downside risk of exchange rate volatility.

In sum, by the 1990s, global intermediation can be defined by the following three salient features. One is the "exorbitant privilege" the US enjoys on account of the fact that the dollar is the international reserve currency.³ This historically gave rise to the need for large US trade deficits as a requirement for reserve accumulation in the rest of the world, which posed a threat to the confidence in the dollar as Triffin had recognized in the 1960s.⁴ The second is a global system of financial intermediation in which the US role as the world's banker⁵ evolved from being simply the issuer of the reserve currency to, increasingly, being the issuer of interest-bearing short term liabilities to the rest of the world. Finally, with the spread of capital account liberalization central banks lose much of their ability to control credit expansion in their respective countries. Variable price assets become the main conduit for capital flows and, compared to the fixed price bank loans of the 1980s, blur the distinction between borrowing and the sale of equity, making long term investment much easier to reverse and speculation less costly.

In other words, just as the importance of capital flows increased that of 'national intermediation' declined. Countries could acquire the reserve asset (dollars) in three possible ways: by running trade surpluses, borrowing or attracting capital. Dollars accumulated unevenly in the hands of a few successful exporters - first Japan and Germany, then China,

² The increase in net US current income in recent years has largely been due the substantial capital gains in US assets abroad due to the depreciation of the dollar. See, Lane & Milesi-Feretti (2008) for a detailed discussion of these valuation effects on the US external position. The improvement of the US net income position in its current account after its net asset position had turned negative has also given rise to the mistaken notion that its overall external deficit is illusory (Hausmann & Sturzenegger 2006).

³ The term is often used more broadly to refer to the fact that the US earns a higher return on its international assets than its liabilities to foreigners. The folklore has it that it was first used in a speech given by President De Gaulle, though Valéry Giscard d'Estaing might actually have been the one who coined the term when he was the Finance Minister in 1965 (Gourinchas & Rey 2007).

⁴ For our take on Triffin's dilemma and its "resolution," see D'Arista & Erturk (2010).

⁵ The term originates from Kindleberger (1965).

the oil exporters and a few others.⁶ Less successful exporters on the other hand had to compete against each other in making themselves more hospitable to foreign investment as attracting foreign capital became their only option to avoid deflation. The US, as the middleman, dispersed the surplus funds it attracted from the first set of countries to the latter, and later increasingly became a generator of such funds through money creation.

1.2. Global intermediation in distress

The viability of any system of financial intermediation requires that banks and other financial units can issue new liabilities with ease to retire maturing debt. However, once banks and financial institutions around the world come to hold vast quantities of dollar denominated assets against liabilities that need not be in dollars, their net worth becomes vulnerable to prolonged dollar weakness that ebbing confidence in the dollar is liable to cause.⁷ In the shorter run, the liquidity of the system also becomes highly sensitive to bouts of currency turmoil. That in a nutshell explains why many international banks found themselves precariously squeezed for liquidity when the financial crisis elevated their currency mismatch risk.

European and Japanese banks with massive amounts of dollar denominated assets accumulated since the late 1990s⁸ relied mainly on short term foreign currency swaps – but, also, on wholesale borrowing in the interbank market and from money markets funds as well - to hedge their dollar exposure. As the financial crisis broke out the FX swap market came under stress (Baba and Packer 2009) and the interbank market seized up while money market funds drastically contracted (Baba et al 2009), forcing banks to scramble for dollar funds to rollover their short term funding positions.⁹ As the markets for many of their dollar assets (such as structured mortgage-based securities) had also dried up, banks found that the maturity of their assets effectively lengthened just as the maturity of their liabilities were rapidly shortening.

The logjam was finally broken by the international swap agreements the Federal Reserve brokered which enabled central banks to lend dollars on demand to the banks in trouble in their respective countries (McGuire & von Peter 2009; Obstfeld & Shambaugh 2008). The Federal Reserve effectively acted as the lender of last resort both in the US and abroad and succeeded dampening the global liquidity crisis. In the aftermath, however, it was much less successful in addressing the insolvency crisis, which still persists. The overall viability of the payments system remains dependent on the Federal Reserve's continuing to hold a massive volume of assets whose market value is yet to recover. In fact, fresh injections of liquidity and a further lengthening of the Federal Reserve's balance sheet are now in the works and still more injections can be called for to deal with future funding difficulties banks might experience both in the US and elsewhere. Past a certain threshold, however, such injections pose the risk of undermining confidence rather than bolstering it, which might then

⁶ Incidentally, the prevention of currency appreciation was quite often the *sine qua non* of their success. The link between an undervalued real exchange rate and growth shows up in cross-country regressions (Rodrik 2008).

⁷ Note that the trade weighted dollar exchange rate index rose steadily from mid-1995 to mid-2001, and began its descent afterwards, again, falling steadily, till the breakout of the crisis in 2008.

⁸ "The outstanding stock of banks' foreign claims grew from \$10 trillion at the beginning of 2000 to \$34 trillion by end-2007, a significant expansion even when scaled by global economic activity" (McGuire and von Peter 2009).

⁹ Yet another complication was the withdrawal of dollar reserves emerging market central banks kept with commercial banks to assist their own banks that were experiencing funding difficulties.

paradoxically necessitate larger rounds of liquidity injections that can eventually destabilize the reserve asset itself. We are now at a point where the fear has risen in financial markets that that will happen, which in itself is destabilizing.

This seems to be the gist of the constraint monetary authorities are facing in the US today. It used to be thought that the exceptional ability to issue liabilities in its own currency makes the US immune to the potential conflict between domestic policy objectives and international payment obligations that so often bedevils policy makers in other countries. That is hardly true today, if it ever was. It is evident that US economic policy autonomy has been shrinking rapidly and is likely to continue to do so, though it remains doubtful how well that is recognized by US policy makers themselves.

Unsurprisingly, during the strong dollar era prior to 2001 the destabilizing effects of currency mismatch and exchange rate instability were mainly felt in emerging economies. Throughout the 1990s it was primarily (though not exclusively) the emerging economies that were plagued by sudden stops and abrupt capital flow reversals that culminated in one currency crisis after another. With the benefit of hindsight these episodes can be seen as the early signs of trouble for global intermediation as a whole, and thus a precursor of the financial crisis that eventually hit the US and other advanced countries at the core of the system.

1.2. A look at the data

In this section, we look at the gross flows of funds in and out of the US as a circular flow. Accordingly, we organize the US balance of payments data¹⁰ on the assumption that all incoming funds into the US were in the nature of short term borrowing,¹¹ which in turn are drawn on (in part) to make investments in other countries either directly through FDI or indirectly through the purchase of foreign securities. Thus, we lump together the outflow of FDI from the US and private US purchases of foreign securities, and call it, for the purposes of this discussion, *US long term investment*.

Once the gross flows are organized as defined, it becomes possible to identify synchronized cyclical turning points in the data. For instance, when we look at *US Long Term Investment* (Graph 1) we observe a steady rising trend - though interrupted by a sharp increase in volatility at the time of the Asian crisis - that is not reversed until it reaches its pinnacle in 1999 (Graph 2), a year before the burst of the dot.com bubble and the steep fall in the stock market. We then observe a declining trend that is only reversed after the end of the 2001-2 recession, which also coincides with the turnaround in the stock market. The third phase is the period of the housing bubble that reaches its apex prior to the outbreak of the financial crisis and again precedes the turning point in the stock market by almost a year as it did in the first turning point. A similar periodization is also evident in the gross inflow of funds into the US (Graph 2), especially when official flows are deducted (Graph 3). It can also be seen that the latter are inversely correlated with the former, especially, after 2000 (Graph 4).

¹⁰ We use seasonally adjusted, quarterly data: Table 1 in US International Transactions, released by the Bureau of Economic Analysis on September 16, 2010.

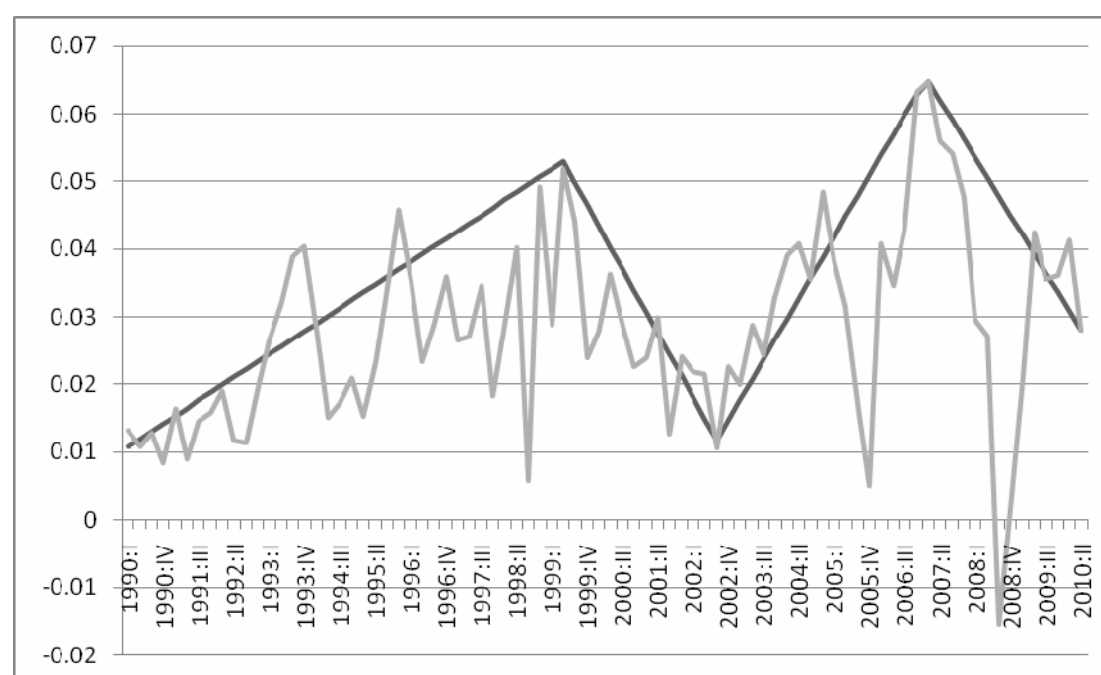
¹¹ That is, with the exception of FDI, which we assume would have a different modality. Thus we lump together officially and privately owned US assets by foreigners, Lines 56 and 63, respectively, but deduct Foreign Direct Investment by foreigners in the US (Line 64).

The dates of the turning points for these two series are summarized in Table 1.¹² Of course, it is too early to tell if the bottom in the fourth turning point in Table 1 in fact marks the end of a declining trend. It might be more likely that the declining trend is still continuing as depicted in Graphs 3, and that the rebound in the two respective series is simply due to the “dead cat bounce” effect. It is also interesting to note that the US current account is not synchronized with the turning points in these gross flows, except for the third turning point associated with the financial crisis – and, possibly, the fourth if it turns out there is one. The first two turning points in the gross flows appear only as inflection points in the current account time series (Graph 5).

Table 1: Turning points in gross flows of incoming and outgoing funds

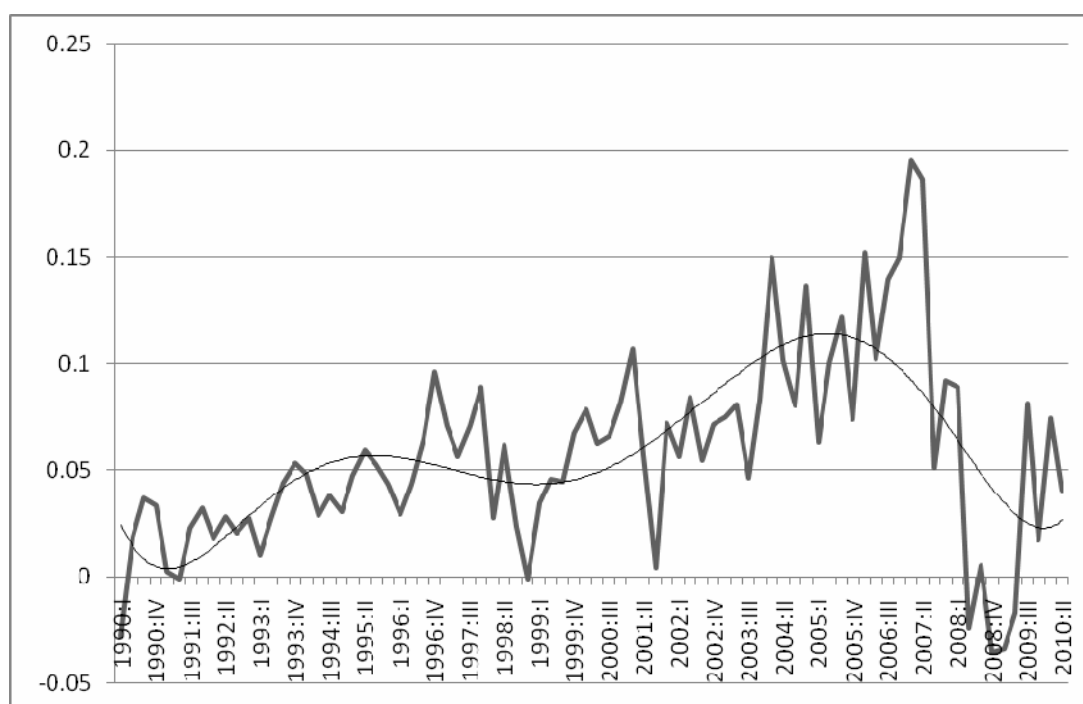
Turning Points	LTInv	STB (Private)	S&P Index
1. Peak	1999(2)	2001(1)	2000(2)
2. Bottom	2002(3)	2003(2)	2002(3)
3. Peak	2006(4)	2007(2)	2007(3)
4. Bottom (?)	2008(3)	2009(1)	2009(1)

Graph 1: US long term investment as a ratio of GDP

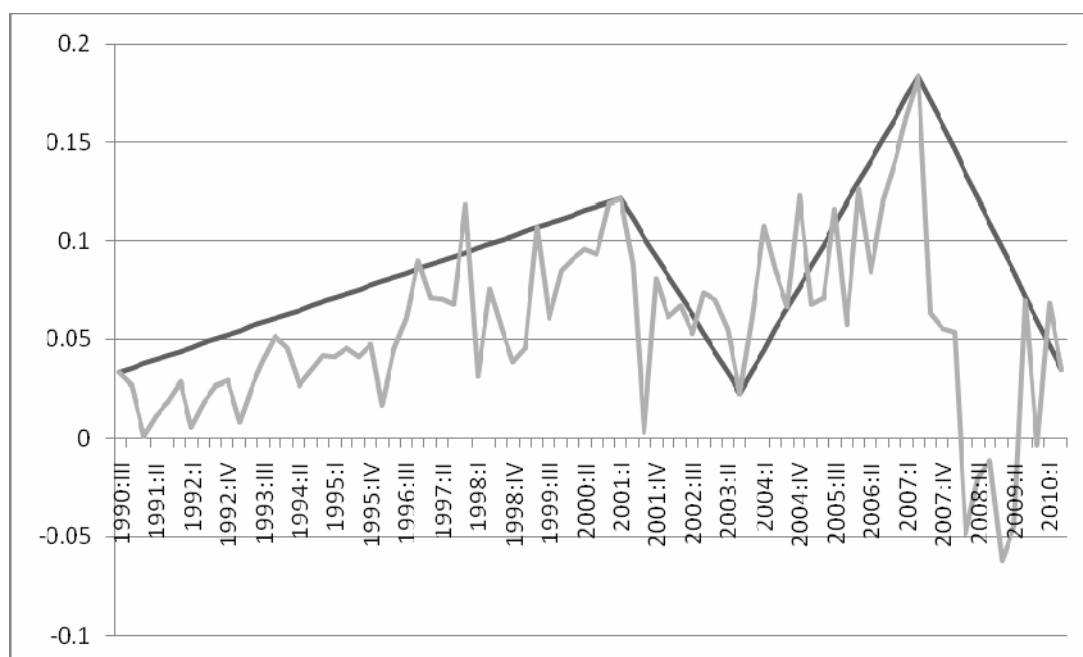


¹² The first column refers again to “US Long Term Investment” (Lines 51+52), while the second column refers to US private “short term borrowing” (Line 63) only. The third column gives the dates of turning points in the S&P Index of the NY Stock Exchange.

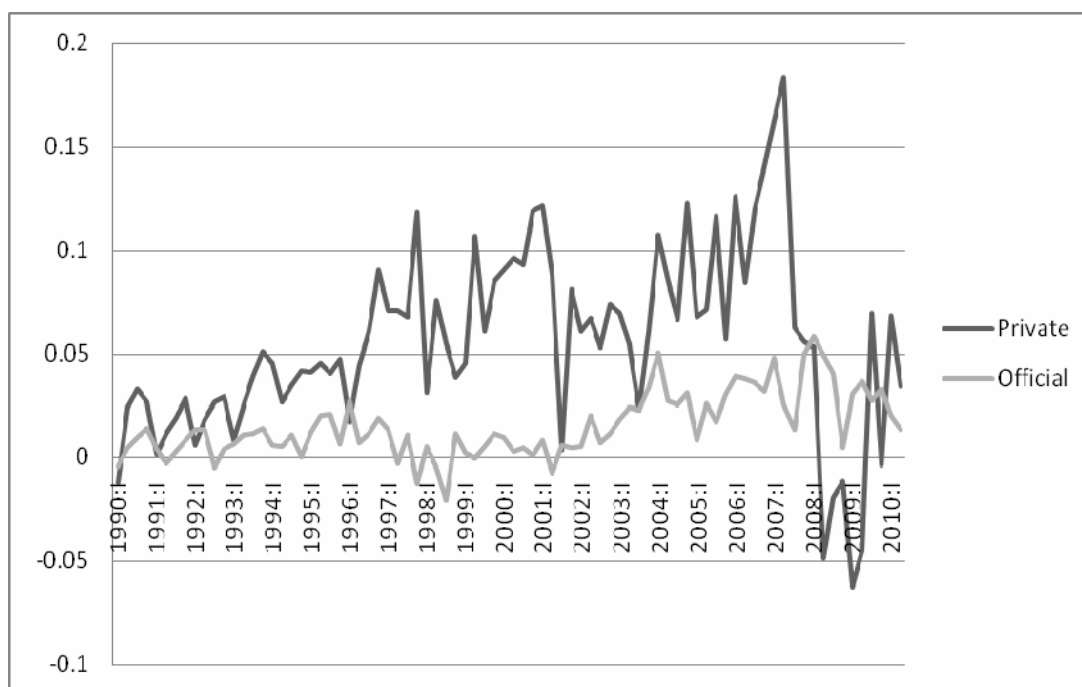
Graph 2: US short term borrowing as a ratio of GDP



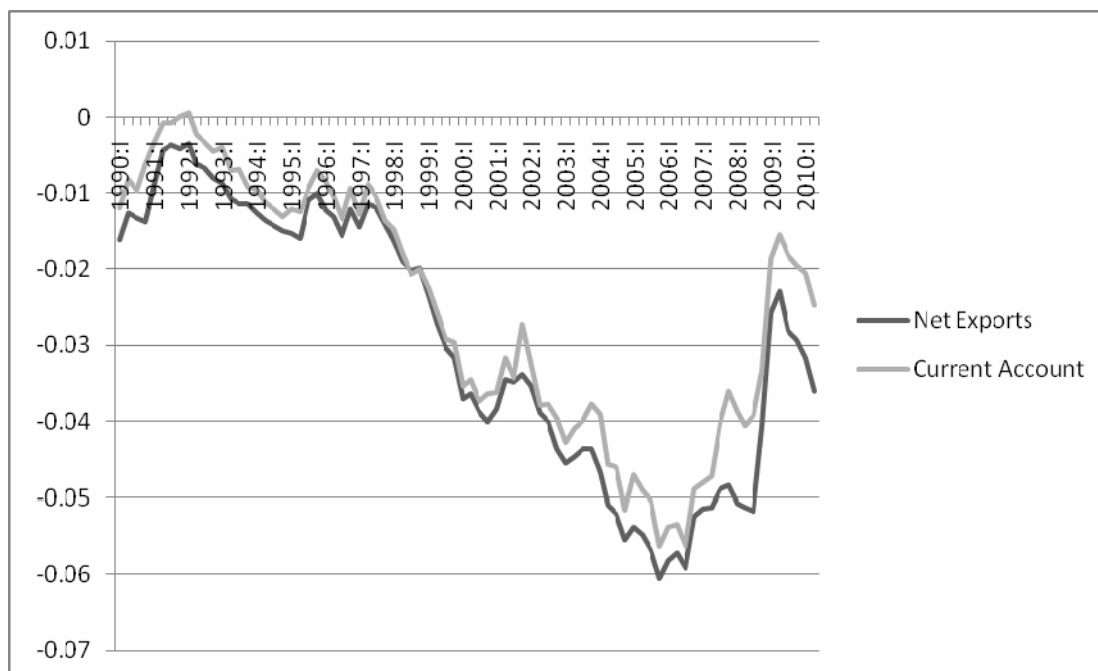
Graph 3: US short-term private borrowing (line 63) – ratio of GDP



Graph 4: Official (line 56) and private (line 63) flows into the US



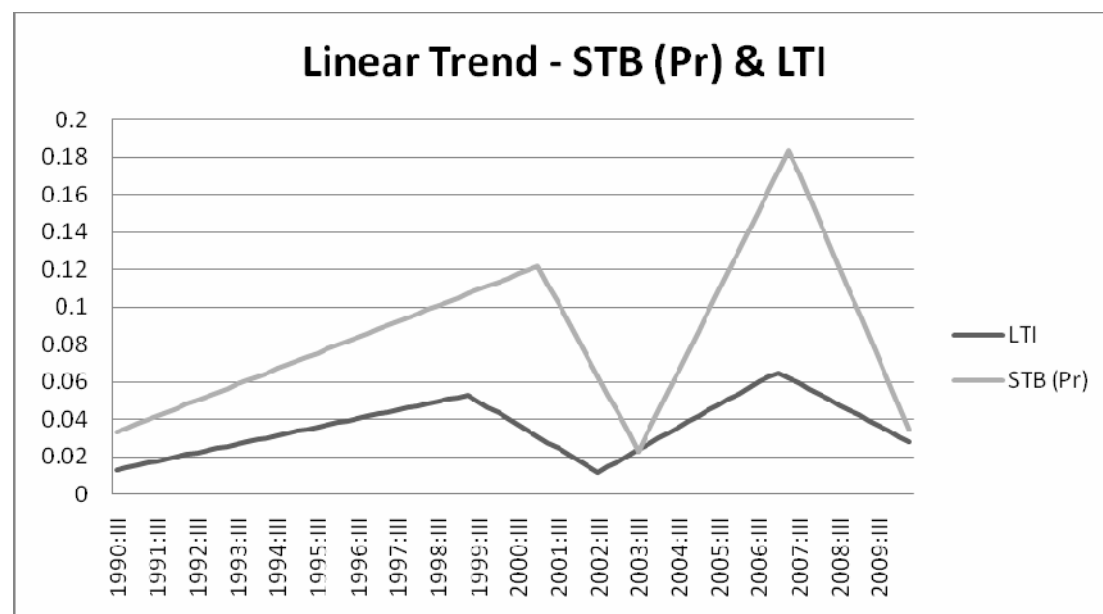
Graph 5: US current account balance and net exports



The overall picture that emerges from these graphs shows that global intermediation suffered its first setback following the Asian crisis and the ensuing dot.com debacle. There was a marked contraction in the volume of intermediation roughly around the dot.com debacle when both outgoing long term investment as well as the short term borrowing fell steadily - Graph 6 reproduces the linear trend lines from Graphs 1 and 3 above to make this easier to track. This was in part the result of the collapse of investment after the Asian crisis in the

region (Felipe, Kintanar, and Lim 2006),¹³ the fallout from the bursting of the dotcom bubble and the broader cumulative effect of rising currency and contagion risk in the emerging countries, arguably a reflection of the fact that the economies that were the recipients of significant capital flows would soon experience abrupt capital flow reversals and run into crisis throughout the 1990s.

Graph 6: Long-term investment and short-term borrowing – linear trend lines



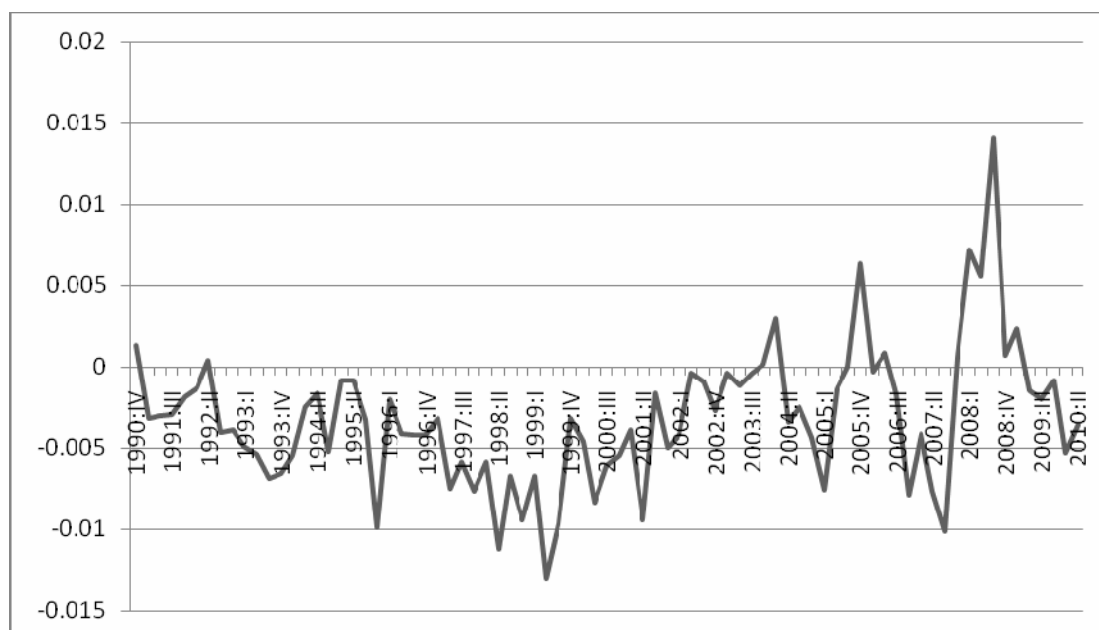
The beginning of the US recovery towards the end of 2002 appears to have jumpstarted global intermediation, thanks in part to the steady increase in official incoming funds during the interim (Graph 4) which basically amounted to the monetization of US debt by Asian central banks – most notably, in Japan. However, this second phase of intermediation associated with the US housing bubble was much less effective in dispersing funds than the first. In the 1990s, incoming funds rose faster than outgoing funds, yet the rate of growth of both were comparable. By contrast, the rate of increase in outgoing funds lagged far behind that of incoming funds in the period after 2002 (Graph 6). Bernanke's (2005, 2007) 'savings glut' was as much the result of the outgoing funds' failure to increase in tandem with incoming funds, and explains why global intermediation became increasingly lopsided as a significant portion of potentially outgoing "long term investment" turned inward to exploit the greater reservoirs of US creditworthiness. But, of course, that also meant that the epicentre of debt build up shifted onto the US with all its ill-effects that have since become all too familiar.

In this second, lopsided phase of intermediation the growing importance of official incoming funds also stands out. While Graph 7 shows their relative magnitude in relation to outgoing funds, what we have termed US Long-term Investment fell steadily until the period around the Asian crisis and rose thereafter in ragged cycles that reached a higher peak at each successive burst. The inverse relationship between private and official incoming funds is again observable, but is more pronounced in this latter period with the successive dips in the latter part of the trend line in Graph 7 corresponding to periods when private flows picked up. Since the collapse of Lehman Brothers, the cumulative total official inflow has been almost

¹³ For a broader discussion of the causes of the global decline in investment, see Pagano & Rossi (2009)

three times as large as private incoming funds. In the period 2000 – 2008, it was exactly the reverse: the private inflow was roughly three times as large. During 2000 -2003 - the last period when the marked fall in private incoming funds was partially compensated by a rising official inflow - the ratio was even higher in favour of private inflows. While this needs more work to fully substantiate, it seems clear that the relative importance of newly created liquidity - through monetization of US debt first in Asia and later in the US after the crisis – has markedly increased as funds have been going back and forth like a ping pong ball between the US and abroad.

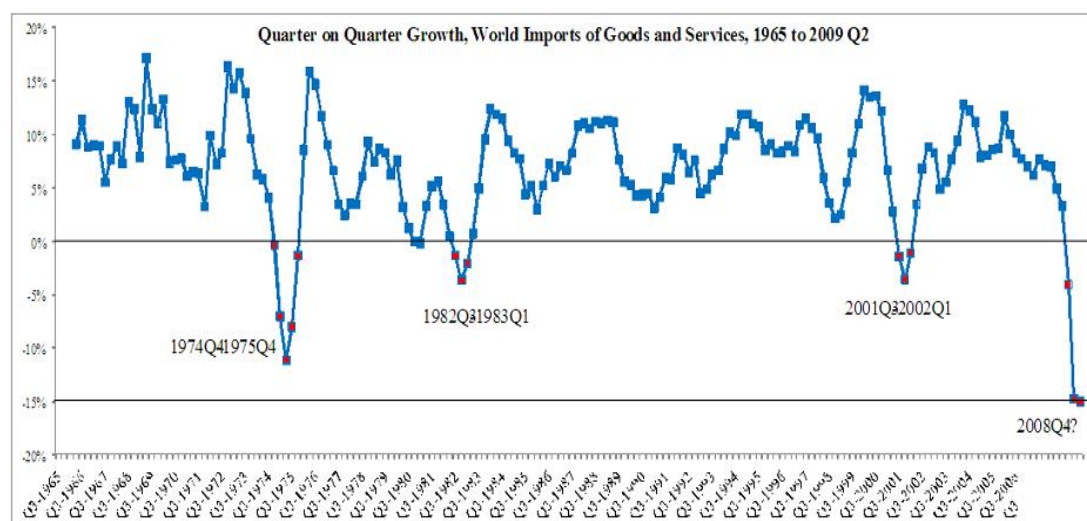
Graph 7: Ratio of official inflows to outgoing us long term investment



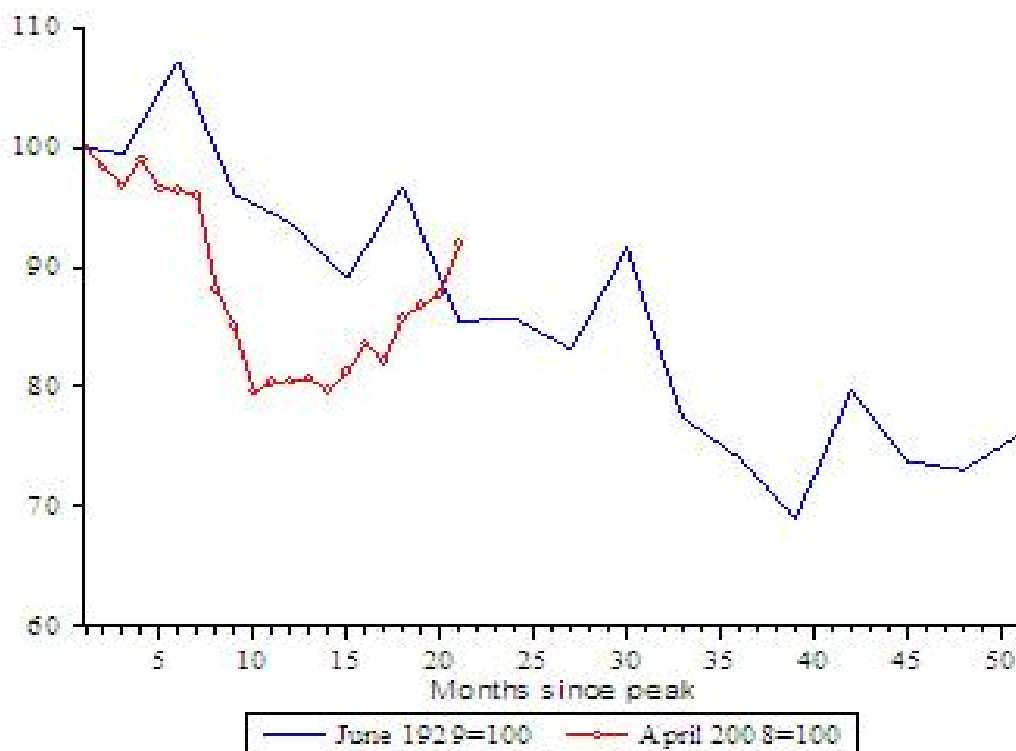
After the first bout of quantitative easing, the ‘carry trade’ reversed, making the dollar the funding currency in search of yield overseas. Thus, the speculative capital inflow overseas became an increasingly more important source of funds compared to trade surpluses, and reserve accumulation picked up as central banks scrambled to prevent their currencies from appreciating against the dollar and thereby pushed up the demand for US financial assets. But, a part of the funds recycled through reserve accumulation abroad returned to the US only to leave it anew in search of yield overseas again – hence, the ping pong analogy.

From the point of view of the threat of global disintermediation, what was even more worrisome was, of course, the dramatic collapse in global trade (Graph 6) after the crisis broke out, falling 20% below its previous peak - steeper than the contraction experienced during the Great Depression (Graph 7). With the revival in world industrial production world trade continues to recover, but still remains below its previous peak at the beginning of 2008 (Eichengreen & O’Rourke 2010). It is thought provoking that this time around there was no ‘Smoot-Hawley Tariff Act’ to blame.

Graph 6: Contraction of world trade



Graph 7: World trade now and during The Great Depression



1.3. Currency reform?

In our view, international currency/payment reform is important because it can potentially reverse the trend towards disintermediation, and provides the means to repair the confidence in the reserve asset while avoiding deflation. It might become politically viable in two different ways. One is through the enlightened leadership of the US and international cooperation, perhaps at the level of the G20. This route appears increasingly unlikely today,

given the persistent lack of interest on the part of policy makers in the US. The other route might be more indirect, involving the roundabout impact the rising cost of inaction could have on decision makers and the overall policy debate, especially in the US where arguably the full implications of the current impasse - 10% unemployment and stagnation for years to come - have not yet been fully factored into the political equation.

However, it is also entirely possible that US policy makers might respond in a shortsighted way to their growing inability to revive aggregate demand through asset purchases and increased government spending, by seeking solace in a weak dollar. In fact, barring international reform, an inflationary collapse of the dollar and a slide into a multicurrency system can be said to be in the US interest – analogous perhaps to going off the gold standard in 1933 – as it could free its hand to reflate its economy and mitigate its debt overhang. The dynamic that can bring this about can be quite similar to what is described in the second generation currency crisis models. In the European crisis of 1992-3, the conflict speculators perceived between fixed parities and changes in the direction of macroeconomic policies that appeared likely in the light of unexpected economic developments was perceived to be the main problem. Speculators attacked the currencies of those countries they thought could gain more from abandoning fixed parities than defending them. Governments ended up *ratifying* these speculative attacks by changing course, even though their original policies would have been viable had it not been for the attack on the currency.

On the other hand, a collapse of the dollar and slide into a multicurrency system is hardly in the best interest of developing countries. From their point of view, the challenge is to put to use their large reserves of dollars to revive a form of financial intermediation that can assist development. If this cannot be achieved globally because of the intransigence of the US, regional efforts to establish monetary unions in Latin America and South East Asia can perhaps provide a second best solution. The large cache of dollar reserves they have accumulated provides them with historical opportunities that hitherto were never available.

II. The Current Debate on Reform

Views on the kinds of reforms needed and how quickly they should be adopted vary widely. The 2009 *Report of the United Nations Commission of Experts on Reforms of the International Monetary and Financial System* sees reform as urgent and argues that a new global reserve currency is “an idea whose time has come”. Their report echoes the view of many that using assets denominated in national currencies as reserves is a system that creates global payment imbalances and inequities by channeling capital flows away from developing countries to countries that issue reserve currencies.

Others, however, believe it likely that there will be an ongoing evolution of the current system. Some think that shifts in investment patterns will determine change – that, for example, a preference for long-term investments could develop which would reduce the need to hold short-term liquid assets as reserves (Feldstein 2009) - while others see evolution as inevitable because they doubt that far-reaching reforms can be implemented. For example, staff economists at the IMF do not argue that the current system should continue - they argue, in fact, that the level of instability is an indication of “a need to look for more durable remedies” (Mateos y Lago et.al., 2009). Nevertheless, their skepticism about the political will for change leads them to accept the probability that the current system may endure for some time if suitably strengthened.

Many think there will be a shift away from a key currency to a multicurrency system and assume that increasing the number of currencies in which international reserves are held will add diversity and increase stability. Even so, most concede that adding currencies will require deep and liquid financial markets for those currencies, their wide use in private sector transactions and the ability of public sector investors to hold the amount of national financial assets denominated in those currencies necessary to satisfy the demand for reserve assets (ibid.)¹⁴

Opponents of a shift to a multicurrency system think it will increase exchange rate volatility, that the expansion of international reserves denominated in any national currency results in cumulative current account deficits for a reserve currency country and is therefore inherently unsustainable (Greenwald and Stiglitz 2008, Ocampo 2009, D'Arista 2009). Nevertheless, a multicurrency system is the most likely outcome of the failure to develop a coordinated approach to reform.

In the following sections, we describe and analyze the trends in thinking about reform reflected in current discussions and proposals. The first section describes the problems caused by previous experiences with multicurrency systems; the second discusses various proposals for expanding the use of special drawing rights (SDRs) as an alternative to reserves based on national currencies, and the third offers proposals for creating new non-national reserve assets not based on the SDR and issued by international agencies other than the IMF.

II.1. Problems and weaknesses inherent in multicurrency systems

Multicurrency systems are not new. That was the system that emerged after the collapse of the Bretton Woods agreement in the early 1970s. During that decade, the dollar and most of the currencies of Western Europe were used as reserve and transaction currencies and shifts from one currency to another resulted in a high level of exchange rate volatility that disrupted trade. Central banks in major industrial countries other than the US attempted to redress the problem by intervening in foreign exchange markets to moderate the appreciation or depreciation of their currencies or those of other countries. Most of the intervention was intended to support a weak dollar but the 65 percent increase in reserves in 1971 and further increases throughout the decade demonstrated how counterproductive this policy tool would prove to be. The buildup in reserves contributed to global inflation and severely weakened, rather than strengthened, the dollar (Dam 1982).

Then as now, the effects of central bank currency intervention were not understood and the outcome was not as intended. In a currency-based international monetary system, foreign exchange reserves are invested in interest-bearing credit instruments and thus increased holdings of reserves expand credit in the country in which those instruments are issued. In other words, when a central bank buys another country's currency with the intention of pushing up that currency's value, it acquires a bank deposit denominated in that currency which it can hold as a deposit or reinvest in securities such as government bonds issued in that country. The act of holding or investing the currency the intervening central

¹⁴ There is already a problem in terms of investments in euro denominated reserves. The assets preferred by public investors are government securities and, while all government securities in the euro area are denominated in the same currency, the credit-worthiness of the securities of individual countries is questioned. Since the development of a euro government bond backed by all EU members is unlikely at this time, euro reserve holdings are likely to be concentrated in a few countries. Moreover, as Greenwald and Stiglitz (2008) have argued, given that the EU's growth and stability pact tends to restrict expansionary policies, a significant shift of reserve holdings into euro-denominated assets could result in strong deflationary pressures if those governments fail to respond effectively.

bank has acquired results in an addition to the recipient country's credit supply. If the acquired currency had weakened because of expansive monetary or fiscal policies, intervention would augment that expansion and cause a further weakening of the currency.¹⁵ Given the procyclical effects of intervention, it is no wonder that the 1970s – a decade of intervention and rising global reserves – was also a decade of inflation.

A shift to a multicurrency system in the 1930s created the opposite problem – the damaging deflationary consequences of the extinction of reserves that occurred in that period. After World War I, the movement of gold to the US that occurred during the war and the decline in gold production made it increasingly difficult for European countries to acquire sufficient gold backing for their currencies to resume gold convertibility. Central banks had held some foreign exchange reserves before the war and, in 1922, many accepted the recommendation of a monetary conference in Geneva to expand the use of foreign exchange reserves to economize on gold.¹⁶ While the Bank of England resumed gold convertibility in 1926 and persuaded several other European countries to do the same, most industrial countries continued to acquire foreign exchange assets as reserves and, by the end of the decade, these reserve assets had grown to about 42 percent of the total reserves of 25 countries (Grubel 1977).

Germany's drift into recession in 1929 prompted the Bank of France to sell its holdings of Deutsch mark assets and forced Germany to suspend gold convertibility. As economic conditions worsened world-wide in 1931, the French central bank converted its other foreign exchange reserve holdings into gold, driving other countries to follow. Fears that the Bank of England would suspend convertibility led to a self-fulfilling prophecy: a run on the Bank forced suspension in September 1931. At that point, several European countries (France, Belgium, Switzerland and the Netherlands) converted sterling assets into still-convertible dollars and created a run on the dollar. Between mid-September and the end of October, the Federal Reserve lost \$755 million of gold. In a futile attempt to stem the hemorrhage and bring gold back, the Fed raised the discount rate from 1 ½ to 3 ½ percent – a blunder widely viewed as deepening the recession in the US and the rest of the world (Kindleberger 1984).

The post-WWI multicurrency system became the critical channel for transmitting economic collapse in the 1930s. Holdings of foreign exchange reserves fell from 42 to 27 percent between 1929 and 1931 and fell further to 8 percent by 1932. The implosion in international monetary reserves caused sharp contractions in money stocks and credit in the major national economies and in cross-border trade and investment (Grubel 1977).¹⁷

¹⁵ Conversely, when intervention is undertaken to dampen the value of a currency, the intervening central bank sells its holdings of assets denominated in that currency, withdrawing funds from that country's credit markets, causing interest rates to rise and, contrary to the original intention, raising the value of the currency. The sell-off of dollar assets by European central banks in the early 1980s in response to the stronger dollar helped push US interest rates and the dollar higher than would have been the case absent intervention.

¹⁶ There was no formal international agreement but some countries acted legislatively on this recommendation at the national level and many others simply resumed buying foreign exchange from their own financial institutions (Grubel 1977).

¹⁷ Eichengreen (2009b) agrees that the erratic shifts that occurred destabilized and ultimately destroyed the interwar reserve system. Nevertheless, he thinks having a number of alternative currencies in a system is positive because it puts pressure on policymakers to maintain investor confidence and, in his view, "that's not a bad thing". Such an optimistic assessment of the ability (or willingness) of policymakers to respond to such pressures – especially when faced with waves of speculative flows – is not supported by evidence of responses in the 1930s or more recently.

Over the last decade, the growth in carry trade transactions as channels for capital flows has introduced some elements of a multicurrency system with significant effects in terms of the growth of international reserves.¹⁸ Rising inflows of investment in emerging economies has been a primary cause of reserve accumulation in recent years and a mechanism for increasing the volume of capital flows as the investment of reserves fed liquidity back into the national markets of strong currency countries and into external (a.k.a. euro) markets. Large inflows into Japanese equities, for example, prompted the Bank of Japan to offset its mounting stock of dollar reserves by relaxing restrictions on lending in yen by Japanese banks in March 2005. The result was an even larger buildup in yen/dollar carry trades than occurred before the 1998 collapse of the Long Term Capital management hedge fund. The buildup in holdings of dollar assets depressed dollar interest rates, led to a search for higher yields that resulted in historically high capital flows to emerging economies in 2006 and 2007 and in additional reserve accumulation by these countries.

The enormous buildup in carry trade positions invested in a variety of assets (including sub-prime mortgages) issued by both advanced and emerging economies played a significant role in the global financial crisis in 2007 and 2008. Unable to maintain access to the immense volume of credit needed to support their bloated balance sheets, global financial institutions precipitated the implosion that followed as lending dried up across the global economy, asset prices plunged and trade suffered a steeper contraction than in the early years of the 1930s.

The shift toward a multicurrency system is already underway and, if left to market forces, is likely to involve a diversification of currencies in reserve holdings as well as in private international investment. But it is doubtful that such a development will lead to stability or, given previous experiences with multicurrency systems, help prevent future crises. Thus, as many have urged, consideration of alternative monetary systems is both reasonable and, perhaps, urgent.

II.2. *The SDR as a reserve asset*

There have been several attempts to revive interest in expanding SDR issuance since it was first introduced in the late 1960s and they have become more frequent since the onset of the financial crisis.¹⁹ While the proposal for a substitution account to replace dollars with SDRs – first offered in the late 1970s when the US seemed unable to stem the fall of the dollar – has been revived (Kenen2009), the discussion has advanced to explore ways to create a new SDR-type global currency. Recent proposals focus on ways to move a non-national reserve asset that is already in existence into the center of the international monetary system. Those who support such a move believe it is necessary to replace a system that is inherently unstable and inequitable and see expanding the use of the SDR as the most feasible path to reform.

The substitution account is viewed by some as a first, feasible step toward reform. Its objective is to cushion a potential sharp fall in the value of the dollar that would lower the value of global reserves and precipitate contractions in credit and asset values throughout the

¹⁸ Cross-border carry trades involve borrowing in a low interest rate currency for investment in higher yielding assets denominated in another currency. As the build-up of carry trade positions increased, so did exchange rate volatility since sales of the funding currency cause it to depreciate and purchases of the investment currency result in its appreciation. Since the mid-1990s, the yen, euro and dollar have all been used at various times as funding and investment currencies in amassing carry trade positions with higher-yielding emerging market assets attracting large shares of investment in the mid-2000s.

¹⁹ For a discussion of the origin and history of SDRs, see IMF (1987) and D'Arista (2009).

global economy. It would do so by creating a means to convert dollars into SDRs by having the IMF exchange holdings of US Treasury bills held in reserve accounts for SDRs and paying interest on the SDRs from interest received on the T-bills. Since the US would be paying interest on its securities in any event, the transfer would not result in a cost to the US Treasury. But If the objective of creating the account is to maintain the value of dollar reserves, the US could potentially face a substantial cost because it would lose the ability to depreciate its currency and thus lower the value of its debt. When the substitution account was first proposed in the 1970s, the US was unwilling to accept the burden of guaranteeing the value of the dollars held in the substitution account on a par with an SDR that was backed by 16 currencies at that time. But as historically high interest rates pushed up the value of the dollar in the early 1980s, interest in SDRs waned (Helleiner 2009).

Given the growth in global reserves, it is even less likely now that the US would assume the burden of maintaining the value of dollar reserves held in a substitution account. But new proposals that include sharing the exchange rate risk (Kenen 2009; IMF 2009) create new problems and inequities. If all IMF member countries shared the risk in proportion to their quotas in the Fund, the largest holders of dollar reserves would benefit the most and would be subsidized by other countries. But sharing the risk in proportion to the size of countries' reserve holdings would place the burden on the largest holders without providing them with benefits sufficient to encourage participation. Sharing the risk would have been a feasible proposal at the end of the 1970s when most dollar reserves were held by a large group of industrial countries. The current level of concentration makes an agreement on a substitution account less likely.

Additional SDR Allocations The new allocation of SDRs in mid-2009 in response to the agreement by the G-20 raised the share of the SDR in non-gold reserves from 0.5 to 5.0 percent. The call for a new issuance had been made by the governor of the Chinese central bank, Zhou Xiaochuan, together with a proposal to include the currencies of all the major economies in the SDR basket, weighted in terms of GDP and backed by real assets held in a reserve pool that would allow subscription and redemption as desired (Helleiner 2009). Only the allocation itself was adopted and some see it as a marginal accomplishment and doubt more can be done to promote its role as the primary reserve asset unless some of the limitations inherent in SDR issuance can be overcome.

One of those limitations is the fact that the SDR is not liquid; it cannot be openly traded for national currencies and buying or selling SDRs for national currencies requires consent from the countries issuing those currencies. As a result, SDRs are useless in terms of responding to a run on a country's currency, an economic downturn or a natural disaster. To increase its liquidity, some propose establishing a settlement system between the SDR and other currencies and encouraging IMF members to peg to and invoice in SDRs. But increasing its role and usefulness will also require encouraging, promoting and/or subsidizing private sector use of the SDR (IMF 2009).²⁰

Barry Eichengreen argues that the critical mass required to make the SDR liquid would involve its "commercialization" through a process that would allow SDRs to be issued and redeemed by governments and private banks as well as the IMF. He suggests that the IMF be authorized to undertake the role of market-maker, buying and selling SDRs at spreads comparable to those on the dollar. This is, in effect, a proposal to make the SDR the key asset used in international payments as well as international reserves. But he concedes that

²⁰ Steps in that direction might include encouraging the denomination of international trade and investment transactions in SDRs with settlement in one of the component currencies – a strategy used in Europe when the ecu was the unit of account before the introduction of the euro.

this would require time for the IMF to evolve into a global central bank and lender-of-last-resort (Eichengreen 2009a). In the meantime, his view is that the dollar will remain “first among equals” into the future since the market for US Treasury securities is the “single most liquid government bond market in the world” (Eichengreen 2009b).

Because he accepts the limitations inherent in moving the SDR to the center of the payments system, Jose Antonio Ocampo advocates focusing on expanding its use in the global reserve system while continuing the use of the dollar in international payments.²¹ His primary concern about SDR issuance is that it should be aligned with development and proposes that larger allocations be given to those with the highest demand for reserves and that the IMF be authorized to use unutilized reserves to buy bonds from developing countries.²² In his view, allocations should be countercyclical – loaned during crises and automatically extinguished when loans are repaid – and unused allocations be treated as deposits that can be loaned to other countries as needed. Included in his proposals is the suggestion that generous overdraft or “drawing” facilities be created that can be used on an unconditional basis by all member countries and that the IMF be authorized to suspend the right of countries with large surpluses or excessive reserves to receive SDR allocations (Ocampo 2009).

Bruce Greenwald and Joseph Stiglitz (2009) also advocate penalizing surplus countries by taxing the substantial and regular issuances of SDRs they propose²³ and using the tax for global financial aid. They address the liquidity problem by requiring each member country to guarantee it would convert SDRs into its own currency. Alternatively, they suggest that a group of countries could form a new system to which they make annual contributions in their own currencies and receive “global greenbacks” in return.²⁴ This would ensure convertibility and so could be used in a crisis to provide resources available to all members of the group. Because it could be initiated at a regional level, it would serve as a means to build a new monetary system from the ground up – an advantage also noted by Ocampo (2009) and the Report of the UN Commission of Experts (2009).

The Greenwald and Stiglitz plan assumes that global greenbacks would be held initially by central banks but that “a more ambitious version” would allow them to be held by individuals. This is yet another acknowledgement of the need to create a link between reserve assets not based on national currencies and those used in private international transactions but the institutional arrangements necessary for such an evolutionary development to take place are missing here as in an earlier proposal by Stiglitz (2006).

The Report of the UN Commission of Experts (2009). Many of the elements of the above proposals are included in Chapter 5 of the UN Commission’s report. The Report would, however, provide a new global reserve currency that could be managed by the IMF or by a new institution – a “Global Reserve Bank”. One version of the proposal would create a

²¹ This would, however, perpetuate many of the problems associated with the buildup of dollar liabilities. If used in transactions (and held as reserves) by the foreign *private* sector, foreign holdings of dollars would continue to create distortions in capital flows as US credit markets would continue to be the center for the temporary investment of funds used in payments.

²² George Soros has also proposed that rich countries give their unutilized SDRs to poor countries to relieve debt and finance low carbon investments, and proposes that the IMF use its \$100 billion gold reserve to guarantee repayment (Harraban 2009).

²³ Given global reserves of about \$3 trillion in 2008 and an average rate of growth in trade of 7 percent, they suggested annual increases in SDR issues of \$200 billion.

²⁴ The authors do not discuss how the currencies contributed to the agency would be invested or how they might affect credit in national economies.

world-wide system of swaps among central banks with the contributions in their currencies as backing for the global currency. Another version would have the international agency issue the global currency to member countries like the IMF issues SDRs but with no backing other than the commitment of member countries to accept it in exchange for their own currencies. Yet another version would designate these issues of the global currency as deposits in the Global Reserve Bank and authorize the Bank to use them to buy government securities or lend them, providing backing for the global currency in the same way national currencies are backed by the assets of national central banks.

This last institutional arrangement provides for paying interest on deposits created and allocated by the Global Reserve Bank out of the interest on loans or government bonds to encourage member countries to hold reserves with the Bank. Allocations would be determined by the size of member countries' GDP or their needs and carry penalties to prevent countries from running large surpluses that are not used to create global demand.²⁵

The UN Report suggests some of the elements needed to make a non-national currency reserve asset effective. For example, like a system based on national currencies, the institution that issues the asset must have the authority to create credit and must use some form of backing that can channel credit to the recipients. In other words, the institution must be a monetary agency – unlike the IMF that functions more like a Treasury operation dependent on taxpayer funds. If structured as a monetary agency, the institution would have the potential to evolve into a global central bank issuing liabilities in sufficient amounts and with sufficient credibility to be used by both public and private sectors for international transactions. But, as Eichengreen points out, that evolution will take time.

A Modified SDR Proposal. The above proposals lay out important goals that must be met if a reserve system based on non-national currencies is to evolve. It is likely that further institutional arrangements will be proposed that can hasten that evolution. In the meantime, we offer the following outline of a modified SDR-type plan that might serve as an effective transitional step in moving toward a new system. The plan would be structured as follows:

- The international agency would issue a reserve asset to central banks of member countries in exchange for securities issued by their Treasuries. Those securities would serve as backing for the reserve asset.
- The value of the asset would reflect the aggregate market value of all members' currencies. The amount of reserves issued to a given country would be determined by its shares of global population, trade and output. The governance of the international agency should reflect those same weights.
- The international agency could provide liquidity to member countries by exchanging its holdings of government securities with central banks of other member countries for their currencies or selling them to private or public investors.
 - For example, the agency could sell the government securities of country A to investors in exchange for the currency of country A or that of any other country at its discretion. It could then exchange the currency acquired with the government or central bank of country B in exchange for that country's reserve assets.

²⁵ Several other alternative proposals in the Commission's Report include the basic one of increasing SDR issuance on a regular or countercyclical basis, providing all financing for crises in SDRs and extinguishing them as loans are paid back, and investing some of the SDRs in bonds issued by regional development banks. The Report also advocates using these proposals in regional arrangements.

- In such transactions, country A's reserve balance would be unaffected and the agency's holdings of country B's securities would remain unaffected. However, the agency would now have a loan to country B on the asset side of its balance sheet and a liability to country A for the securities sold. When the loan by country B is repaid (in country A's currency), the proceeds would be used to reconstitute the agency's holdings of country A's securities. Thus there would be no change in the value of the agency's balance sheet and no expansion of global liquidity.
- New issues of reserve assets would, however, expand credit in member countries and expand global liquidity. Redemptions of countries' holdings of reserve assets by the international agency in exchange for their government securities would contract credit. Thus the international agency would have countercyclical powers to issue and redeem reserve assets.

One benefit of this modified system is that it fosters development by absorbing Treasury debt in exchange for reserve assets that can back credit expansion in the domestic economy. Countries that have not been able to engage in fiscal stimulus would be able to do so. Another benefit is that it can supply the means of payment for international transactions to countries that do not issue widely tradable currencies. Equally important, it can respond as a lender-of-last-resort in currency crises. Finally, unlike the euro, it moderates the intrusion on national sovereignty of a new regional or global currency. Countries would still use their own national currencies at home but would be able to acquire international reserves without borrowing from foreign private financial institutions or earning reserves by promoting export-led growth at the expense of domestic demand.

II.3. Alternative Global Reserve and Currency Reforms

The commercialization of the SDR proposed by Eichengreen would, in time, move the international reserve and payments system toward a structure that would function like a global central bank and lender-of-last-resort. But it could also lead to the adoption of a single currency in the global economy that, as recent experience with the euro suggests, has important drawbacks. But there are other potential institutional and instrumental structures that move beyond the SDR-based proposals that are the current focus of discussion and they, too, should be explored. We offer the following reform proposals in an effort to encourage others that will expand the menu of options and enlarge the debate.

Creating a public international investment fund for emerging economies. The investment of emerging economies' current account surpluses in the US and other major national and international financial markets assured not only that these poorer countries would be financing the rich but that some portion of those funds would be recycled back to those same creditor economies in the form of foreign acquisition and ownership of their financial assets and productive facilities.²⁶ This channel for returning savings back into these countries often tends to undercut the potential for those savings to support development.

The primary channel for flows to emerging economies is foreign portfolio investment and reflects the shift toward a dominant role for institutional investors in global financial markets. More often than not, however, portfolio investment has tended to change prices and exacerbate volatility in secondary markets rather than provide long-term financing for economic expansion, while outflows often trigger and intensify currency crises. Moreover,

²⁶ For a discussion of the spill over effects of these patterns of capital flows, see D'Arista and Griffith-Jones (2006).

many developing countries that need long-term financing for infrastructure and other basic components of development strategies do not have markets that can absorb foreign portfolio investment flows nor the credit standing to attract them. What is needed is a new channel for portfolio investment to provide flows that are stable, in amounts appropriate to the size of a country's economy and directed toward the goals of development rather than solely toward the short-term profits of investors.

Creating one or more closed-end funds for emerging market investment through a separate institution under the Bretton Woods structure could constitute an important step toward accomplishing those goals.²⁷ These new funds would issue their own liabilities in national currencies in markets where there is strong demand for portfolio investment and would buy stocks and bonds of private enterprises and public agencies (including development banks) denominated in local currencies in emerging and developing economies. Marketed to both private institutional investors and official investors, they would qualify as international reserve holdings with a guarantee from the multinational agency that issues them and its member countries. Such a channel would enable emerging and developing economies to redirect their external savings back into their own economies rather than into the financial markets of strong currency countries. In addition, their closed-end structure would allow the new agency to make long-term investments and ensure that sales of the funds' liabilities would not disrupt development projects.

In addition to creating a stable channel for financing development, these funds would create a new international reserve asset that, in time, would expand sufficiently to bring about an incremental shift away from reserve holdings based on the financial assets of the wealthier, strong currency countries. Their status as reserve assets would be enhanced by their multilateral (rather than unilateral) backing by advanced and emerging economies.

Creating a New International Payments System. The above proposal addresses one critical flaw in the current international monetary system but, as the overview of the current debate suggests, the current payments system based on national currencies will tend to perpetuate the imbalances that are now constraining effective international financial intermediation. As long as the dollar or other strong currencies remain the means of payment for cross-border transactions, countries will be compelled to rely on promoting exports and shape their economies to ensure that they can earn or borrow key currencies to engage in external trade and investment. It also means that key currency countries must export more than they import to meet the demand for their currencies and accept the resulting current-account deficits and buildup in debt. In other words, the development of payments imbalances is inherent in the structure of the current system.

Ideally, the international payments system should be one in which every country could engage in trade and borrow and invest externally in its own currency. This was a core assumption in Keynes' proposal at Bretton Woods to create an international clearing union (ICU) and one we believe should be revived by creating an institutional structure that can accommodate such a system. Keynes' clearing house platform would be a key element in this structure. For example, an international clearing agency (ICA) could clear cross-border transactions in members' own currencies by crediting and debiting their clearing accounts.²⁸ These clearing accounts would, in fact, constitute the international reserves of the system, held by the ICA and valued using a trade-weighted basket of members' currencies. Thus the clearing process would change the ownership of reserves and reinstate the original intent of

²⁷ For a discussion of the benefits of closed-end funds and other details of its structure, see D'Arista (2000).

²⁸ For details of the ICA proposal, see D'Arista (2000)

the Bretton Woods agreement to maintain public control of international payments. It would preserve the valid role of market forces in determining exchange rates while ensuring that speculators would no longer dominate the process.

A revised clearing house structure could also reintroduce former US undersecretary of the Treasury Harry Dexter White's Bretton Woods proposal to authorize the IMF to engage in open market operations (Boughton 2006)²⁹, permitting the ICA to acquire government securities of its member countries as backing for their reserve holdings. This instrumental structure would give the ICA means and authority to conduct open market operations at the international level, enabling it to help national authorities correct imbalances, carry out exchange-rate adjustments, and promote stability by altering holdings of international reserves relative to national central bank reserves invested in domestic assets. Equally important, it would allow the ICA to act as a true lender-of-last-resort, supplying liquidity by buying government securities of member countries and augmenting their international reserves.

The ICA's ability to create and extinguish international reserves would give it the authority to expand or contract liquidity at the international level. The absence of that authority has become increasingly evident throughout the post-Bretton Woods era as crisis after crisis has damaged the global economy. Establishing an international monetary authority to conduct countercyclical operations was never needed more than now.

II.4. The feasibility of current reform proposals

The institutional and instrumental framework for using SDRs as an alternative to international reserve assets based on national currencies already exists. As a result, the SDR has emerged as the primary element in proposals for reform and there has already been a substantial new issue of SDRs. But this new issue was not large enough or structured effectively to produce results that would test the ability of the asset to provide a transition to a new system.

The creation of closed-end international investment funds discussed above would also be able to use the existing institutional framework to increase the share of non-currency reserves in the system. The World Bank already has authority to issue its own liabilities and even began experimenting with using institutional investment pools to direct flows to emerging economies in the 1990s when it sponsored private investment funds for the purpose. The open-ended structure of those funds undercut their effectiveness as stable sources for longer-term development strategies (as did the focus in that period on promoting privatization) and perpetuated the procyclical effects of portfolio investment. Thus, a minor shift in structure – the creation of closed-end funds – could make this channel effective in achieving both monetary and development goals.

Changes in the instrumental and institutional structure of the existing Bretton Woods agency would, however, be required to implement the more ambitious SDR proposals and the international clearing agency discussed above. Those changes would require new international agreements and approval by national legislative bodies. Moreover, since they include reform of both reserve and payments systems, these agreements would be a major undertaking and require an unusual commitment of political will at the international level. As the agreement for new issues of SDRs suggests, any of the more ambitious reform proposals will likely be initiated in discussions by the G-20. Absent a crisis of global proportions

²⁹ This proposal is also incorporated in the modified SDR plan described above.

involving the international monetary system itself, it is difficult to see how such discussions will come about. Nevertheless, we believe that failure to take those steps – to focus only on the international reserve system – will result in a shift to a multicurrency payments system that, given the size of private international capital flows, will intensify the imbalances and crises that have plagued the current key currency system.

Conclusion

The world economy is at an impasse, and policy makers are at a crossroad in terms of how they respond to the challenge it poses. A win-win solution would require deepening international cooperation and new institutions that would make many of the reform proposals discussed above politically viable. However, inertia and shortsighted policy decisions on the part of the rich and powerful nations, especially the US, might instead push us towards an outcome inferior to what is within reach for all. However, even then, the increased economic power of emerging economies and their financial clout means that they might be able to have much greater influence over their own destiny today than was ever possible before, provided that they manage to act in tandem through global or regional fora.

In a nutshell, the policy challenge emerging market and developing countries face involves the need to address two related but separate problems. One is the challenge of reviving financial intermediation in a way that channels investment throughout the world to promote development and stability. The other is to be able to participate in global trade and investment without having to amass someone else's currency – a requirement that, in the past, forced them to either over-borrow or promote exports at the expense of all else. The large dollar reserves in the hands of emerging economies give them some breathing room from the constraint posed by the latter challenge while providing them with the means to address the former. In fact, any success in financial intermediation that channels investment towards development globally – or at least regionally – can potentially make it easier to reform the international monetary system by creating the assets that can be used as reserves in a new system.

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U.S. “quantitative easing” is fracturing the Global Economy

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Moreover, it may well be asked whether we can take it for granted that a return to freedom of exchanges is really a question of time. Even if the reply were in the affirmative, it is safe to assume that after a period of freedom the regime of control will be restored as a result of the next economic crisis.

—Paul Einzig, *Exchange Control* (1934).¹

Great structural changes in world trade and finance occur quickly – by quantum leaps, not by slow marginal accretions. The 1945-2010 era of relatively open trade, capital movements and foreign exchange markets is being destroyed by a predatory financial opportunism that is breaking the world economy into two spheres: a dollar sphere in which central banks in Europe, Japan and many OPEC and Third World countries hold their reserves the form of U.S. Treasury debt of declining foreign-exchange value; and a BRIC-centered sphere, led by China, India, Brazil and Russia, reaching out to include Turkey and Iran, most of Asia, and major raw materials exporters that are running trade surpluses.

What is reversing trends that seemed irreversible for the past 65 years is the manner in which the United States has dealt with its bad-debt crisis. The Federal Reserve and Treasury are seeking to inflate the economy out of debt with an explosion of bank liquidity and credit – which means yet more debt. This is occurring largely at other countries' expense, in a way that is flooding the global economy with electronic “keyboard” bank credit while the U.S. balance-of-payments deficit widens and U.S. official debt soars beyond any foreseeable means to pay. The dollar's exchange rate is plunging, and U.S. money managers themselves are leading a capital flight out of the domestic economy to buy up foreign currencies and bonds, gold and other raw materials, stocks and entire companies with cheap dollar credit.

This outflow from the dollar is not the kind of capital that takes the form of tangible investment in plant and equipment, buildings, research and development. It is not a creation of assets as much as the creation of debt, and its multiplication by mirroring, credit insurance, default swaps and an array of computerized forward trades. The global financial system has decoupled from trade and investment, taking on a life of its own.

In fact, financial conquest is seeking today what military conquest did in times past: control of land and basic infrastructure, industry and mining, banking systems and even government finances to extract the economic surplus as interest and tollbooth-type economic rent charges. U.S. officials euphemize this policy as “quantitative easing.” The Federal Reserve is flooding the banking system with so much liquidity that Treasury bills now yield less than 1%, and banks can draw freely on Fed credit. Japanese banks have seen yen borrowing rates fall to 0.25%.

This policy is based on a the wrong-headed idea that if the Fed provides liquidity, banks will take the opportunity to lend out credit at a markup, “earning their way out of debt” – inflating the economy in the process. And when the Fed talks about “the economy,” it means

¹ Paper presented at the Boeckler Foundation meetings in Berlin, October 30, 2010. I am indebted to Eric Janszen of i-tulip for bringing the Einzig quote to my attention.

asset markets – above all for real estate, as some 80% of bank loans in the United States are mortgage loans.

One-third of U.S. real estate is now reported to be in negative equity, as market prices have fallen behind mortgage debts. This is bad news not only for homeowners but also for their bankers, as the collateral for their mortgage loans does not cover the principal. Homeowners are walking away from their homes, and the real estate market is so thoroughly plagued with a decade of deception and outright criminal fraud that property titles themselves are losing security. And despite FBI findings of financial fraud in over three-quarters of the packaged mortgages they have examined, the Obama Justice Department has not sent a single bankster to jail.

Instead, the financial crooks have been placed in charge– and they are using their power over government to promote their own predatory gains, having disabled U.S. public regulatory agencies and the criminal justice system to create a new kind of centrally planned economy in the hands of banks. As Joseph Stiglitz recently observed:

In the years prior to the breaking of the bubble, the financial industry was engaged in predatory lending practices, deceptive practices. They were optimizing not in producing mortgages that were good for the American families but in maximizing fees and exploiting and predatory lending. Going and targeting the least educated, the Americans that were most easy to prey on.

We've had this well documented. And there was the tip of the iceberg that even in those years the FBI was identifying fraud. When they see fraud, it's really fraud. But beneath that surface, there were practices that really should have been outlawed if they weren't illegal.

... the banks used their political power to make sure they could get away with this [and] ... that they could continue engaging in these kinds of predatory behaviors. ... there's no principle. It's money. It's campaign contributions, lobbying, revolving door, all of those kinds of things.

... it's like theft ... A good example of that might be [former Countrywide CEO] Angelo Mozillo, who recently paid tens of millions of dollars in fines, a small fraction of what he actually earned, because he earned hundreds of millions.

The system is designed to actually encourage that kind of thing, even with the fines. ... we fine them, and what is the big lesson? Behave badly, and the government might take 5% or 10% of what you got in your ill-gotten gains, but you're still sitting home pretty with your several hundred million dollars that you have left over after paying fines that look very large by ordinary standards but look small compared to the amount that you've been able to cash in.

The fine is just a cost of doing business. It's like a parking fine. Sometimes you make a decision to park knowing that you might get a fine because going around the corner to the parking lot takes you too much time.

I think we ought to go do what we did in the S&L [crisis] and actually put many of these guys in prison. Absolutely. These are not just white-collar crimes or little accidents. There were victims. That's the point. There were victims all over the world. ... the financial sector really brought down the global economy and if you include all of that collateral damage, it's really already in the trillions of dollars.²

² "Stiglitz Calls for Jail Time for Corporate Crooks," DailyFinance: <http://srph.it/aRwl4I>, October 21, 2010.

This victimization of the international financial system is a consequence of the U.S. Government's attempt to bail out the banks by re-inflating U.S. real estate, stock and bond markets at least to their former Bubble Economy levels. This is what U.S. economic policy and even its foreign policy is now all about, including de-criminalizing financial fraud. As Treasury Secretary Tim Geithner tried to defend this policy: "Americans were rightfully angry that the same firms that helped create the economic crisis got taxpayer support to keep their doors open. But the program was essential to averting a second Great Depression, stabilizing a collapsing financial system, protecting the savings of Americans [or more to the point, he means, their indebtedness] and restoring the flow of credit that is the oxygen of the economy."³

Other economists might find a more fitting analogy to be carbon dioxide and debt pollution. "Restoring the flow of credit" is a euphemism for keeping today's historically high debt levels in place, and indeed adding yet more debt ("credit") to enable home buyers, stock market investors and others to bid asset prices back up to rescue the banking system from the negative equity into which it has fallen. That is what Mr. Geithner means by "stabilizing a collapsing financial system" – bailing out banks and making all the counterparties of AIG's fatal financial gambles whole at 100 cents on the dollar.

The Fed theorizes that if it provides nearly free liquidity, banks will lend it out at a markup to "reflate" the economy. The "recovery" that is envisioned is one of new debt creation. This would rescue the biggest and most risk-taking banks from their negative equity, by pulling homeowners out of *theirs*. Housing prices could begin to soar again.

But the hoped-for new borrowing is not occurring. Instead of lending more – at least, lending at home – banks have been tightening their loan standards rather than lending more to U.S. homeowners, consumers and businesses since 2007. This has obliged debtors to start paying off the debts they earlier ran up. The U.S. saving rate has risen from zero three years ago to 3% today – mainly in the form of amortization to pay down credit-card debt, mortgage debt and other bank loans.

Instead of lending domestically, banks are sending the Fed's tsunami of credit abroad, flooding world currency markets with cheap U.S. "keyboard credit." The Fed's plan is like that of the Bank of Japan after its bubble burst in 1990: The hope is that lending to speculators will enable banks to earn their way out of debt. So U.S. banks are engaging in interest-rate arbitrage (the carry trade), currency speculation, commodity speculation (driving up food and mineral prices sharply this year), and buying into companies in Asia and raw materials exporters.

By forcing up targeted currencies, this dollar outflow into foreign exchange speculation and asset buy-outs is financial aggression. And to add insult to injury, Mr. Geithner is accusing China of "competitive non-appreciation." This is a term of invective for economies seeking to maintain currency stability. It makes about as much sense as to say "aggressive self-defense." China's interest, of course, is to avoid taking a loss on its dollar holdings and export contracts denominated in dollars (as valued in its own domestic renminbi).

³ Tim Geithner, "Five Myths about Tarp," *Washington Post*, October 10, 2010.

Countries on the receiving end of this U.S. financial conquest (“restoring stability” is how U.S. officials characterize it) understandably are seeking to protect themselves. Ultimately, the only way this serious way to do this is to erect a wall of capital controls to block foreign speculators from deranging currency and financial markets.

Changing the international financial system is by no means easy. How much of alternative do countries have, Martin Wolf recently asked. “To put it crudely,” he wrote: the US wants to inflate the rest of the world, while the latter is trying to deflate the US. The US must win, since it has infinite ammunition: there is no limit to the dollars the Federal Reserve can create. What needs to be discussed is the terms of the world’s surrender: the needed changes in nominal exchange rates and domestic policies around the world.⁴

Mr. Wolf cites New York Federal Reserve chairman William C. Dudley to the effect that Quantitative Easing is primarily an attempt to deal with the mortgage crisis that capped a decade of bad loans and financial gambles. Economic recovery, the banker explained on October 1, 2010, “has been delayed because households have been paying down their debt – a process known as deleveraging.” In his view, the U.S. economy cannot recover without a renewed debt leveraging to re-inflate the housing market.

By the “U.S. economy” and “recovery,” to be sure, Mr. Dudley means his own constituency the banking system, and specifically the largest banks that gambled the most on the real estate bubble of 2003-08. He acknowledges that the bubble “was fueled by products and practices in the financial sector that led to a rapid and unsustainable buildup of leverage and an underpricing of risk during this period,” and that household debt has risen “faster than income growth ... since the 1950s.” But this debt explosion was justified by the “surge in home prices [that] pushed up the ratio of household net worth to disposable personal income to nearly 640 percent.” Instead of saving, most Americans borrowed as much as they could to buy property they expected to rise in price. For really the first time in history an entire population sought to get rich by running to debt (to buy real estate, stocks and bonds), not by staying out of it.

But now that asset prices have plunged, people are left in debt. The problem is, what to do about it. Disagreeing with critics who “argue that the decline in the household debt-to-income ratio must go much further before the deleveraging process can be complete,” or who even urge “that household debt-to-income ratios must fall back to the level of the 1980s,” Mr. Dudley retorts that the economy must inflate its way out of the debt corner into which it has painted itself. “First, low and declining inflation makes it harder to accomplish needed balance sheet adjustments.” In other words, credit (debt) is needed to bid real estate prices back up. A lower rather than higher inflation rate would mean “slower nominal income growth. Slower nominal income growth, in turn, means that less of the needed adjustment in household debt-to-income ratios will come from rising incomes. This puts more of the adjustment burden on paying down debt.” And it is debt deflation that is plaguing the economy, so the problem is how to re-inflate (asset) prices.

(1) How much would the Fed have to purchase to have a given impact on the level of long-term interest rates and economic activity, and, (2) what constraints exist in terms of limits

⁴ Martin Wolf, “Why America is going to win the global currency battle,” *Financial Times*, October 13, 2010.

to balance-sheet expansion, and what are the costs involved that could impede efforts to meet the dual mandate now or in the future?⁵

On October 15, 2010, Fed Chairman Ben Bernanke explained that he wanted the Fed to encourage inflation – his of program of Quantitative Easing – and acknowledged that this would drive down the dollar against foreign currencies. Flooding the U.S. banking system with liquidity will lower interest rates, increasing the capitalization rate of real estate rents and corporate income. This will re-inflate asset prices – by creating yet more debt in the process of rescue banks from negative equity by pulling homeowners out of *their* negative equity. But internationally, this policy means that foreign central banks receive less than 1% on the international reserves they hold in Treasury securities – while U.S. investors are making much higher returns by borrowing “cheap dollars” to buy Australian, Asian and European government bonds, corporate securities, and speculating in foreign exchange and commodity markets.

Mr. Bernanke proposes to solve this problem by injecting another \$1 trillion of liquidity over the coming year, on top of the \$2 trillion in new Federal Reserve credit already created during 2009-10. The pretense is that bailing Wall Street banks out of their losses is a precondition for reviving employment and consumer spending – as if the giveaway to the financial sector will get the economy moving again.

The working assumption is that if the Fed provides liquidity, banks will lend it out at a markup. At least this is the dream of bank loan officers. The Fed will help them keep the debt overhead in place, not write it down. But as noted above, the U.S. market is “loaned up.” Borrowing by homeowners, businesses and individuals is shrinking. Unemployment is rising, stores are closing and the economy is succumbing to debt deflation. But most serious of all, the QE II program has a number of consequences that Federal Reserve policy makers have not acknowledged. For one thing, the banks have used the Federal Reserve and Treasury bailouts and liquidity to increase their profits and to continue paying high salaries and bonuses. What their lending is inflating are asset prices, not commodity prices (or output and employment). And asset-price inflation is increasing the power of property over living labor and production, elevating the FIRE sector further over the “real” economy.

These problems are topped by the international repercussions that Mr. Dudley referred to as the “limits to balance-of-payments expansion.” Cheap electronic U.S. “keyboard credit” is going abroad as banks try to earn their way out of debt by financing arbitrage gambles, glutting currency markets while depreciating the U.S. dollar. So the upshot of the Fed trying save the banks from negative equity is to flood the global economy with a glut of U.S. dollar credit, destabilizing the global financial system.

Can foreign economies rescue the U.S. banking system?

The international economy’s role is envisioned as a *deus ex machina* to rescue the economy. Foreign countries are to serve as markets for a resurgence of U.S. industrial exports (and at least arms sales are taking off to India and Saudi Arabia), and most of all as

⁵ William C. Dudley, “The Outlook, Policy Choices and Our Mandate,” Remarks at the Society of American Business Editors and Writers Fall Conference, City University of New York, Graduate School of Journalism, New York City, October 1, 2010. <http://www.zerohedge.com/article/why-imf-meetings-failed-and-coming-capital-controls>.

financial markets for U.S. banks and speculators to make money at the expense of foreign central banks trying to stabilize their currencies.

The Fed believes that debt levels can rise and become more solvent if U.S. employment increases by producing more exports. The way to achieve this is presumably to depreciate the dollar – the kind of “beggar-my-neighbor” policy that marked the 1930s. Devaluation will be achieved by flooding currency markets with dollars, providing the kind of zigzagging opportunities that are heaven-sent for computerized currency trading, short selling and kindred financial options.

Such speculation is a zero-sum game. Someone must lose. If Quantitative Easing is to help U.S. banks earn their way out of negative equity, by definition their gains must be at the expense of foreigners. This is what makes QE II is a form of financial aggression.

This is destructive of the global currency stability that is a precondition for stable long-term trade relationships. Its underlying assumptions also happen to be based on Junk Economics. For starters, it assumes that international prices are based on relative price levels for goods and services. But only about a third of U.S. wages are spent on commodities. Most is spent on payments to the finance, insurance and real estate (FIRE) sector and on taxes. Housing and debt service typically absorb 40% and 15% of wage income respectively. FICA Wage withholding for Social Security and Medicare taxes absorb 11%, and income and sales taxes another 15 to 20%. So before take-home pay is available for consumer spending on goods and services, these FIRE-sector charges make the cost of living so high as to render American industrial labor uncompetitive in world markets. No wonder the U.S. economy faces a chronic trade deficit!

The FIRE sector overhead has become structural, not merely a marginal problem. To restore its competitive industrial position, the United States would have to devalue by much more than the 40% that it did back in 1933. Trying to “inflate its way out of debt” may help bank balance sheets recover, but as long as the economy remains locked in debt deflation it will be unable to produce the traditional form of economic surplus needed for genuine recovery. A debt write-down would be preferable to the policy of keeping the debts on the books and distorting the U.S. economy with inflation – and engaging in financial aggression against foreign economies. The political problem, of course, is that the financial sector has taken control of U.S. economic planning – in its own self-interest, not that of the economy at large. A debt write-down would threaten the financial sector's creditor power over the economy.

So it is up to foreign economies to enable U.S. banks to earn their way out of negative equity. For starters, there is the carry trade based on interest-rate arbitrage – to borrow at 1%, lend at a higher interest rate, and pocket the margin (after hedging the currency shift). Most of this financial outflow is going to China and other Asian countries, and to raw materials exporters. Australia, for example, has been raising its interest rates in order to slow its own real estate bubble. Rather than slowing speculation in its large cities by fiscal policy – a land tax – its central bank is operating on the principle that a property is worth whatever a bank will lend against it. Raising interest rates to the present 4.5% reduces the capitalization rate for property rents – and hence shrinks the supply of mortgage credit that has been bidding up Australian property prices.

This interest-rate policy has two unfortunate side effects for Australia – but a free lunch for foreign speculators. First of all, high interest rates raise the cost of borrowing across the board for doing business and for consumer finances. Second – even more important for the present discussion – high rates attract foreign “hot money” as speculators borrow at low interest in the United States (or Japan, for that matter) and buy high-yielding Australian government bonds.

The effect is to increase the Australian dollar’s exchange rate, which recently has achieved parity with the U.S. dollar. This upward valuation makes its industrial sector less competitive, and also squeezes profits in its mining sector. So on top of Australia’s rising raw-materials exports, its policy to counter its real estate bubble is attracting foreign financial inflows, providing a free ride for international arbitrageurs. Over and above their interest-rate arbitrage gains is the foreign currency play – rising exchange rates in Australia and many Asian countries as the U.S. dollar glut swamps the ability of central banks to keep their exchange rates stable.

This foreign-currency play is where most of the speculative action is today as speculators watching these purchases have turned the currencies and bonds of other raw-materials exporters into speculative vehicles. This currency speculation is the most aggressive, predatory and destructive aspect of U.S. financial behavior. Its focus is now shifting to the major nation that has resisted U.S. attempts to force its currency up: China. The potentially largest prize for U.S. and foreign speculators would be an upward revaluation of its renminbi.

The House Ways and Means Committee recently insisted that China raise its exchange rate by the 20 percent that the Treasury and Federal Reserve have suggested. Suppose that China would obey this demand. This would mean a bonanza for U.S. speculators. A revaluation of this magnitude would enable them to put down 1% equity – say, \$1 million to borrow \$99 million – and buy Chinese renminbi forward. The revaluation being demanded would produce a 2000% profit of \$20 million by turning the \$100 million bet (and just \$1 million “serious money”) into \$120 million. Banks can trade on much larger, nearly infinitely leveraged margins.

Can U.S. banks create enough electronic “keyboard credit” to buy up the whole world?

The Fed’s QE II policy poses a logical question: Why can’t U.S. credit buy out the entire world economy – all the real estate, companies and mineral rights yielding over 1%, with banks and their major customers pocketing the difference?

Under current arrangements the dollars being pumped into the global economy are recycled back into U.S. Treasury IOUs. When foreign sellers turn over their dollar receipts to their banks for domestic currency, these banks turn the payment over to the central bank – which then faces a Hobson’s Choice: either to sell the dollars on the foreign exchange market (pushing up their currency against the dollar), or avoid doing this by buying more U.S. Treasury securities and thus keeping the dollar payment within the U.S. economy. Why can’t this go on *ad infinitum*?

What makes these speculative capital inflows so unwelcome abroad is that they do not contribute to tangible capital formation or employment. Their effect is simply to push up

foreign currencies against the dollar, threatening to price exporters out of global markets, disrupting domestic employment as well as trade patterns.

These financial gambles are setting today's exchange rates, not basic production costs. In terms of relative rates of return, foreign central banks earn 1% on their U.S. Treasury bonds, while U.S. investors buy up the world's assets. In effect, U.S. diplomats are demanding that other nations relinquish their trade surpluses, private savings and general economic surplus to U.S. investors, creditors, bankers, speculators, arbitrageurs and vulture funds in exchange for this 1% return on U.S. dollar reserves of depreciating value – and indeed, in amounts already far beyond the foreseeable ability of the U.S. economy to generate a balance-of-payments surplus to pay this debt to foreign governments.

The global economy is being turned into a tributary system, achieving what military conquest sought in times past. This turns out to be implicit in QE II. Arbitrageurs and speculators are swamping Asian and Third World currency markets with low-priced U.S. dollar credit to make predatory trading profits at the expense of foreign central banks trying to stabilize their exchange rates by selling their currency for dollar-denominated securities – under conditions where the United States and Canada are blocking reciprocal direct investment (e.g., Potash Corp. of Saskatchewan in Canada and Unocal in the United States.).

The road to capital controls

Hardly by surprise, other countries are taking defensive measures against this speculation, and against “free credit” takeovers using inexpensive U.S. electronic “keyboard bank credit.” For the past few decades they have stabilized their exchange rates by recycling dollar inflows and other foreign currency buildups into U.S. Treasury securities. The Bank of Japan, for instance, recently lowered its interest rate to just 0.1% in an attempt to induce its banks to lend back abroad the foreign exchange that is now coming in as its banks are being repaid on their own carry-trade loans. It also offset the repayment of past carry-trade loans extended by its own banks in yen by selling \$60 billion of yen and buying U.S. Treasury securities, of which it now owns over \$1 trillion.

Foreign economies are now taking more active steps to shape “the market” in which international speculation occurs. The most modest move is to impose a withholding tax on interest payments to foreign investors. Just before the IMF meetings on October 9-10, 2010, Brazil doubled the tax on foreign investment in its government bond to 4%. Thailand acted along similar lines a week later. It stopped exempting foreign investors from having to pay the 15% interest-withholding tax on their purchases of its government bonds. Finance Minister Korn Chatikavinij warned that more serious measures are likely if “excessive” speculative inflows keep pushing up the baht. “We need to consider the rationality of capital inflows, whether they are for speculative purposes and how much they generate volatility in the baht,” he explained. But the currency continues to rise.

Such tax withholding discourages interest-rate arbitrage via the bond market, but leaves the foreign-currency play intact – and that is where the serious action is today. In the 1997 Asian Crisis, Malaysia blocked foreign purchases of its currency to prevent short-sellers from covering their bets by buying the ringgit at a lower price later, after having emptied out its central bank reserves. The blocks worked, and other countries are now reviewing how to impose such controls.

Longer-term institutional changes to more radically restructure the global financial system may include dual exchange rates such as were prevalent from the 1930 through the early 1960s, one (low and stable) for trade and at least one other (usually higher and more fluctuating) for capital movements. But the most decisive counter-strategy to U.S. QE II policy is to create a full-fledged BRIC-centered currency bloc that would minimize use of the dollar.

China has negotiated currency-swap agreements with Russia, India, Turkey and Nigeria. These swap agreements may require exchange-rate guarantees to make central-bank holders “whole” if a counterpart currency depreciates. But at least initially, these agreements are being used for bilateral trade. This saves exporters from having to hedge their payments through forward purchases on global exchange markets.

A BRIC-centered system would reverse the policy of open and unprotected capital markets put in place after World War II. This trend has been in the making since the BRIC countries met last year in Yekaterinburg, Russia, to discuss such an international payments system based on their own currencies rather than the dollar, sterling or euro. In September, China supported a Russian proposal to start direct trading using the yuan and the ruble rather than pricing their trade or taking payment in U.S. dollars or other foreign currencies. China then negotiated a similar deal with Brazil. And on the eve of the IMF meetings in Washington on Friday, Premier Wen stopped off in Istanbul to reach agreement with Turkish Prime Minister Erdogan to use their own currencies in a planned tripling Turkish-Chinese trade to \$50 billion over the next five years, effectively excluding the dollar.

China cannot make its currency a world reserve currency, because it is not running a deficit and therefore cannot supply large sums of renminbi to other countries via trade. So it is negotiating currency-swap agreements with other countries, while using its enormous dollar reserves to buy up natural resources in Australia, Africa and South America.

This has reversed the dynamics that led speculators to gang up and cause the 1997 Asia crisis. At that time the great speculative play was against the “Asian Tigers.” Speculators swamped their markets with sell orders, emptying out the central bank reserves of countries that tried (in vain) to keep their exchange rates stable in the face of enormous U.S. bank credit extended to George Soros and other hedge fund managers and the vulture funds that followed in their wake. The IMF and U.S. banks then stepped in and offered to “rescue” these economies if they agreed to sell off their best companies and resources to U.S. and European buyers.

This was a major reason why so many countries have tried to free themselves from the IMF and its neoliberal austerity programs, euphemized as “stabilization” plans rather than the economic poison of chronic dependency and instability programs. Left with only Turkey as a customer by 2008, the IMF was a seemingly anachronistic institution whose only hope for survival lay in future crises. So that of 2009-10 proved to be a godsend. At least the IMF found neoliberal Latvia and Greece willing to subject themselves to its precepts. Today its destructive financial austerity doctrine is applied mainly by Europe’s “failed economies.”

This has changed the equation between industrial-nation creditors and Third World debtors. Many dollar-strapped countries have been subject to repeated raids on their central banks – followed by IMF austerity programs that have shrunk their domestic markets and made them yet more dependent on imports and foreign investments, reduced to selling off

their public infrastructure to raise the money to pay their debts. This has raised their cost of living and doing business, shrinking the economy all the more and creating new budget squeezes driving them even further into debt. But China's long-term trade and investment deals – to be paid in raw materials, denominated in renminbi rather than dollars – is alleviating their debt pressures to the point where currency traders are jumping on the bandwagon, pushing up their exchange rates. The major international economic question today is how such national economies can achieve greater stability by insulating themselves from these predatory financial movements.

Summary

The 1945-2010 world economic dynamic has ended, and a new international system is emerging – one that was not anticipated as recently as just five years ago.

From the 1960s through 1980s, the international economy was polarizing between indebted raw-materials producers in Africa, Latin America and large parts of Asia – “the South” – and the industrialized North, led by North America, Europe and Japan. Economists analyzing this polarization focused (1) on the terms of trade for raw materials as compared to industrial goods, (2) on the failure of World Bank programs to help “the South” cure its food dependency and other import dependency, and (3) on the failure of IMF austerity programs to stabilize the balance of payments. The IMF-World Bank model promoted austerity, low wage standards, trade dependency, and deepening foreign debt. It was applauded as a success story in the creditor-investor nations.

Today's world is dividing along quite different lines. The main actor is still “the North” composed of the United States and Europe. But the counterpart economic bloc that is emerging is growing less dependent and indebted. It is led by a rapidly growing China, India, Brazil and even Russia (the BRIC countries), joined by the strongest Middle Eastern economies (Turkey and potentially Iran) and Asian economies such as Korea, Taiwan, Malaysia and Singapore. This “BRIC bloc” and its allies are in payment surplus, not deficit. It is now the U.S. and European governments that find themselves debt-ridden beyond their ability to pay, especially when it comes to paying foreign governments, central banks and bondholders.

Yet the world is now seeing a race to convert electronic (“paper”) credit creation from these already debt-ridden economies into asset ownership before governments in the payments-surplus economies to erect protective walls. Easy credit in the United States and Japan is fueling speculation in economies that are not so heavily loaded down with debt. This flight out of the U.S. dollar into Asian and Third World currencies is changing the global economy's orientation – in such a way as to restore financial dominance to nations running balance-of-payments surpluses, whose currencies promise to rise (or at least remain stable) rather than to fall along with the dollar.

As the U.S. and European domestic markets shrink in response to debt deflation, Asian countries and raw-materials exporters from Australia to Africa have recovered mainly because of China's growth. As in 1997, the problem they face is how to keep predatory U.S. and allied financial speculation at bay. This makes these countries the most likely to find capital controls attractive. But this time around, they are trying to keep speculators from buying into their

assets and currencies, not selling them. Targeted economies are ones that are strong, not ones that are weak.

Since the mid-19th century, central banks raised interest rates to hold their currencies stable when trade moved into deficit. The universal aim was to gain financial reserves. In the 1930s, money and credit systems were still based on gold. Protective tariffs and trade subsidies aimed at running trade and balance-of-payments surpluses in order to gain financial reserves. But today's problem is too *much* liquidity, in the form of keyboard bank credit that can be created without limit.

This has turned the world of half a century ago upside-down. National economies in the United States, Japan leading nations are lowering their rates to 1% or less, encouraging capital outflows rather than payments surpluses, while their banks and investors are seeking to gain more by financial speculation than by trade.

Conclusion

The American economy may be viewed as a tragic drama. Its tragic flaw was planted and flowered in the 1980s: a combination of deregulation leading to financial fraud so deep as to turn the banking system into a predatory gang, while shifting the tax burden off real estate and the higher tax brackets onto wage earners and sales taxes. This increased the economy's cost of doing business in two ways. First, taxes on employees (including FICA withholding for Social Security and Medicare) and on business profits increase the cost of doing business for American industry.

Second, untaxing the site value of land (and most "capital gains" are actually land-value gains) has "freed" rental income to be pledged to banks for yet higher mortgage loans. This obliged new homebuyers to take on more and more debt as taxes were shifted off property. So homeowners working for a living did not really gain from low property taxes. What the tax collector relinquished ended up being paid to banks as interest on the loans that were bidding up housing prices, creating a real estate bubble. Meanwhile, governments had to make up the property-tax cuts by taxing employees and employers all the more. So the United States became a high-cost economy.

It didn't have to be this way – and that is the tragedy of the U.S. economy over the past thirty years. It was a fiscal and financial tragedy, with the tragic flaw being the propensity for the financial sector to engage in wholesale fraud and "junk economics." A flawed tax policy was endorsed by a failure of economic thought to explain the costs entailed in trying to get rich by running into debt. What Alan Greenspan famously called "wealth creation" during his tenure as Federal Reserve Chairman sponsoring asset-price inflation turned out simply to be debt leveraging – that is, debt creation when the dust settled and prices fell back into negative equity territory.

To rescue the increasingly irresponsible financial sector from its mortgage-debt gambles, the United States is taking a path that is losing its international position, ending the long epoch of what was actually a free lunch – the U.S. Treasury-bill standard of international finance. All that U.S. diplomats can do at this point is play for time, hoping to prolong the existing double standard favorable to the United States and its Treasury-debt a bit further, to

permit U.S. bankers to get just one more year of enormous bonuses, in keeping with the American motto, "You only need to make a fortune once."

What no doubt will amaze to future historians is why the rest of the U.S. economy has let the banking sector get away with this! Apart from the Soviet Union's self-destruction in 1990-91, it is hard to find a similar blunder in economic diplomacy. It reflects the banking system's success in shifting economic planning out of the hands of government into those of finance-sector lobbyists.

U.S. officials always have waged American foreign trade and financial policy in reference to their own domestic economic interests without much regard for foreigners. The history of U.S. protective tariffs, dollar policy and interest-rate policy has been to look only at home. Other countries have had to raise interest rates when their balance of trade and payments move into deficit, above all, for military adventures. The United States alone is immune – thanks to the legacy of the dollar being "as good as gold" during the decades when it was running a surplus.

To quote Joseph Stiglitz once again:

[T]he irony is that money that was intended to rekindle the American economy is causing havoc all over the world. Those elsewhere in the world say, what the United States is trying to do is the twenty-first century version of 'beggar thy neighbor' policies that were part of the Great Depression: you strengthen yourself by hurting the others.⁶

It is natural enough for the United States to shape its international policy with regard to its own interests, to be sure. The self-interest principle is a foundation assumption of political theory as it is economic logic. What is less understandable is why other countries have not acted more effectively in their own interests – and why U.S. diplomats and economic officials should be so upset today when other nations in fact begin to do so.

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⁶ Joseph Stiglitz: Foreclosure Moratorium, Government Stimulus Needed to Revive US Economy, *Democracy Now*, Oct. 21, 2010.

Dubious assumptions of the theory of comparative advantage¹

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The theory of comparative advantage is the core of the case for free trade. However, contrary to orthodox myth, this theory is crippled by the dubious assumptions upon which it depends.

Review of the theory

To understand comparative advantage, it is best to start with its simpler cousin absolute advantage. The concept of absolute advantage simply says that if some foreign nation is a more efficient producer of some product than we are, then free trade will cause us to import that product from them, and that this is good for both nations. It is good for us because we get the product for less money than it would have cost us to make it ourselves. It is good for the foreign nation because it gets a market for its goods. And it is good for the world economy as a whole because it causes production to come from the most efficient producer, maximizing world output.

Absolute advantage is thus a set of fairly obvious ideas. It is, unfortunately, also false. Under free trade, nations observably imports products of which *they* are the most efficient producer—which makes absolutely no sense by the standard of absolute advantage. This is why one must analyze trade in terms of not absolute but *comparative* advantage. Boiled down to its essence, the often-misunderstood theory simply says this:

Nations trade for the same reasons people do.

And the whole theory can be cracked open with one simple question:

Why don't pro football players mow their own lawns?

Why should this even be a question? Because the average footballer can al-most certainly mow his lawn more efficiently than the average professional lawn mower. The average footballer is, after all, presumably stronger and more agile than the mediocre workforce attracted to a badly paid job like mowing lawns. Yet nobody finds it strange that he would "import" lawn-mowing services from a less efficient "producer." Why? Obviously, because he has *better things to do with his time*.

The theory says that it is advantageous for America, for example, to import some goods simply in order to free up its workforce to produce more-valuable goods instead. We, as a nation, have better things to do with our time than produce these less valuable goods. And, just as with the football player and the lawn mower, it doesn't matter whether we are more efficient at producing them, or the country we import them from is. As a result, it is sometimes advantageous for us to import goods from less efficient nations.

This logic doesn't only apply to our time, that is our man-hours of labor, either. It *also* applies to land, capital, technology, and every other finite resource used to produce goods. So the theory of comparative advantage says that if we could produce something more valuable with the resources we currently use to produce some product, then we should import that product, free up those resources, and produce that more valuable thing instead.

¹ This paper's ideas are explored further in my book [*Free Trade Doesn't Work: What Should Replace It and Why*](#).

Whatever we *give up* producing, in order to produce something else, is our opportunity cost. The opposite of opportunity cost is direct cost, so while the direct cost of mowing a lawn is the hours of labor it takes, plus the gasoline, wear-and-tear on the machine, et cetera, the opportunity cost is the value of whatever else these things could have been doing instead.

The opportunity cost of producing something is always the *next most valuable thing* we could have produced instead. If either bread or rolls can be made from dough, and we choose to make bread, then rolls are our opportunity cost. If we choose to make rolls, then bread is. And if rolls are worth more than bread, then we will incur a larger opportunity cost by making bread. It follows that the smaller the opportunity cost we incur, the less opportunity we are wasting, so the better we are exploiting the opportunities we have. Therefore our best move is always to *minimize our opportunity cost*.

Trade enables us to “import” bread (buy it in a store) so we can stop baking our own and bake rolls instead. In fact, trade enables us to do this for all the things we would otherwise have to make for ourselves. So if we have complete freedom to trade, we can systematically shrug off all our least valuable tasks and reallocate our time to our most valuable ones. Similarly, *nations* can systematically shrink their least valuable industries and expand their most valuable ones. This benefits these nations and under global free trade, with every nation doing this, it benefits the entire world. The world economy, and every nation in it, become as productive as they can possibly be.

This all implies that under free trade, production of every product will automatically migrate to the nation that can produce it at the lowest opportunity cost—the nation that *wastes the least opportunity* by being in that line of business.

The theory thus sees international trade as a vast interlocking system of tradeoffs, in which nations use the ability to import and export to shed opportunity costs and reshuffle their factors of production to their most valuable uses. And this all happens automatically, because if the owners of some factor of production find a more valuable use for it, they will find it profitable to move it to that use. The natural drive for profit will steer all factors of production to their most valuable uses, and opportunities will never be wasted.

It follows that any policy *other* than free trade just traps nations producing less-valuable output than they could have produced. It saddles them with higher opportunity costs—more opportunities thrown away—than they would otherwise incur. In fact, when imports drive a nation out of an industry, this must actually be good for that nation, as it means the nation *must* be allocating its factors of production to producing something more valuable instead. If it weren't doing this, the logic of profit would never have driven its factors out of their former uses. The nation's revealed comparative advantage must lie elsewhere, and it will now be better off producing according to this newly revealed comparative advantage.

A quantifying thought experiment

Suppose an acre of land in Canada can produce either 1 unit of wheat or 2 units of corn.² And suppose an acre in the U.S. can produce either 3 units of wheat or 4 units of corn. The U.S. then has absolute advantage in both wheat (3 units vs. 1) and corn (4 units vs. 2).

² These are not necessarily the same size units, and prices are left out to keep things simple. The example would work the same way with these complexities added.

But we are twice as productive in corn and thrice as productive in wheat, so we have *comparative* advantage in wheat.

Importing Canadian corn would obviously enable us to switch some of our corn-producing land to wheat production and grow more wheat, while importing Canadian wheat would enable us to switch some of our wheat-producing land to corn production and grow more corn. Would either of these be winning moves?

Every 3 units of wheat we import will free up 1 acre of our land because we will no longer need to grow those 3 units ourselves. We can then grow 4 units of corn on that acre. But selling us that wheat will force Canada to take 3 acres out of corn production to grow it, so it will cost Canada $3 \times 2 = 6$ units of corn. Canadians obviously won't want to do this unless we *pay* them at least 6 units of corn. But this means we'd have to pay 6 units to get 4. So no deal.

What about importing Canadian corn? Every 4 units of corn we import will free up 1 acre of our land, on which we can then grow 3 units of wheat. Selling us those 4 units will force Canada to take $4 \div 2 = 2$ acres out of wheat production, costing Canada $2 \times 1 = 2$ units of wheat. So we can pay the Canadians what it cost them to give us the corn (2 units of wheat) and still come out ahead, by $3 - 2 = 1$ unit of wheat. So importing Canadian corn makes economic sense.

The above scenario all works in reverse on the Canadian side, so it benefits Canada, too. And because the world now contains one more unit of wheat, it's a good move for the world economy as a whole.

Poor nations have low opportunity costs

The opportunity cost of producing a product can vary from one nation to another even if the two nations' *direct* costs for producing the product are the same, because they can face different alternative uses for the factors of production involved. So having a low opportunity cost for producing a product can just as easily be a matter of having poor alternative uses for factors of production as having great efficiency at producing the product itself.

Opportunity costs in underdeveloped nations are low because they don't have a lot of other things they can do with their workers. The visible form this takes is cheap labor, because their economies offer workers few alternatives to dollar-an-hour factory work. As a result, the productivity of any one job does not determine its wage. Economy-wide productivity does. (This is why it is good to work in a developed country even if the job you yourself do, such as sweeping floors, is no more productive than the jobs people do in developing countries.)

If wages, which are paid in domestic currency, don't accurately reflect differences in opportunity costs between nations, then exchange rates will (in theory) adjust until they do. So if a nation has high productivity in most of its internationally traded industries, this will push up the value of its currency, pricing it out of its lowest-productivity industries. But this is a good thing, because it can then export goods from higher-productivity industries instead. This will mean less work for the same amount of exports, which is why advanced nations rarely compete in primitive industries, or want to.

What the theory does not say

The theory of comparative advantage is sometimes misunderstood as implying that a nation's best move is to have as much comparative advantage as it can get—ideally,

comparative advantage in every industry. This is actually impossible by definition. If America had superior productivity, therefore lower direct costs, and therefore absolute advantage, in every industry, we would still have a greater margin of superiority in some industries and a lesser margin in others. So we would have *comparative* advantage where our margin was greatest and comparative disadvantage where it was smallest. This pattern of comparative advantage and disadvantage would determine our imports and exports, and we would still be losing jobs to foreign nations in our *relatively* worse industries and gaining them in our *relatively* better ones, despite having absolute advantage in them all.

So what's the significance of absolute advantage, if it doesn't determine which nation makes what? It *does* determine relative wages. If the U.S. were exactly 10 percent more productive than Canada in all industries, then Americans would have real wages exactly 10 percent higher. But because there would be no *relative* differences in productivity between industries, there would be no differences in opportunity costs, neither country would have comparative advantage or disadvantage in anything, and there would be no reason for trade between them. There would be no corn-for-wheat swaps that were winning moves. All potential swaps would cost *exactly* as much as they were worth, so there would be no point. (And under free trade, none would take place, as the free market isn't stupid and won't push goods back and forth across national borders without reason.)

Conversely, the theory of comparative advantage says that whenever nations do have different relative productivities, mutual gains from trade *must* occur. This is why free traders believe that their theory proves free trade is always good for every nation, no matter how poor or how rich. Rich nations won't be bled dry by the cheap labor of poor nations, and poor nations won't be crushed by the industrial sophistication of rich ones. These things simply can't happen, because the fundamental logic of comparative advantage guarantees that only mutually beneficial exchanges will ever take place. Everyone will always be better off.

The theory's seven dubious assumptions

The flaws of the theory of comparative advantage consist in a number of dubious assumptions it makes. To wit:

Assumption #1: Trade is sustainable.

This problem divides into two parts: unsustainable imports and exports.

When America, for example, does not cover the value of its imports with the value of its exports, it must make up the difference by either selling assets or assuming debt. If either is happening, America is either gradually being sold off to foreigners or gradually sinking into debt to them. We are poorer simply because we own less and owe more.³

And this situation is unsustainable. We have only so many existing assets we can sell off, and can afford to service only so much debt.⁴ By contrast, we can produce goods indefinitely. So deficit trade, if it goes on year after year, must eventually be curtailed—which

³ Note that a nation *can* assume *some* debt to foreigners and sell off some of its assets without courting crisis. The point here is not that doing this in exchange for imports is problematic *per se*; the point was that if the quantities involved are unsustainable, that nation will maximize short-term consumption at the expense of long-term prosperity.

⁴ Obviously, this limit can change over time, but that is not the same as its being infinitely elastic at any given time. Bond rating agencies exist for a reason.

will mean reducing our consumption one day.⁵ We get a decadent consumption binge today and pay the price tomorrow, but because mainstream economics doesn't traffic in concepts like "decadent," it doesn't see anything wrong.⁶

The implied solution is to tax imports. And that is not free trade.

Now consider unsustainable exports. This usually means a nation that is exporting nonrenewable natural resources. The same long vs. short term dynamics will apply, only in reverse. A nation that *exports* too much will maximize its short term living standard at the expense of its long-term prosperity. But mainstream economics—which means free trade—will a-gain perversely report that this is "efficient." The oil-rich nations of the Persian Gulf are the most obvious example, and it is no accident that OPEC was the single most formidable disruptor of free trade in the entire post-WWII era. But other nations with large land masses, such as Canada, Australia, Russia, and Brazil, also depend upon natural resource exports to a degree that is unhealthy in the long run.

The implied solution is to tax or otherwise restrict nonrenewable exports. And that is also not free trade.

Assumption #2: There are no externalities.

The theory of comparative advantage, like all theories of free market economics, is driven by prices, so if prices are wrong due to positive or negative externalities, it will recommend suboptimal policies.

For example, goods from a nation with lax pollution standards will be too cheap. As a result, its trading partners will import too much of them. And the exporting nation will export too much of them, overconcentrating its economy in industries that are not really as profitable as they seem, due to ignoring pollution damage. Free trade not only permits problems such as these, but positively encourages them, as skimping on pollution control is an easy way to grab a cost advantage.

Positive externalities are also a problem. If an industry generates technological spillovers for the rest of the economy, then free trade can let that industry be wiped out by foreign competition because the economy ignored its hidden value. Some industries spawn new technologies, fertilize improvements in other industries, and drive economy-wide technological advance; losing these industries means losing all the industries that would have flowed from them in the future.

These problems are the tip of an even larger iceberg known as GDP-GPI divergence. Negative externalities and related problems mean that increases in GDP can easily coincide with *decreases* in the so-called Genuine Progress Indicator or GPI.⁷ GPI includes things like resource depletion, environmental pollution, unpaid labor like housework, and unpaid goods

⁵ There is an exception to this fact if we are running a deficit to import capital goods rather than consumption goods, because the output generated by these goods pays the interest on the foreign debt and the return to foreign asset holders. The U.S. was in this position in the early 19th century, but is not doing this today.

⁶ In technical language, the time discount on consumption is exogenous, i.e. economics takes it as a given and can't tell us whether it's good or bad. See Ian Fletcher, "A Neoclassical Hole in Neoclassical Free Trade," *Post-Autistic Economics Review*, August 2004.

⁷ "Genuine Progress Indicator," Redefining Progress, http://www.rprogress.org/sustainability_indicators/genuine_progress_indicator.htm.

like leisure time, thus providing a better metric of material well-being than raw GDP.⁸ This implies that even if free trade *were* optimal from a GDP point of view (it isn't), it could still be a bad idea economically.

Assumption #3: Factors of production move easily between industries.

The theory of comparative advantage is about reshuffling factors of production from less-valuable to more-valuable uses. But this assumes that the factors of production used to produce one product can switch to producing another. Because if they can't, then imports won't push a nation's economy into industries better suited to its comparative advantage. Imports will just kill off its existing industries and leave nothing in their place.

Although this problem actually applies to all factors of production, we usually hear of it with regard to labor and real estate because people and buildings are the least *mobile* factors of production. When workers can't move between industries—usually because they don't have the right skills or don't live in the right place—shifts in an economy's comparative advantage won't move them into an industry with lower opportunity costs, but into unemployment.

Sometimes the difficulty of reallocating workers shows up as outright unemployment. This happens in nations with rigid employment laws and high *de facto* minimum wages due to employer-paid taxes, as in Western Europe. But in the United States, because of our relatively low minimum wage and hire-and-fire labor laws, this problem tends to take the form of *underemployment*. This is a decline in the quality rather than quantity of jobs. So \$28 an hour ex-autoworkers go work at the video rental store for eight dollars an hour.⁹ Or they are forced into part-time employment. This implies that low unemployment, on its own, doesn't prove free trade has been a success. The human cost is obvious, but what is less obvious is the purely economic cost of writing off investments in human capital when skills that cost money to acquire are never used again.

In the Third World, decline in the quality of jobs often takes the form of workers pushed out of the formal sector of the economy entirely and into casual labor of one kind or another, where they have few rights, pensions, or other benefits. Mexico, for example, has over 40 percent of its workers in the informal sector.¹⁰

There is also a risk for the economy as a whole when free trade puts factors of production out of action. As Nobel Laureate James Tobin of Yale puts it, "It takes a heap of Harberger triangles to fill an Okun gap."¹¹ Harberger triangles represent the benefits of free trade on the standard graphs.¹² The Okun gap is the difference between the GDP our economy *would* have, if it were running at full output, and the GDP it does have, due to some

⁸ John Cavanagh, Jerry Mander et al, *Alternatives to Economic Globalization: A Better World is Possible* (San Francisco: Berrett-Koehler, 2002), p. 204.

⁹ The commonly quoted figure of \$70-\$73 per hour for autoworkers includes health benefits and legacy costs. Their cash wages were about \$28/hr, plus \$2.25 for payroll taxes and \$7 for a health insurance package. Source: United Auto Workers.

¹⁰ World Bank figure, quoted in John MacArthur, *The Selling of Free Trade: NAFTA, Washington, and the Subversion of American Democracy* (New York: Hill & Wang, 2000) p. 81.

¹¹ Quoted in Robert Kuttner, *Everything for Sale: the Virtues and Limits of Markets* (New York: Knopf, 1997), p. 25.

¹² See <http://upload.wikimedia.org/wikipedia/en/4/4d/EffectOfTariff.svg>.

of its factors of production lying idle.¹³ Tobin's point is simply that the benefits of free trade are quantitatively small, compared to the cost of not running our economy at full capacity due to imports.

Assumption #4: Trade does not raise income inequality.

When the theory of comparative advantage promises gains from free trade, these gains are only promised to the economy as a whole, not to any particular individuals or groups thereof. So it is entirely possible that even if the economy as a whole gets bigger thanks to freer trade, many (or even most) of the people in it may lose income. This is not a trivial problem: it has been estimated that freeing up trade reshuffles five dollars of income between different groups of people domestically for every one dollar of net gain it brings to the economy as a whole.¹⁴

Free trade squeezes the wages of ordinary Americans largely because it expands the world's effective supply of labor, which can move from rice paddy to factory overnight, faster than its supply of capital, which takes decades to accumulate at prevailing savings rates. As a result, free trade strengthens the bargaining position of capital relative to labor. This is especially true when combined with growing global capital mobility and the entry into capitalism of large formerly socialist nations such as India and China. As a result, people who draw most of their income from returns on capital (the rich) gain, while people who get most of their income from labor (the rest) lose.

The underlying mechanism of this analysis has long been part of mainstream economics in the form of the Stolper-Samuelson theorem.¹⁵ This theorem says that freer trade raises returns to the abundant input to production (in America, capital) and lowers returns to the scarce one (in America, labor). Because America has more capital per person, and fewer workers per dollar of capital, than the rest of the world, free trade tends to hurt American workers.

Free trade also affects different kinds of labor income differently. The impact of free trade on a worker in the U.S. is basically a function of how easy it is to substitute a cheaper foreign worker by importing the product the American produces.¹⁶ For extremely skilled jobs, like investment banking, it may be easy to substitute a foreigner, but foreign labor (some yuppie in London) is just as expensive as American labor, so there is no impact on American wages. For jobs that cannot be performed remotely, such as waiting tables, it is impossible to substitute a foreign worker, so again there is no direct impact. The occupations that suffer most are those whose products are easily tradable *and* can be produced by cheap labor abroad. This is why unskilled manufacturing jobs were the first to get hurt in the US: there is a huge pool of labor abroad capable of doing this work, and manufactured goods can be

¹³ See http://upload.wikimedia.org/wikipedia/commons/0/0a/Actual_potential_GDP_output_gap_CBO_Jan_09_outlook.png

¹⁴ Dani Rodrik, *Has Globalization Gone Too Far?* (Washington: Institute for International Economics, 1997), p. 30.

¹⁵ Wolfgang Stolper and Paul Samuelson, "Protection and Real Wages," *Review of Economic Studies*, November 1941, p. 58.

¹⁶ This is not, of course, the entire story, but close enough for purposes of the present analysis.

packed up and shipped around the globe. Because low-paid workers are concentrated in these occupations, free trade hurts them more.¹⁷

There is another problem. Suppose that opening up a nation to freer trade means that it starts exporting more airplanes and importing more clothes than before. (This is roughly the situation the U.S. has been in.) Because the nation gets to expand an industry better suited to its comparative advantage and contract one less suited, it becomes more productive and its GDP goes up, just like the theory says. So far, so good. But here's the rub: suppose that a million dollars' worth of clothes production requires one white-collar worker and nine blue-collar workers, while a million dollars of airplane production requires three white-collar workers and seven blue-collar workers. This means that for every million dollars' change in what gets produced, there is a demand for two more white-collar workers and two fewer blue-collar workers. Because demand for white-collar workers goes up and demand for blue-collar workers goes down, the wages of white-collar workers will go up and those of blue-collar workers will go down. But *most* workers are blue-collar workers—so free trade has lowered wages for most workers in the economy!

It follows from the above problems that free trade, *even if* it performs as free traders say in other respects (it doesn't), could still leave most Americans with lower incomes. And even if it expands our economy overall, it could still increase poverty. Taking an approximate mean of available estimates, we can attribute perhaps 25 percent of America's three-decade rise in income inequality to freer trade.¹⁸ It was estimated in 2006 that the increase in inequality due to freer trade cost the average household earning the median income more than \$2,000.¹⁹

Assumption #5: Capital is not internationally mobile.

Despite its wide implications, the theory of comparative advantage is, at bottom, a very narrow theory. It is *only* about the best uses to which nations can put their factors of production. We have certain cards in hand, so to speak, the other players have certain cards, and the theory tells us the best way to play the hand we've been dealt. Or more precisely, it tells us to let the free market play our hand *for us*, so market forces can drive all our factors to their best uses in our economy.

Unfortunately, this all relies upon the impossibility of these same market forces driving these factors right *out* of our economy. If that happens, all bets are off about driving these factors to their most productive use *in* our economy. Their most productive use may well be in another country, and if they are internationally mobile, then free trade will cause

¹⁷ Dani Rodrik, *Has Globalization Gone Too Far?* (Washington: Institute for International Economics, 1997), p. 12.

¹⁸ See Peter H. Lindert and Jeffrey G. Williamson, "Does Globalization Make the World More Unequal?" National Bureau of Economic Research, April 2001, p. 33. This is also the upper end of the estimate in "The U.S. Trade Deficit: Causes, Consequences and Recommendations for Action," U.S. Trade Deficit Review Commission, 2000, pp.110-18. According to William Cline in *Trade and Income Distribution* (Washington: Institute for International Economics, 1997), 37 percent of the recent increase in inequality is due to trade. Also see Thomas Palley, "Accounting for income inequality in the U.S.," AFL-CIO Technical Papers, 1999, in which 34 percent of increased inequality is attributed to increased trade, taking into account trade's negative impact on unionization rates.

¹⁹ Josh Bivens, "Globalization and American Wages: Today and Tomorrow," Economic Policy Institute, October 10, 2007, p. 2. Technically, this paper quantifies the impact of larger trade flows as such, not free trade *per se*.

them to migrate there. This will benefit the world economy as a whole, and the nation they migrate to, but it will *not* necessarily benefit us.

This problem actually applies to all factors of production. But because land and other fixed resources can't migrate, labor is legally constrained in migrating, and people usually don't try to stop technology or raw materials from migrating, the crux of the problem is capital. Capital mobility replaces comparative advantage, which applies when capital is forced to choose between alternative uses within a single national economy, with our its cousin absolute advantage. And absolute advantage contains no guarantees whatsoever about the results being good for *both* trading partners. The win-win guarantee is purely an effect of the world economy being yoked to comparative advantage and dies with it.

Absolute advantage is really the natural order of things in capitalism and comparative advantage is a special case caused by the existence of national borders that factors of production can't cross. Indeed, that is basically what a nation *is*, from the point of view of economics: a part of the world with political barriers to the entry and exit of factors of production. This forces national economies to interact indirectly, by exchanging goods and services *made from* those factors, which places comparative advantage in control. Without these barriers, nations would simply be regions of a single economy, which is why absolute advantage governs economic relations *within* nations. In 1950, Michigan had absolute advantage in auto-mobiles and Alabama in cotton. But by 2000, automobile plants were closing in Michigan and opening in Alabama. This benefited Alabama, but it did not necessarily benefit Michigan. (It only would have if Michigan had been transitioning to a higher-value industry than automobiles. Helicopters?) The same scenario is possible for entire nations if capital is inter-nationally mobile.

Capital immobility doesn't have to be absolute to put comparative advantage in control, but it has to be significant and as it melts away, trade shifts from a guarantee of win-win relations to a possibility of win-lose relations. David Ricardo, who was wiser than many of his own modern-day followers, knew this perfectly well. As he put it:

The difference in this respect, between a single country and many, is easily accounted for, by considering the difficulty with which capital moves from one country to another, to seek a more profit-able employment, and the activity with which it invariably passes from one province to another of the same country.²⁰

Ricardo then elaborated, using his favorite example of the trade in English cloth for Portuguese wine and cutting right to the heart of present-day concerns:

It would undoubtedly be advantageous to the capitalists of England, and to the consumers in both countries, that under such circumstances the wine and the cloth should both be made in Portugal, and therefore that the capital and labor of England employed in making cloth should be removed to Portugal for that purpose.²¹

But he does not say it would be advantageous to the workers of England! This is precisely the problem Americans experience today: when imports replace goods produced here, capitalists like the higher profits and consumers like the lower prices—but workers *don't* like the lost jobs. Given that consumers and workers are ultimately the same people, this means they may lose more as workers than they gain as consumers. And there is no theorem

²⁰ David Ricardo, *The Principles of Political Economy and Taxation* (Mineola, NY: Dover Publications, 2004), p. 83.

²¹ *Ibid.*

in economics which guarantees that their gains will exceed their losses.²² Things can go either way, which means that free trade is sometimes a losing move for them.

Assumption #6: Short-term efficiency causes long-term growth.

The theory of comparative advantage is a case of static analysis. That is, it looks at the facts of a single instant in time and determines the best response to those facts at that instant. This is not an intrinsically invalid way of doing economics—balancing one's checkbook is an exercise in static analysis—but it is vulnerable to a key problem: *it says nothing about dynamic facts*. That is, it says nothing about how today's facts may change tomorrow. More importantly, it says nothing about how one might cause them to change in one's favor.

The problem here is that even if the theory of comparative advantage tells us our best move today, given our productivities and opportunity costs in various industries, it *doesn't* tell us the best way to raise those productivities tomorrow. That, however, is the essence of economic growth, and in the long run much more important than squeezing every last drop of advantage from the productivities we have today. Economic growth, that is, is ultimately less about *using* one's factors of production than about *transforming* them—into more productive factors tomorrow.²³ The difference between poor nations and rich ones mainly consists in the problem of turning from Burkina Faso into South Korea; it does not consist in being the most efficient possible Burkina Faso forever. The theory of comparative advantage is not so much wrong about long-term growth as simply silent.

Analogously, it is a valid application of personal comparative advantage for someone with secretarial skills to work as a secretary and someone with banking skills to work as a banker. In the short run, it is efficient for them both, as it results in both being better paid than if they tried to swap roles. (They would both be fired for inability to do their jobs and earn zero.) But the path to personal success doesn't consist in being the best possible secretary forever; it consists in upgrading one's skills to better-paid occupations, like banker. And there is very little about being the best possible secretary that tells one how to do this.

Ricardo's own favorite example, the trade in English textiles for Portuguese wine, is very revealing here, though not in a way he would have liked. In Ricardo's day, textiles were produced in England with then-state-of-the-art technology like steam engines. The textile industry thus nurtured a sophisticated machine tool industry to make the parts for these engines, which drove forward the *general* technological capabilities of the British economy and helped it break into related industries like locomotives and steamships.²⁴ Wine, on the other hand, was made by methods that had not changed in centuries (and have only begun to change since about 1960, by the way). So for hundreds of years, wine production contributed no technological advances to the Portuguese economy, no drivers of growth, no opportunities to raise economy-wide productivity. And its own productivity remained static: it did the same thing over and over again, year after year, decade after decade, century after century,

²² In technical terms, there is no theorem guaranteeing that partial-equilibrium losses to import-competing producers are more than offset by gains to consumers due to reduced prices. This problem has been formally modeled in Masao Oda and Robert Stapp, "Factor Mobility, Trade, and Wage Inequality," in Tak-ashi Kamihigashi and Laixun Zhao, eds., *International Trade and Economic Dynamics* (Berlin: Springer, 2008).

²³ Michael Porter, *The Competitive Advantage of Nations* (New York: The Free Press, 1990), p. 21.

²⁴ Nathan Rosenberg, *Inside the Black Box: Technology and Economics*. (New York: Cambridge University Press, 1982), p. 73.

because this was where Portugal's immediate comparative advantage lay. It may have been Portugal's best move in the short run, but it was a dead end in the long run.

Today, the theory of comparative advantage is similarly dangerous to poor and undeveloped nations because they tend, like Portugal, to have comparative advantage in industries that are economic dead ends. So despite being nominally free, free trade tends to lock them in place.

Assumption #7: Trade does not induce adverse productivity growth abroad.

Gains from free trade derive from the difference between *our* opportunity costs for producing products and the opportunity costs of our trading partners. This opens up a paradoxical but very real way for free trade to back-fire. When we Americans trade with a foreign nation, this will generally build up that nation's industries, i.e., raise its productivity in them. Now it would be nice to assume that this productivity growth in our trading partners can only reduce their direct costs, therefore reduce their opportunity costs, and therefore increase our gains from trading with them. Our foreign suppliers will just become ever more efficient at supplying the things we want, and we will just get ever cheaper foreign goods in exchange for our own exports, right?

Wrong. Because, as noted, while productivity (output per unit of input) does determine direct costs, it *doesn't* on its own determine opportunity costs. The alternative uses of factors of production do. As a result, productivity growth in some industries can actually *raise* our trading partners' opportunity costs in other industries, by increasing what they give up producing in one industry in order to produce in another. If the number of rolls they can make from a pound of dough somehow goes up (rolls get fluffier?), this will make it more expensive for them to bake bread instead. So they may cease to supply us with such cheap bread!

Consider our present trade with China. Despite all the problems this trade causes us, we do get compensation in the form of some very cheap goods, thanks mainly to China's very cheap labor. The same goes for other poor countries we import from. But labor is cheap in poor countries because it has poor alternative employment opportunities. What if these opportunities improve? Then this labor may cease to be so cheap, and our supply of cheap goods may dry up.

This is actually what happened in Japan from the 1960s to the 1980s, as Japan's economy transitioned from primitive to sophisticated manufacturing and a lot of cheap Japanese merchandise disappeared from America's stores. Did this reduce the pressure of cheap Japanese labor on American workers? Indeed. But it also deprived us of some very cheap goods we used to get. (And it's not like Japan stopped pressing us, either, as it moved upmarket and started competing in more sophisticated industries.) The same thing had happened with Western Europe as its economy recovered from WWII from 1945 to about 1960 and cheap European goods disappeared from our stores.

Here things get slippery. Because gains from trade don't derive from absolute but comparative advantage, these gains can be killed off *without* our trading partners getting anywhere near our own productivity levels. So the above problem doesn't merely consist in our trading partners catching up to us in industrial sophistication. But if their *relative* tradeoffs for producing different goods cease to differ from ours, then our gains from trading with them will vanish. If Canada's wheat vs. corn tradeoff is two units per acre vs. three and ours is four vs. six, all bets are off. Because both nations now face the same tradeoff ratio between

producing one grain and the other,²⁵ all possible trades will cost Canada *exactly* as much they benefit the US—leaving no profit, no motivation to trade, and no gain from doing so. And if free trade helped raise Canada's productivity to this point, *then free trade deprived us of benefits we used to get*.

Thus free trade can “foul its own nest” and kill off the benefits of trade over time. Even within the most strictly orthodox Ricardian view, only the *existence* of gains from free trade is guaranteed.²⁶ It is not guaranteed that changes *induced by* free trade will make these gains grow, rather than shrink.²⁷ So free trade can do billions of dollars worth of damage *even if Ricardo was right about everything else* (he wasn't).

Conclusion: trade yes, free trade no

Given that the theory of comparative advantage has all of the above-de-scribed flaws, how much validity does it really have? Answer: some. Asking what industries a nation has comparative advantage in helps illuminate what kind of economy it has. And insofar as the theory's assumptions do hold to some extent, some of the time, it can give us some valid policy recommendations. *Fairly open trade, most of the time, is a good thing*. But the theory was never intended to be by its own inventor, and its innate logic will not support its being, a blank check that justifies 100 percent free trade with 100 percent of the world 100 percent of the time. It only justifies free trade insofar as its assumptions hold true,²⁸ and they largely do not.

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²⁵ Remember that this toy example only works if all trade between Canada and the U.S. is barter of corn and wheat. For a fully computed analysis of this whole problem, see Paul A. Samuelson, “Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization,” *Journal of Economic Perspectives*, Summer 2004, p. 141.

²⁶ Assuming nations have different opportunity cost ratios.

²⁷ For a fully elaborated exposition of this fact, see Paul A. Samuelson, “Where Ricardo and Mill Rebut and Confirm Arguments of Mainstream Economists Supporting Globalization,” *Journal of Economic Perspectives*, Summer 2004.

²⁸ *Pace*, for now, other problems.

Why did Dutch economists get it so wrong?

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Abstract

As late as February 2010, at the time when it already had exploded, Dutch economists denied the existence of a 'housing bubble' in the Netherlands. The reasons for this denial seem to be an unwarranted trust in formalized economic models as well as econometric estimates, the neglect of basic historical, comparative and statistical information as well as a curious lack of knowledge about 'state of the art' ideas and models, let alone 'heterodox' ideas. This paper examines the failure of Dutch economists as a means of answering two transnational and ultimately theoretical questions:

1. Is it possible to develop a kind of analysis which enables us to identify housing bubbles in an earlier phase, and
2. Do economists when looking for housing bubbles look at the right variables and in the right way?

1. Introduction

Is there a housing bubble when, as happened in the Netherlands between 1986 and 2007 (data from Özdemir and De Ward, 2005 and Centraal Bureau voor de Statistiek (CBS), <http://statline.cbs.nl/statweb/?LA=nl>; <http://www.woningmarktcijfers.nl>):

- loan-to-value ratio's rise to unprecedented heights;
- loan-to-income ratio's rise to unprecedented heights;
- mortgage debt rises from about 100 billion euro in 1993 to over 600 billion euro in 2009 – and continues to increase up to January 2010. November 2010 saw the first drop in decades;
- real house prices rise about 150% in 21 years (1986-2007);
- a fast increasing share of new mortgages consists of 'interest-only' mortgages or even 'top mortgages' of up to 125% of house value and even higher;
- 2009 mortgage debt per household is the highest in the world;
- 2009 housing costs are the highest ever and the highest in Europe;
- real house prices fall 8% in two years and continue to fall (October 2010);
- the number of transactions on the housing market falls about 40% compared with 2006 and continues to fall. October 2010: was minus 12% compared with 2009;
- cities like Amsterdam and Eindhoven run into major problems as they can't sell land-with-a-building-permits anymore – and have to introduce draconian cuts in their infrastructure budgets;
- 'Theoretical selling time' (number of houses for sale divided by average sales per month) increases to 48 months for more expensive houses and to 24 months for median priced houses;
- construction output falls 20% in a year;

Meanwhile nothing of the kind happens in neighboring Germany? According to Dutch economists there is and was, in spite of all these disturbing signs, no housing bubble in the

Netherlands. (Kranendonk en Verbruggen, April 2008; Geest en Heutz, May 2008; Brouwer, May 2008; De Nederlandse Bank, September 2008; Francke, February 2010; Commissie van sociaal-economisch deskundigen, April 2010; Donders, Dijk en Romijn, April 2010). While, at that moment, real turnover on the housing market had already gone down about 45%, professor Francke stated as late as February 2010:

“At the end of the seventies and in the early eighties there was a great overvaluation; at the time the real prices are significantly higher than the equilibrium prices. The last few years the differences between real prices and equilibrium prices are small. From the perspective of the ECM (the model, M.K.) there is no reason to assume that there is an overvaluation of the housing market at the moment. This conclusion is in line with the recent reports of research institutions like the CPB, IMF and OTB (Francke, 2010, p. 17)”.

Francke should have mentioned that other research institutions, which do not only look at the income and expenses account of households but also at balance sheet items and liquidity statements and which do understand the ‘changing circumstances’ drawback of the econometric models based upon historical data which are used by Francke and the economists he cites, do mention overvaluation problems:¹

“In the countries with the largest house price increases (Ireland, the Netherlands, Spain and the United Kingdom) as well as in Australia and New Zealand, these ratios (i.e. price to income and price to rents ratios, M.K.) exceed their long-term averages by 40% or more.” (OECD 2005, p. 42).

Also, the ‘household investment rate’ in the Netherlands has been quite a bit

Table 1. Household investment rate (% of gross disposable income)				
	1998	2002	peak	2009
Peak: highest level between 2006-2008				
Ireland	n.a.	17	27	8
Spain	n.a.	12	15	9
The Netherlands	12	11	14	12
France	8	8	10	9
Germany	12	9	9	9
Italy	8	9	10	9
United Kingdom	6	7	8	5

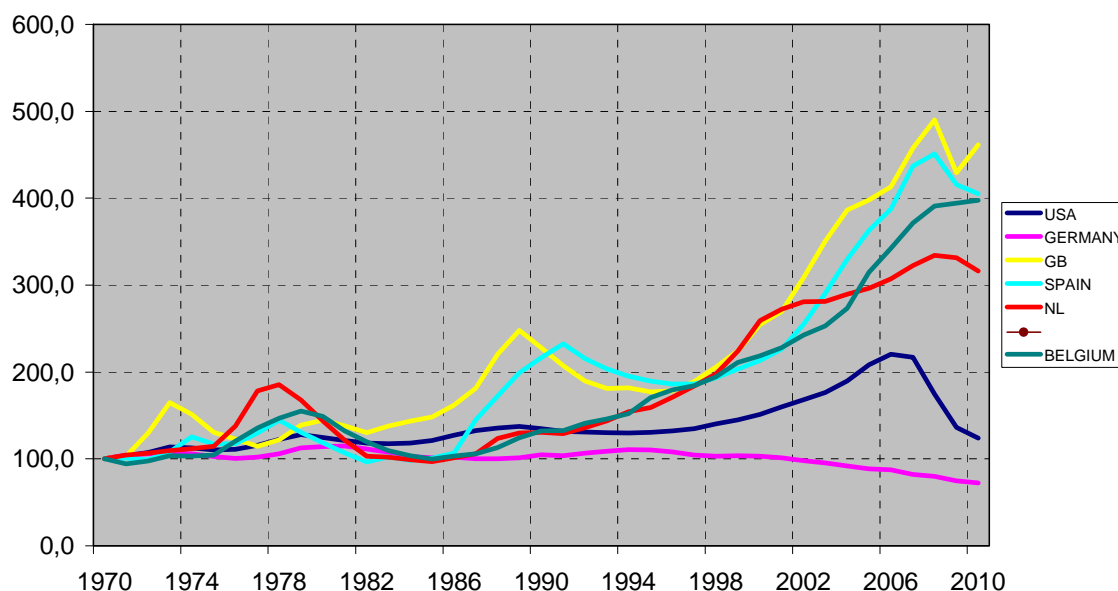
Source: Eurostat

¹ Francke also forgets The Economist, 2003, which predicted disastrous declines in house prices in Ireland, Spain, the USA, Great-Britain, Australia and the Netherlands, as there were big bubbles in these countries: *“People buy a home in the expectation that its price will continue to rise strongly over time. Such expectations lie at the heart of all bubbles. Given the boom in the property market over the past few years, at the very least house-buyers betting on further rapid house-price gains are likely to be disappointed. Worse, there is a risk that house prices will take such a tumble that they take whole economies with them.”* And contrary to the remark of Francke, the IMF also did warn: IMF, 2008.

below what it was in the building boom; the high level was mainly due to ever increasing house prices.²

When we look at prices, the same pattern shows (graph 1). This graph is based on the Bank of International Settlements eighteen countries real prices 1970-2006 dataset which is spliced to the new Eurostat house price data (released December 2010) and the Case-Shiller house prices index for the United States, whose data were deflated with Eurostat consumer price indices. The countries with the lowest and highest 1970-2010 increase were Germany and Great Britain. The Netherlands were fifth-highest. Especially the comparison with Germany (and believe me: people do not live in sheds over there) indicates that something curious is the matter with house prices in countries like Great Britain and the Netherlands – surely when (see below) building costs have not risen as much as house prices, if at all. Are economists looking at the right things when they state that there isn't any kind of housing bubble in the Netherlands?

Graph 1. Real house prices, 1970 = 100



Sources: data up to 2006: http://www.finfacts.ie/biz10/BISHOUSE_PRICE_DATA.xls. Data 2007-2010: USA: Case-Shiller home prices index (national data); all other countries: Eurostat, 2010. 2007-2010 data have been deflated with Eurostat inflation data, 2010 with the October 2010 figure.

This question is not confined to Dutch economists alone. The USA economist Dean Baker is somewhat embarrassed by the manifest failure of many USA economists to identify the USA housing bubble even after it collapsed – a bubble which he already explicitly identified in 2002 (Baker, 2002; Baker, 2010).³ This leads to the question why, despite the obvious and glaring information on tensions and risks, unsustainable developments and a severe implosion of the market (minus 45% in real terms and falling) do economists still not

² Compared with other countries, there is an exceedingly high mortgage and interest burden on households in the Netherlands: OECD, 2005, 131. Since then the burden has increased.

³ His main argument was the rise of the price/rent ratio, which indicates that the 'asset' aspect of houses started to outweigh the 'home' aspect in decisions to buy a home: people started to speculate in their own house. He calls the USA bubble the biggest bubble ever in the largest market ever. He's right about that. On a relative scale, however, the Irish bubble was much larger.

admit what happened – and to the more general and important question: Is it possible to develop a kind of analysis which enables us to identify bubbles in an earlier phase? In this paper I will try to answer that question and also: Do economists look at the right variables and in the right way?

2. What did Dutch economists recently say about the housing market?

Recently, prestigious think tanks, institutions, professors and advisory committees have published numerous studies on the housing market in the Netherlands (Verhagen en Wolters, 2001; Vries en Boelhouwer, 2004; Kranendonk en Verbruggen, April 2008; Geest en Heutz, May 2008; De Nederlandse Bank, September 2008; Francke, February 2010; Commissie van sociaal-economisch deskundigen, April 2010; Donders, Dijk en Romijn, April 2010). Some of these studies are excellent (Verhagen en Wolters, 2001; Vries en Boelhouwer, 2004). They investigate a number of different models, analyze which models are most apt to be of use and show acquaintance with recent as well as less recent theoretical and historical developments. They are, though economic in nature, written by non-economists. Other studies are not so good. The latter studies also do not mention the good ones.

Those of the Central Plan Bureau (CPB), the main economic think tank of the government of the Netherlands, are especially wanting. It's not exactly 'state of the art' economics to explain the development of average *individual* house prices with (among other variables) *total* wage income of households (Kranendonk en Verbruggen, 2008). As the number of households increases in a more or less stable linear fashion and as this 1%-a-year change is quite a bit lower than changes in total wages, changes in total wage income will almost always have the same sign and almost the same magnitude (though smaller on the down side and larger on the up side) as changes in wage income per household – and indeed, the variable is statistically significant. But it's a clear misspecification which affects the magnitude of the coefficients, which are therefore quite useless.⁴ A newer study uses the 'Representative consumer' to explain the housing market (Donders, Dijk en Romijn, 2010). But even when one accepts this kind of methodology, it's not acceptable to use it when one investigates choices between renting and buying (i.e. the choice between 'a little bit more/less of rent and a little bit less/more of ownership of the partly rented, partly owned house of the representative consumer). Low income groups do not have access to the mortgage market and therefore have, contrary to the assumptions of the model, little to choose.⁵ An implicit assumption of the model is also that low income groups are literally able to split off part off their (rented) house to make sure that richer people can have larger houses.⁶

⁴ This is a textbook example of what Ziliak and McCloskey call 'The cult of statistical significance' – as long as something is significant, you do not have to look at what it really means.

⁵ Representative consumer models with two consumers have been developed: for instance Mourougane and Vogel, 2008. Even when one accepts the 'representative consumer' methodology, the two consumer model should have been used, with one consumer not being able to buy. Much more important, of course, is that the very fact that the CPB model turns out to be outdated implies the imperative possibility that the newer model also might be less than perfect – results of models *always* have to be discussed, criticized and analyzed. This is a 'no-brainer' for the biologists and agronomists with whom I often work. Economists, however....

⁶ Using a 'representative consumer' literally leads to the conclusion that the poor have to pay more for smaller houses to make room for the rich, according to the study. As the rich have more money, a disproportional share of expenses of the 'representative consumer' are of course paid by house owners, which in a single consumer neo-classical model characterized by equality between prices and marginal utility almost inevitably leads to such conclusions.

Even worse, the authors use a 'Cobb-Douglas' utility curve, without explaining if such indifference curves indeed exists, without arguing if a Cobb-Douglas specification is the apt specification and without arguing if the parameters used to quantify the Cobb-Douglas function have any kind of empirical basis – it's all 'Brothers Grimm' economics. They also assume that owners demand a 5,7% return on total investment, even when empirical data show that it is less. A thorough investigation of the present situation is absent, historical analysis is absent, no attention is given to alternative models – the list of basic flaws goes on, and on. Again and again, the authors state: 'we assume', again and again they do not show acquaintance with either the historical record or recent literature – the least they could have done is to realize that proposing a 40% increase of rents, to enable higher taxable profits for people renting out houses, for a country where rents already are the highest of Europe (Özdemir and De Ward, 2005) is rather quaint.⁷ With regard to bubbles the model is straightforward: the assumptions rule these out. As the authors take the results of the model at face value and do not discuss these, they can't see a bubble – as there is no bubble (in the model).

Geest and Heutz (2008) and Francke (2010) do quite a bit better. Geest and Heutz do give an analysis of the present situation, using a wide array of data on, for instance, value to loan ratios and the historical development of prices. Francke also shows knowledge of recent theoretical developments and the international literature, while he also gives an insightful overview of the concept of house prices: as the 'goods' in question as well as the buyers and the sellers are unusually heterogenous, the market is quite 'fuzzy'. Information contained in a price paid by one consumer might be of little use to another consumer. To this may be added that, as is usual in secondary markets for assets, historical costs only play a small role when it comes to setting prices, which enhances the 'fuzzyness' of prices when it comes to information. Both studies however spoil their case when it comes to the model used. Unlike Geest and Heutz, Francke recognizes the importance of hysteresis – i.e.: the best prediction of this year's prices are last year's prices⁸ - and also shows that the effect of hysteresis withers away after some years. Unlike Francke, Geest and Heutz also pay attention to the balance sheet of households and analyze the (in their eyes: increasingly alarming) ratio's and increasing risks shown by balance sheet changes. The changes in the balance sheets are however not 'statistically significant' (at least not in the historical period they investigate) and are, therefore, not included in their regression models: Minsky moments defy statistical significance. And just like Kranendonk and Verbruggen, they extrapolate their regressions into the future, without even mentioning the chance of a 'regime change'. The results of their regressions are *not* discussed against the information they provide about balance sheet items, etcetera as well as common sense and a wide array of all kinds of literature and information: the future is a straight regression line which by definition excludes a crisis. As long as price increases are explained in a statistically significant way by past prices - there seems to be no bubble. This kind of reasoning by implication also changes our view of Dutch history: as seventeenth-century increases in tulip prices might be explained, in a

⁷ Their study boils down to a centrally planned rate of profit, which enables the state to tax organizations and persons renting out houses – squeezing the renters, to phrase this differently. Return on investment has to be high because this enables investors to build houses, while it's expensive to build houses as land prices have increased because house owners are allowed a tax deduction of mortgage interest. Phrased differently: squeeze renters to enable a tax subsidy to owners of houses and a windfall rent for land owners.

⁸ More precisely: when house prices in a certain period start to rise because interest rates drop and real household income rises, and interest rates continue to decrease for a period of five years while incomes continue to increase for a period of five years, while in year six interest rates and household incomes return to their original levels, house prices will after year five still stay quite high for some years.

statistical significant way, by earlier increases, there was no tulip mania – until the bubble exploded.

Studies of De Nederlandse Bank (DNB) are technically outstanding and investigate balance sheets of households and clearly mention all kinds of risks. These studies are however very cautious when it comes to a possible bubble (Brouwer, 2008; DNB, 2008). I do have the impression – which I can't prove – that the DNB is afraid to mention the 'bubble' word as this might lead to panic. To my knowledge, there are no recent statements of the DNB that suggest any kind of bubble might already have imploded.

The report of the 'Commissie van sociaal-economisch deskundigen' (CSED) of the Sociaal Economische Raad (Committee of social economic experts of the social economic advisory board) is a special case (CSED, 2010). The Sociaal-Economische Raad is the most prestigious board of advisors to the Dutch government. The report of its housing specialists starts with a balanced discussion of the situation and problems of the total housing market (owner occupied housed and rented houses) in the Netherlands. Problems start when solutions are proposed. They accept the CPB study (Donders, Dijk and Romijn, 2010) and solutions have to be consistent with this model and, therefore, the premise that real rents have to increase with about 40%. The report even states that rent increases have been slow and limited – a manifest falsehood born out by ignorance of the facts, as will be shown below. Some of the drawbacks of the CPB study have already been mentioned. These return with full force in the CSED study – it in fact reads as a textbook neo-classical model of monopolistic price setting where the monopolist – read: the government – sets prices at the point where marginal costs (read: investment costs of *new* houses including inflated land pricing and including a 5,7% net return on total investment) have to equal marginal proceedings (average rent on *all* houses, including old houses with a much, much lower balance sheet value). As investment costs for housing are based on present day land prices, which were at a historical high, as one of the main causes of these high land prices is a very generous tax deduction of mortgage interest, as this deduction is abolished in the CSED plan but as land prices are supposed to stay at their historical high (while they are, at the moment, already falling), the study is quit an inconsistent.⁹ The study has been published in April 2010, when house prices and prices of land were already falling while the number of transactions on the housing market had plummeted. The study does not take this into account. It does mention the criticism that the 'real world' rate of return in the 'real world' housing market is well below 5,7%. The authors however seem to prefer the 'centrally planned rate of profit'.¹⁰

Summarizing: economists trust their models – even when these contradict reality. The way these models are used in combination with the structure of the models exclude the possibility of bubbles. So, according to the economists, no such bubble exists. The DNB might be the exception to this – but for the moment we can't exclude the possibility that the DNB-people are afraid that crying wolf will awaken Fenrir, the mythological German Ragnarok wolf. Better models and ideas however exist. This will be the subject of the next section..

⁹ Already, the competitive position of the economy of the Netherlands is threatened by high prices of housing, as German houses prices did not increase. Increasing real rents by 40% will lead to higher inflation and higher wages and therewith to an eroding of the competitive position of the economy of the Netherlands - all this to secure rentier incomes. According to the CBS, in 2007, 2008 and 2009 increasing rents and energy costs were responsible for 37,5%, 20% and 33% of total inflation (CBS, Statline).

¹⁰ This, of course, reminds one of the idea of Kornai that neo-classical equilibrium requires a Stalinist central planner. The Dutch housing market is characterized by a multitude of companies, charities, corporations, individuals and governments who rent out houses – that's the real-world market. This real-world market does not work quite like the textbook market. 'Too bad for reality', according to the study.

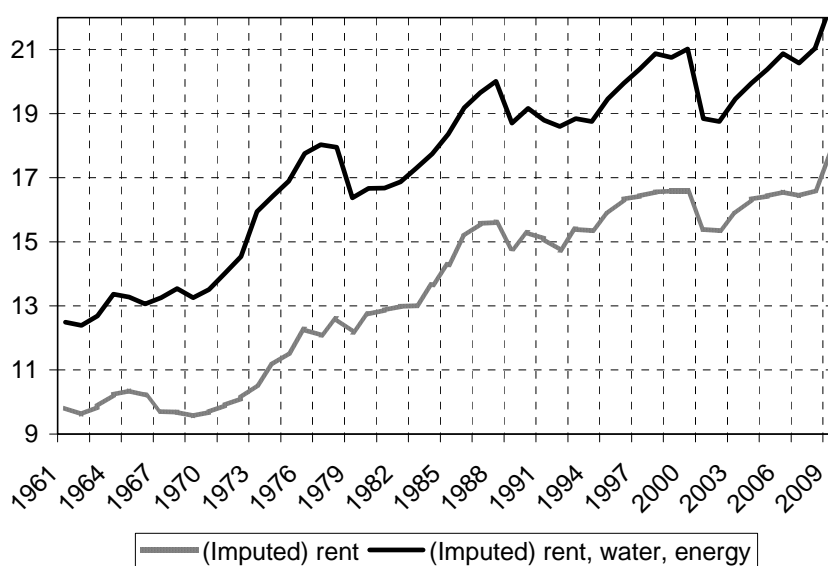
3. Whatever happened to the Dutch housing market? A non-general non-equilibrium approach

One of the main reasons why the studies mentioned above don't see a bubble is that they focus mainly on house prices. Building costs, turnover in the market, mortgages and the like are, when push comes to play, not taken into account. There are models that do pay attention to such variables. This paragraph will discuss some developments on the housing market with such models and ideas. A special characteristic of this analysis, rather distinct from the models mentioned above, will be the idea that people do not pay mortgage interest to buy a house, but to solve a liquidity problem: to obtain a mortgage. The mortgage is used to pay for the house.

3.1 The income and expenses account of households

A somewhat neglected characteristic of the long and even the very long term of 'modern economic growth' seems to be that 'the housing share of consumption spending' continues to increase (see, for the USA, Baker, 2002). The Netherlands are no exception to this (graph 1 and 2). Graph 1 is based on National Accounts data which have the advantage that these are part of a consistent estimate of the entire Dutch economy, a drawback of the housing data is however that the costs of owner occupied houses are not measured but estimated as 'imputed rents', taking rent of comparable houses as a measure. Graph 2 is based upon surveys. Surveys have the advantage that they allow a comparison between households owning a house and households renting a house, they however have the drawback that it is 'only' surveys and, therefore, have a margin of error. Maintenance is not included in data on owner occupied houses; paying off debt is included in costs of owning a house, though the share of interest in payments of mortgage owners has been dwindling for quite some time.

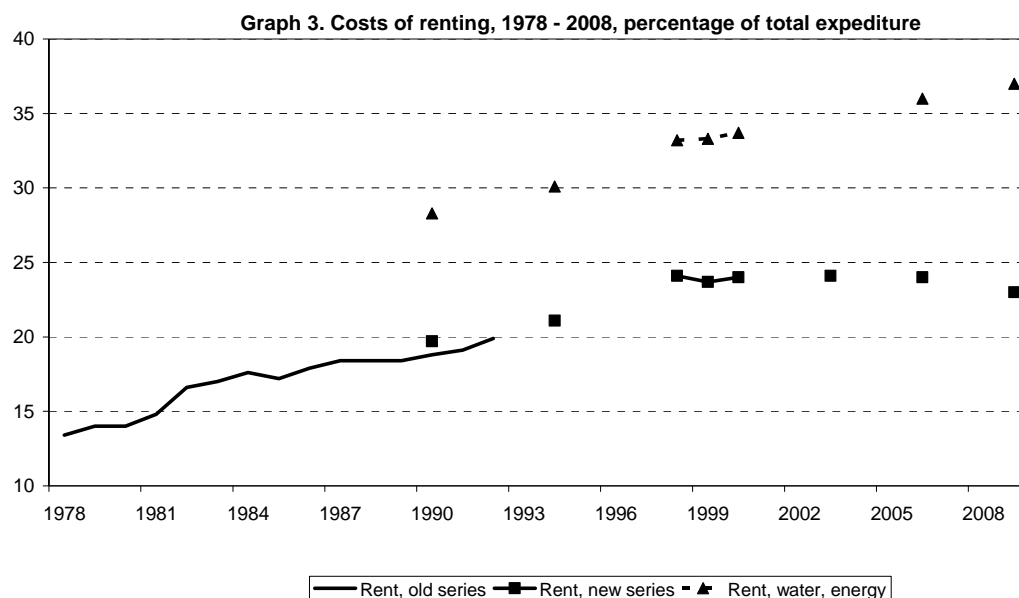
Graph 2. Housing costs, the Netherlands, 1961-2009. Percentage of total household expenditures



Source: National Accounts

Graph 2 indicates that housing costs have almost doubled between 1961 and 2009. When we compare owners with people renting a house it becomes clear that people renting a house pay a larger part of their income on housing than owners (all these data are net of tax

deductions and government subsidies, gross expenditures are even higher, Graph 2). Graph 3 shows the same thing for renters only. Owners generally have lower costs, though these too have risen, from 24% to 1986 to 25% in 2006 and 26% in 2009 (ABF-research, 2010, p. 50-51). Maintenance is however not included in the 'owner occupied' data, while mortgage costs include interest as well as paybacks.



Source: CBS, Statline; CBS and ABF research, 2010, pp. 49-49

The main conclusion from these graphs is that housing costs have increased (almost doubled) to an historically unprecedented level (Older data are at the moment not available. Considering pre-1961 rents as well as the share of food in pre-1930 budgets, it can be concluded that housing has never been as expensive as today). When we include furnishing and the like, this becomes even clearer. Remember, this is average costs. Looking at lower income groups, the share of housing in the household budget increases to about fifty and even sixty percent (CBS and ABF research, 2010, p. 51), net (!) of housing allowances.

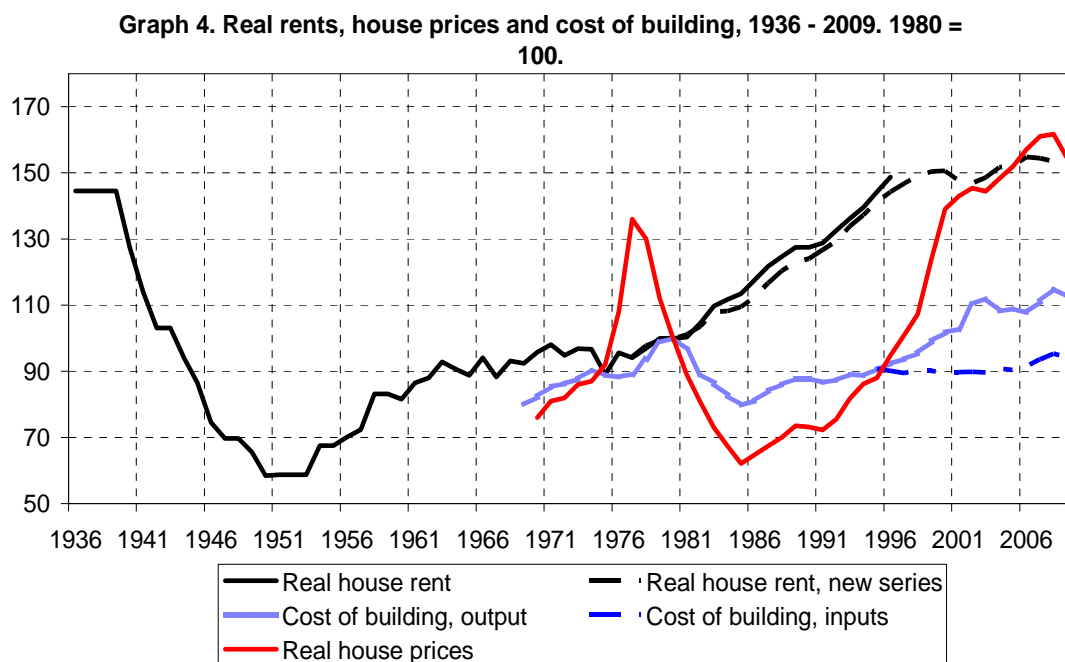
There are of course reasons why housing has become so expensive. One is obvious from the graph 2 and 3: over the long haul, energy prices have risen. There are three other main reasons. One is the decreasing size of households. To state this otherwise: the house/per capita ratio has increased. Though the number of full time jobs per households hardly changed in the post 1970 period, this of course caused an increase in total housing costs. The other reason is price increases (graph 3). The increase of house prices is of course well known. In the Netherlands as well as in many countries – though surely not all, Germany, South-Korea and Japan are clear exceptions – prices of houses have shown a tremendous increase.¹¹ Less well known – and according to the statements in their report: unknown to the CSED economists (CSED, 2010, p. 32) - is the equally epic increase in real rents (graph 4).¹² Taking 1980 as 100 (or 1975 as 90, which is, by coincidence, also possible)

¹¹ Above, I've voiced some mild criticism of existing studies. Graph 3 is the background rationale for this. It's (albeit for a much shorter period) the Dutch version of the famous Shiller house prices/building costs graph, combined with the rent/house prices graph of (Baker, 2002). The Shiller graph has recently made it to macro economic textbooks and should, therefore, have been forged and used by the economists mentioned above. It has become orthodox economics.

¹² The committee consists of: Kees Goudswaard, Arnoud Boot, Lans Bovenberg, Harry Garretsen, Hugo Priemus, Leo Stevens, Job Swank, Coen Teulings and Pieter Winsemius. Coen Teulings is also

it shows that real rents, i.e. rents deflated with the consumer price index, have increased as much as real house prices.¹³

Why this rise? As the comparison with 'output' prices (i.e. prices of new houses) and 'input prices' (i.e. prices of new houses excluding land and profit) show, the price increase of either rents or houses can not or only to a limited extent be explained by increasing costs of building, which, after 1975, did not increase too much or even hardly at all.



Sources: CBS, Statline; *Statistisch Jaarboekje* (various issues), own calculations

Rent increase after 1953 was, up till about 1990, a kind of catching up. Directly after the war the government pursued a low wage policy to boost exports but wanted, at the same time, to increase purchasing power of labor. The government squared the circle by limiting house rents to the pre-war level, which of course meant that building had to be subsidized. When, after 1953, economic growth accelerated rents were increased to make up part of the difference. The catching up lasted till about 1995, when the last subsidies were abolished – and at the moment of writing, the Dutch parliament is even talking about a 600 million Euro levy on building corporations, the main suppliers of social housing. The increase of building costs (including land) has been the main rationale behind ongoing increases of rents of (mainly) social housing after 1995. As new homes became more expensive, rents of all homes had to be increased. Graph 4 clearly shows that the increase in prices is not caused by input prices, but by the increasing price of land – which increases as owner occupied houses get more expensive.

The spike in prices of existing houses after 1975 was caused by high inflation and (very) low real interest rates. After 1980, the Volcker crisis led to a combination of high real

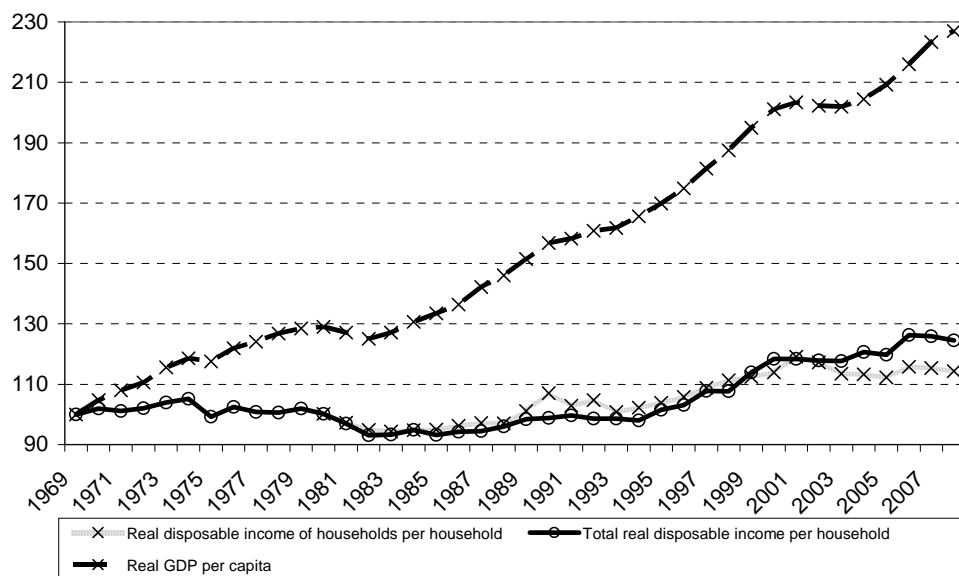
the head of the CPB, Bovenberg and Teulings are members of the board of advisors of Nyffer, which produced the Geest and Heutz study.

¹³ According to Eurostat, The Netherlands not only had the lowest rate of owner occupied houses without mortgage debt but also the highest rate of tenants living in houses at commercial rates. http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Housing_statistics

interest rates together with a large rise in unemployment – which predictably (though with a lag) led to a steep decline. Especially after 1992 declining interest rates in combination with increasing job opportunities and laxer rules of banks, like admitting interest-only mortgages and to-mortgages of 125% of the house prices led to an increase in prices, especially after international competitors like the Bank of Scotland entered the Dutch mortgage market. The increase in the amount of mortgage debt clearly causes the increased cost of owner occupied dwellings, especially when we take into account that an increasing amount of these costs consist of interest payments while paying-back accounts for an ever smaller part. Increasing quality of housing can not be ruled out, though it was only after 1990 that average size of new owner occupied dwellings increased over the pre-1946 average (CBS and ABF-research, p. 51).¹⁴

One of the variables used to explain real house prices is real income. This might be statistically significant, but it can't be that important: average real income per household hardly increased after 1969. Economists tend to focus on GDP per capita. This variable indeed did increase quite a bit (graph 5). But real income per household didn't, as the difference between gross and net increased, as the number of households increased quite a bit faster than the population, as the surplus of the current account increased and as an increasing part of disposable income did not go to households but to companies and the government. Real disposable income per household has in fact been decreasing since 2003, is now about as high as twenty years ago and only 10% higher than in 1969. This can't explain much of the house price increases. The regressions of Francke and Geest and Heuts do show large coefficients for real income – but when long term income change is zero, large coefficients do not explain anything in the long run.

Graph 5. Real GDP per capita and real income per household, (1969 = 100)



Source: CBS, National Accounts

3.2 The liquidity account of households

Real interest rates – which decreased after about 1984 - do explain quite a bit of the change, according to the regressions.¹⁵ This leads the authors to conclude that there is no

¹⁴ The report states 1946 but hardly any houses were built during the war.

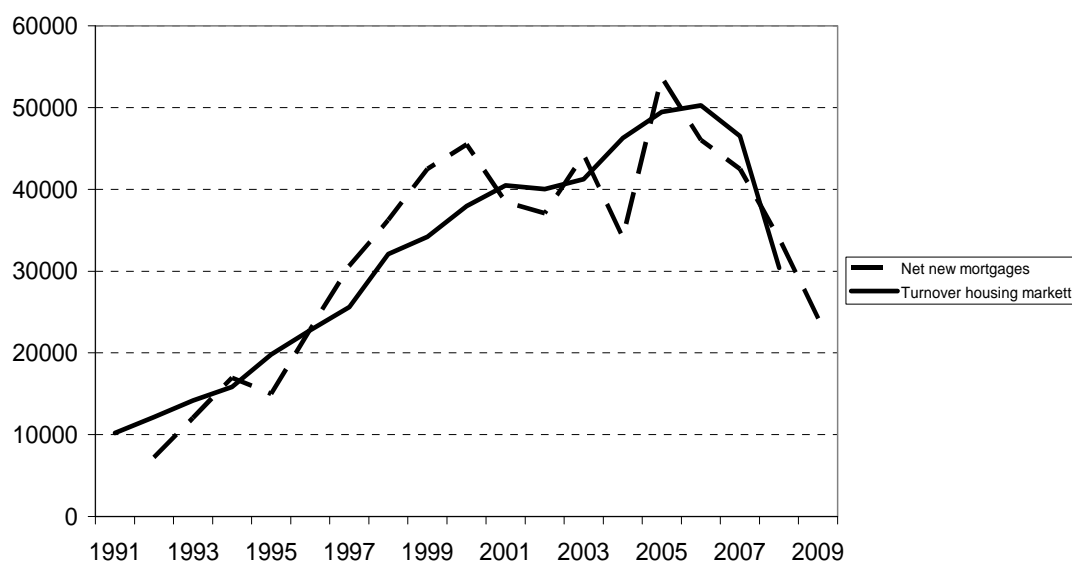
overvaluation of houses, as the rise is 'explained'. The fundamental misunderstanding is, however, that people pay interest on their home and not on their mortgage. Lower interest rates do have a statistically significant relation with prices, as a certain income can buy a higher mortgage debt. The size of mortgages indeed increased, which, as incomes hardly increased, has (and can) be explained by a combination of lower interest rates and laxer rules. Tax rules (mortgage interest deductions) in the Netherlands make it unprofitable to finance a house with savings. Almost all houses bought (new, existing) are therefore financed with mortgages (a balance sheet item) – but paid with money (a liquidity sheet item). This Mortgage-money is what I call 'local' money which can only be used for limited purposes – in this case: buying a house. All the paperwork and the solicitors have to ensure is that the money is not used for other purposes. This means that, on the housing market, the $MV = PT$ relation should hold, with V being one. Comparing the total amount of new mortgages with total turnover on the housing market we indeed obtain graph 6. The relation seems to hold (turnover one year delayed). As V is 1 (Mortgage-money is, in the Netherlands, only once used to buy a house), a change in M might lead in a change in P and/or a change in T . Between 1992 and 2006 (the peak of the housing market), both happened. Average price increased from 82.000 to 234.000, the number of houses sold increased from 124.000 to 210.000 (new houses as well as resale's). After 2006, however, when people suddenly postponed decisions to buy a house, the flow of M dwindled. Contrary to everyone's expectation, this only led to a limited contraction of P , but to a very large contraction of T , back to 128.000 (back to 1991) while prices changed to 243.000 (lower than in 2008, but still up on 2006). But that, for the moment, does not matter: in the Netherlands, turnover is constricted by the flow of mortgage-money. When prices increase, they do not increase because people want to pay higher prices, but because more money is available and the number of (new) houses is restricted: 'local inflation'. The increase and decrease in the amount of Mortgage money was facilitated by the banks, which especially after about 1993 became easier with their rules and more creative with their mortgages. In the end, the growth in Mortgage money is, however, a demand led process. In the end, buyers have to sign the mortgage-contract – the horse has to drink the water. And buyers want to drink less.¹⁶ At this moment, as house prices are quite sticky, this leads to a large decline in sales – and an increasing stock of unsold houses. In the end, many people however will have to sell – and prices will decline.¹⁷ To state this otherwise: interest rates might be called 'fundamentals', but just looking at the income account only gives part of the picture (as is explained in any introductory text on business accounts). Lower interest rates can only explain increasing prices as long as balance sheet or liquidity sheet considerations do not exclude this. To the extent that people expect to gain from future price rises – an expectation which did lead to the fast increase of 'interest only' mortgages – this indeed can be called a bubble.

¹⁵ Francke shows that hysteresis withers away after about three years, i.e. after about three years prices are fully adapted to lower (or higher) interest rates.

¹⁶ New, stricter rules are also imposed at the moment, due to 'Zeitgeist'. Even if the horse will start to drink again, there will be less water.

¹⁷ As mortgages are a 'leading indicator' for turnover, the most recent data spell disaster for the Dutch housing market.

Graph 6. Total new mortgage debt and total turnover on the market for houses, 1991-2009 (millions)



Source: CBS, Statline; own calculations.

3.3 The balance sheet

This however comes at the cost of increasing debts. Between 1992 and 2009, mortgage debt rose 500 billions to a level of about twice total disposable income of households – a clearly unsustainable rate. As long as house prices increase, this does not have to deteriorate equity: assets rise as much as liabilities. When house prices go down, equity will however decrease. Most people know this. When mortgage-money available

4. Discussion. Combining the lot: when can you call a bubble a bubble?

The IMF states that house prices have risen most in those countries (Denmark, Ireland, the Netherlands) which have the most 'advanced' mortgage-markets (IMF, 2008). The Economist states that bubbles are defined by asset prices which increase as people expect future price rises. Dean Baker states that an increasing house price/rent ratio is indicative of such a bubble on the housing market. 'Advanced' mortgage markets make it easier for people to increase the amount of mortgage-money which will increase turnover on the housing market. Lower interest rates will enhance peoples power to attain higher mortgages. When the supply of houses is inelastic, house prices will necessarily increase when Mortgage money increases, as people do want a 'dreamhouse' and as they will compete with each other for these houses; and price increases will fuel expectations of future increases, a well known characteristic of bubbles. Balance sheets of households will expand. Land prices will increase, as input costs of building seem to be rather stable in the long run. All these signs are sign of a bubble: a rise of prices fuelled by expectations of future price gains. Estimating and predicting an ongoing increase of rising real prices, as the Dutch economists do, is estimating a bubble. When the estimates are statistically significant, this is a statistical significant estimate of a bubble, especially when a discussion of the results of an estimate indicates that there are other 'red signs' on the way. The Dutch economists state that there was no bubble – but they estimated the very opposite.

5. Practical suggestions

Economists do a bad job when identifying housing bubbles. A shortcut to identification of a housing bubble might be an investment rate over 10% or an increase of the investment rate of more than 3% or 4% in two years (graph 1). House price increases which for a prolonged period of time are much higher than in comparable neighboring countries are also suspect. Economists do have to (re)learn about the difference between land and houses and the difference between labor income (wages, profits) and rent income (Foldvary 1991 might do well). Economists do have to learn that the plain results of models and estimates always require a thoughtful, scholarly discussion. (Shiller, 2005, for starters). With regard to economic policy: the Dutch housing market needs some 'Georgist' reform, restricting rentier incomes, while Banks have to carry more risk and apply stricter rules when lending out Mortgage money. Net tax deductions of mortgage interest (i.e. after subtracting the at present very low estimate of imputed rent income of the owner) have to decrease. 'Internal devaluation', which as the Netherlands do not have an own currency anymore might become necessary in the future, should not be restricted to wages but should first be applied to debts and rents – which was in fact characteristic of post war economic policy of the Netherlands. We have to prepare for a shrinking of the banking sector.

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If Herman Daly has a better plan, let's hear it

Richard Smith [Institute for Policy Research and Development, London]

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The great strength of Herman Daly's work has always been his passionate, eloquent, and insistent argument against both mainstream economics and green growth proponents that economic growth cannot continue forever on a finite planet and that humanity will not survive unless we construct a sustainable "steady-state" economy. I could not agree more with this thesis. Where we differ is that Professor Daly believes that our present capitalist economic system can be reformed in such a way as to make it function as a steady-state economy whereas I contend that it cannot, that such an economy would be undesirable in any case because the "market allocation of resources" Daly wishes to keep is neither efficient nor rational in environmental or social terms, and that the only way we can actually get a non-growing sustainable economy is a democratically planned socialist economy.

Now it is quite true, as Professor Daly says, that he never uses the term "steady state capitalism" but instead always talks about a "steady state economy." This he says is "something different from both capitalism and socialism." But one of the most frustrating aspects of reading Daly's books is this maddening imprecision. If it's not capitalism and it's not socialism, what exactly is it? For a start, who owns it? If we're talking about a modern industrial economy, who owns the factories, the mines, the auto plants, the oil companies, the airlines, etc.? And if this economy is mostly comprised of corporations, owned by investors, what are the implications of such corporate ownership for the problem of growth? And what are the implications of the threat of unemployment if one or another factory has to shut down in order to stop pollution or out-of-control growth, in order, say, to get a "steady-state" economy? Daly says almost nothing about such questions.

All he tells us is that in his imagined SSE, private property will be the rule and the market will determine the allocation of resources. Further, Daly has never to my knowledge suggested that there is anything even slightly socialist about his SSE – no common property, no economic planning, no workers' self-management, no popular economic democracy. Indeed, like Milton Friedman, Daly even rejects capitalist social welfare states (like Sweden). So if there is nothing particularly "socialist" about Daly's SSE model and he insists that the means of production must be privately owned and that markets "determine the allocation of resources," then what else can he be talking about but capitalism?

In his response to my article, Daly says that even if capitalism can be "socially and ecologically constrained" such that "the market can no longer determine the scale of the economy relative to the biosphere" and also "not any longer generate huge inequalities of power and wealth," this is just not enough to satisfy me. I would still be "unhappy" and insist that we would still need a socialist "cure." That is not what I said. For the record, let me state that I would be thrilled if we could get a socially and ecologically constrained market economy. The problem is, as I explained in my article, we cannot get that so long as capitalist private property and markets rule. We would need, in effect, a socialist revolution just to get serious social and ecological constraints imposed. This is because so long as the economy is based on private/corporate producers producing in competition with one another in the market, then all the evils of capitalism must inevitably follow – the need to maximize profits, therefore the need to maximize growth, therefore the need to constantly invent and market new stuff no one needs, therefore the need to strive to render perfectly good already

produced stuff obsolete so as to sell ever more new stuff, therefore the tendencies to exhaust scarce natural resources, to generate ever-growing income inequality, and so on. In short, shareholder demand for profits drives the economy and this dictates the possibilities and limits of “ecological and social constraints” – and not the other way around, as Daly imagines. Time after time, decade after decade, Copenhagen after Nairobi after Rio after Kyoto --all the evidence shows that under capitalism profit maximization trumps all else. Just look at Obama’s record: For all his campaign promises, President Obama has caved to corporate interests on every major issue – not because he lacked the political “will” but because, under capitalism, he had no choice.

He abandoned his own health care “public option” because if the government had actually set up a single payer system, this would have spelled the virtual end of the capitalist health insurance industry because, as polls showed, Americans would have abandoned private health insurance en masse. But Obama was not going to provoke capital destruction and mass unemployment in this so-called industry, so instead we got “health care reform” written by the insurance industry! Or again, Obama abjectly caved to the bankers who held the country to ransom because if he did not bail them out, investors would have gone on strike, production would have completely collapsed, and the economy would have plunged into depression. So capital won again, the rich got even richer and income inequality has widened to Chinese proportions. Or again, for all his campaign promises to “get the country off fossil fuels,” Obama has made no serious effort to do anything of the sort. On the contrary, in the midst of the biggest enviro disaster in the country’s history, when the nation looked to him to “get us off oil,” he caved to the auto and fossil fuel industrial complex, pumping even more money into coal subsidies, pushing ahead with ever-more risky off-shore drilling, and subsidizing bankrupt automakers that ought to be closed down while their workers ought to be reemployed in something useful. Why? Because Obama well understood that at least half the jobs in the country, and most of the best -paying industrial jobs, depend directly on fossil fuels -- and since this is capitalism, not socialism, no one is going to give those unemployed oil drillers, coal miners, or auto workers new jobs. Solar power is not going to replace those jobs, not now and not in the future. Obama understands this (even if green growth tech futurists do not) and so he is not going to provoke economic collapse and mass unemployment in the oil and coal and auto industry by forcing the shutdowns and retrenchment. So long as private property and the markets prevail, then markets are indeed “always masters and never servants.” How many more decades of market failures do we need before pro-market environmentalists finally grasp the obvious -- that the market is the problem and not the solution?

Daly is correct that I did not say anything very specific in my article about how such an eco-socialist economy might work. That’s because the intent of my article was limited to showing why there can be no such thing as a steady-state market economy. Once that’s understood, then we can begin to talk about alternatives, about a post-capitalist steady-state economy. That’s a big topic, one I think about a lot because it’s central to a book I’m working on. I make no claim whatsoever to have all the answers but since Professor Daly raises the question here, I’ll try to respond by stating some basic principles and premises while bearing in mind that these are far from adequate. For a start, I would argue that such an economy would have to be based on the abolition of capitalist private property in at least the major means of production. Why? Because private interests don’t add up to the public interest. So long as the economy is privatized, private/corporate interests will trump the public interest. Scary? The first step on the road to serfdom? I don’t think so. Many West European governments own big chunks of their economies – the utilities, the railroads, airlines and more, and they’re elected democracies not Stalinist dictatorships. Further, even under

capitalism, state-owned state planned industries generally provide better service at lower costs than private industries (at least when they're not starved of funds by right-wing governments determined to prove that government "can't work") because they more closely approximate the needs of society and not just private investors. So for example, French and German state-owned high-speed trains are vastly more efficient, comfortable and faster than any private railroad in the United States. And of course, there's just no doubt anywhere on the planet except in the Washington and Beijing, that single-payer or socialized medicine is far superior to the profit-driven capitalist medical industry we have to deal with. So public property in the major means of production seems to me to be the necessary starting point.

Secondly, an eco-socialist economy would have to be based on national and even international planning which would certainly include, in Daly's words, "rationing of goods and resources." Frankly I don't see any other alternative. And what's wrong with that? Daly, after Hayek, says planning "can't work" and he equates all planning with Stalinism. I don't buy that. Planning by whom for whom? Russian Stalinist central planning was by a totalitarian bureaucracy for the bureaucracy. It completely shut out workers and the rest of society from the planning process. So it didn't "work" very well. But I don't see why those failures disprove the possibility of planning per se, especially democratic planning. And today when, for example, scientists talk about limiting global CO2 output to "350 parts per million," isn't that in effect calling for "planning," indeed, planning on a global scale? When even capitalist governments pump money into research projects like nuclear power or biotech or the internet or clean energy projects, isn't that planning? When scientists say that we need to massively reduce and limit consumption of oil, coal, trees, fish, all kinds of scarce resources – isn't that in effect physical "rationing"? And don't we want that? Indeed, since we all breathe the same air, live in the same biosphere, don't we really want to strive, eventually, for something like a "one-world government" at least on environmental issues? How else can we regulate humanity's collective impact on the biosphere? And given that all those cap & trade "market solutions" fail time and again to solve the emissions problems -- because of course they're designed to fail since the whole point of such "market solutions" is precisely to delay or avoid change, to let the industrialized polluters keep on polluting while buying indulgences from the Third World "underpolluters"—what choice do we as a society have but demand that CO2 and other emissions be physically rationed, limited by planned quotas, even banned where possible – like governments banned DDT and thalidomide and PCPs? And what's wrong with that? Let's put it up for a vote: Solar or coal? But let's do so in a socialist economy where private capitalist interests do not rule and Fox News is history so we can have an honest debate, and where those very capable but misallocated coal workers are guaranteed other decent jobs. Consume it all now or save some for future generations? Why can't society put those decisions up for a vote? Shouldn't everyone who is affected have a say? Isn't that the essential idea of equality and democracy? The problem with capitalism is that the economy isn't "up for a vote." But it needs to be. In our system, huge corporations make critically important life and death decisions that increasingly affect everyone on the planet. But we ordinary mortals have no say in this. The world economy is mostly run by the Masters of the Universe who are accountable only to their investors. But these smart guys, with all their Harvard MBAs, can't help but systematically make wrong decisions, decisions that are destroying our future. Corporations can't help themselves because their interests are always particular interests, never society's collective interests. Even "green" businesses like wind power companies, or synthetic fuels, or organic sugar producers have no choice but to maximize their own corporate interests, which might here and there correspond to what society and the environment need at the moment, but not necessarily in every case and not forever. So who else but we -- all of us -- in a functioning economic democracy, can make such decisions rationally for both the short- and long-term interests of society? There is no

doubt that even the most democratic of socialist societies will sometimes make costly mistakes. But at least they will be honest mistakes and they won't be systematically wrong like under capitalism.

So these are some of what I think are the most basic principles and premises of an eco-socialist economy. But again, this is just a start. This doesn't even begin, for example, to delineate what the concrete institutions of popular local and global democracy might look like or how they could be organized, much less how we could get there. Here and there, all over the world, there are grass roots organizations, community organizations, workers unions, and other forms of self-organization that are instinctively democratic, that could serve as the basis of a working economic democracy. But these are just a start. Constructing a global socialist democracy will be the greatest challenge humanity has ever faced. We may very likely fail. But given that market capitalism can only drive us to collective social suicide, what other choice do we have but to try? If Herman Daly has a better plan, let's hear it.

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Adam Smith's view of slaves as property:

A response to Thomas Wells and Bruce Elmslie

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In a previous issue of the *Review*, both Thomas Wells and Bruce Elmslie argue that I got it wrong when I pointed out in “Free Enterprise and the Economics of Slavery” that in *The Wealth of Nations*, Smith treated slaves as property. I argued that since they were property—one could buy and sell them—one could ignore their human misery. I used Smith, as well as John Locke, to illustrate this peculiar Anglo-American tradition of basing freedom (free enterprise) on property and property rights. (On the European continent, freedom was generally based on the human will (Rousseau) or the moral will (Kant). So, did Smith treat slaves as property in *The Wealth of Nations* or did he not?

In *Civilizing the Economy*, where I provide more details about Smith's treatment of slaves in *The Wealth of Nations*, I quote his comparison of the treatment of cattle and slaves:¹

In all European colonies the culture of the sugarcane is carried on by negro slaves . . . But the success of the cultivation which is carried on by means of cattle, depend very much upon the good management of those cattle; so the profit and success of that which is carried on by slaves, must depend equally upon the good management of those slaves, and in the good management of their slaves the French planters, I think it is generally allowed, are superior to the English.²

Comparing the management of cattle and of African slaves, of course, expresses the full meaning of “chattel slavery,” since *chattel* has the same root as *cattle*. Furthermore, just as cattle were treated as property, so were slaves.

Elmslie makes much of Smith's argument that free labor, in most cases, is superior to slave labor. Smith does write this, but I think he is thinking about this much like one would think about getting the most from what one has purchased. As Patricia Werhane has pointed out, for Smith, labor is property. The difference between whether it is free or slave labor depends on who controls it. She writes:

Because that property [one's productivity] is one's own, to which one has a perfect right, and because productivity is exchangeable, one should be free to exchange this commodity, and others should be free to employ it. Thus one can sell one's labor productivity (but not one's strength and dexterity) without thereby selling oneself into serfdom. If one is not paid for one's productivity, one's property rights will be violated. Worse, because one's productivity is an outcome of one's own labor, if it is not recognized as an exchangeable commodity, one thereby will be treated as a slave.³

¹ Marvin T. Brown *Civilizing the Economy: A New Economics of Provision* (Cambridge: Cambridge University Press, 2010), p. 25.

² Adam Smith *The Wealth of Nations*, ed. Edwin Cannan (New York: The Modern Library, Random House, 1994), p. 633-634

³ Patricia Werhane *Adam Smith and His Legacy for Modern Capitalism* (New York, Oxford: Oxford University Press, 1991), p. 135

Slaves, in other words, were not free to exchange their labor, but were exchanged as labor. So when Smith argues that free labor is usually more productive than slave labor, he is merely calculating how to get the best return from one's investment.

It is true that I do not give much credit to Smith's statements against slavery in his other writings, although I do recognize them. The issue, however, is not Smith's view of slavery as a moral philosopher, but his view as an economist. When he thinks economically, if we may call it this, he treats slaves as property. This is significant because we live in his legacy of this uncivil economics. In this tradition, we can be quite civil, in our religious, legal, and political life, but uncivil in our economic life. As we see the commercial gaining control over the civic today, we need not only to expose this tradition of treating people and the planet as property, but also to switch to a economics based on civic relations, rather than on one based on property and property relations.

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