sanity, humanity and science

real-world economics review

- Subscribers: **21,420** Subscribe **here** ISSN 1755-9472
- A journal of the World Economics Association (WEA) 10,904 members, join here
- Sister open access journals: *Economic Thought* and *World Economic Review*
- back issues at www.paecon.net recent issues: 61 60 59 58 57 56 55 54 53 52

Issue no. 62, 15 December 2012

In this issue:

Instant comments – You may post comments on papers in this issue on the *Real-World Economics Review Blog*

Membership in the WEA is free

---

real-world economics review, issue no. 62
subscribe for free

A radical reformation of economics education: educating real world economists[1]

Jack Reardon [Hamline University, Minnesota, USA]

Abstract
Our generation is confronted with many problems including climate change, a global financial crisis, a palpable disparity in income and wealth, and a health care crisis. These problems are mutually reinforcing and will only worsen. At the center, however, is the discipline of economics itself and economics education, which obfuscates the interrelationship of our problems, inures its students to human suffering and abnegates thoughtful discussion of the human predicament. This paper will briefly discuss the problem of economics education, and then present a vision for a radical restructuring of the economics curriculum.

Keywords: Economics education, pluralism, neo-classical economics

1: Introduction

Alfred Marshall, in the eighth edition of his *Principles of Economics,* wrote that "economic conditions are constantly changing, and each generation looks at its own problems in its own way" (Marshall 1946 [1920], p.v). Our generation is beset with many problems including climate change, a global financial crisis, a palpable disparity in income and wealth, and a health care crisis. These problems are mutually reinforcing and will only worsen. At the center, however, is the discipline of economics itself and economics education, which obfuscates the interrelationship of our problems, inures its students to human suffering and abnegates thoughtful discussion of the human predicament.

To date, calls for reform of economics education within the neoclassical paradigm have been tepid, content with tinkering around the edges, adding less chalk to more talk, while leaving the bulk of the curriculum intact. Despite the persistence of one of the worst recessions in recent history, and the collective failure of neoclassical economics to predict or understand it, "the generals of [the] mainstream status quo, along with middle ranks, show no signs of giving ground or even of feeling the need for appeasement" (Fullbrook 2010, p. 94). The crisis "doesn't seem to have any decisive impact on the way economics is taught and the trends in economic research" (Otsch and Kapeller 2010, p. 22). The emphasis is overwhelmingly on 'more of the same.'

There is no better example than Gregory Mankiw, author of one of the best-selling economics textbooks, writing during the depths of the financial crisis, "We still have to teach the bread and butter issues, the gains from trade, supply and demand, the efficient properties of markets and so on. These topics will remain the bread and butter of introductory courses" (Mankiw 2009). But "it is hubris run amuck that assumes we only need minor adjustments" (Reardon 2010, p. 182).

What is wrong with neoclassical economics that precludes a honest re-assessment? Where is the humility? Where is the umbrage? Where is the *mea culpa* of university professors,

[1] An earlier version of this paper was presented at a plenary session of the Joint Conference of the AHE, IIPPE and the FAPE, held at the Sorbonne, Paris, July 6, 2012..

textbook authors and publishers? Where is the willingness to go back to the drawing board? Where is the public shock that despite the prodigious change in our economy, "students at the beginning of the 21st century are receiving much the same instruction about how firms set prices as did their counterparts at the end of the 19th century [and] that any scientist from the 19th century would be bewildered by what is commonplace today in his [sic] discipline - save an economist" (Keen 2011, p. 168 and p. 169).

Imagine "if universities continued to use for nuclear engineering a textbook by an engineer who had headed a team managing a nuclear power plant that without external causes exploded creating a huge devastation, there would be a public outcry" (Fullbrook 2009, p. 22). Or imagine the outbreak of a disease, an epidemic, that caught the medical profession unaware, with most of the profession (and textbooks) fastidiously denying the epidemic's possibility. Wouldn't there be public outrage? An enraged demand to hold the profession accountable?

Why is such a similar situation tolerated in economics? Why isn't there a public effort to disbar economists who continue to teach such failed policies? Why isn't there an effort to de-commission the universities that grant such degrees? Why isn't there a detailed public hearing to ascertain what is taught in economics courses and published in economics textbooks?

Imagine a book written for economics students that describes in detail what is missing and wrong in their textbooks so that they "can begin to think critically about what they read in their textbooks, to defend themselves against the unconscious acceptance of ideology" (Hill and Myatt 2010, p. 2).

Unfortunately we don't have to imagine- such a book has been written (Hill and Myatt 2010). The book's title, *The Economics Anti-Textbook - A Critical Thinker's Guide to Microeconomics* acutely underscores the problem: students need a book not as a helpful guide in learning complex material but to unlearn what is written in their texts.[2]

Several reasons explain the collective failure of neoclassical economics to reform and its steadfast refusal of an honest re-assessment. One, a proclivity (I am not sure if it is natural or not) for individuals and academics to become comfortably immersed in the old ways of doing things, while viscerally impugning anything new that might disturb the accepted way. Indeed Francis Bacon noted almost four centuries ago that,

> "In the manners and customs of the schools, universities, colleges and similar institutions, which are intended to house scholars and cultivate learning, everything is found to be inimical to the progress of the sciences... For the readings and men's (sic) writings are confined and imprisoned in the writings of certain authors; anyone who disagrees with them is instantly attacked as a troublemaker and revolutionary " (Bacon 2000 [1620], Book I, XC, pp. 75-76).

Two, and closely related, a reluctance exists to admit that one's work has been in vain. Ironically, for a discipline that claims rationality, it is hard for established practitioners to jettison their life-long beliefs in favour of a new paradigm. And sadly the myopic and

[2] While this book only tackles one subject in economics– microeconomics, the malaise and disconnect described by Hill and Myatt unfortunately affects all subjects within the discipline of economics. Expect more such books to be written.

fundamentalist limitations of their education precludes understanding of the manifold alternatives. It is this "irrational tenacity [to] hold its core beliefs in the face of either contrary factual evidence or theoretical critiques" (Keen 2011, p. 168) that keeps neoclassical economics "a pre-science, rather like astronomy before Copernicus, Brahe and Galileo" (Keen 2011, p. 158).

Three, the basic institutions of neoclassical economics: university departments, associations, journals, classification systems, economics 101 textbooks, and its basic narrative, collectively and interactively block any effort at meaningful reform (Fullbrook 2010, p. 95). Fullbrook notes that "this intransigence and insuperability stems from the fact that as institutions, although independently constituted, they are interlocking and their characteristics inter-determined" (Fullbrook 2010, p. 95).

Four, uniting each of the above factors and, important in its own right, is economics education, which in my opinion best explains why neoclassical economists could not predict the recent crisis; why they are ignorant of alternative paradigms; why they obdurately cling to failed policies; and why they chastise and bully dissenters. Indeed, "economics [and economics education] as currently constituted and practiced, acts as a most effective barrier against the understanding of [our] problems" (Schumacher 1989, p. 50); and as Keen noted,

> "economists may be the main force preventing the introduction of countervailing measures to any future economics slump. Economics may make our recessions deeper, longer and intractable, when the public is entitled to expect economics to have precisely the opposite effect" (Keen 2011, p. 1).

We need economics and we need economists to help fix our problems but more importantly we need educated (and not proselytized) real world economists. And we don't need an economics or economics education that insists on proselytization rather than education; an education that is monist rather than pluralist; that produces students unable and unwilling to understand the myriad diversity of human behavior and unable to work with other social scientists in solving our generation's problems. Economics education is a problem of our generation and must be radically reformed.[3]

2: The problem with economics education

One of my students wrote on a recent exam, "I took two economics classes before yours, and I had a hard time finding a relationship between the study of economics, firms and the entire

[3] Although Marshall is most responsible for the neoclassical synthesis, Marshall along with other founding fathers of neoclassical economics, would "be surprised to find that a manner of thinking they thought would be transitional has instead become ossified as the only way one can do economics and be respectable" (Keen 2011, p. 35). A constant theme of Marshall's work is the exhortation that "the study of local circumstances as the only way to bring general economic principles to bear on the solution of factual problems [which presupposes that the economic principles themselves are given an inherently flexible formulation and conceived as evolutionary instruments by means of which human societies can learn how to deal with changes either of the endogenous sort or those deriving from external sources" (Raffaelli et al., p. xvi). And not surprisingly "some of Marshall's economic ideas had an indirect and almost underground diffusion on political science, urban planning, sociology, demography, rural studies, and so on" (Raffaelli et al,. 2010, p. xi)

society." Given that the overall objective of economics is the study of the economy (isn't it?) and given that the economy is comprised of firms and individuals, isn't this a damming criticism?

If this was an isolated comment, I could cavalierly dismiss it, but I hear it time and time again. My heart stops when students tell me that they were excited to begin their study of economics only to be turned off by an onslaught of deductive logic and abstract models with little resemblance to the world in which they live. Indeed, "in the business, government and other non-academic communities, the perception is widespread and growing of economics as a technical and rarefied discipline, of questionable relevance and limited practical use" (Hodgson 2001, p. 9).

Imagine a physicist being told that her lectures had nothing to do with the physical world; or an anatomy professor being told that his lectures had nothing to do with the human body. Wouldn't there be umbrage; a humbled admission of fault and a dedicated desire to amend the pedagogy?

Not so with neoclassical economics, which claims that "economics isn't defined by its subject matter but by its way of thinking" (Coyle 2007 p. 231-232). No wonder students are disappointed and perplexed when they open up a textbook and expect to learn about the economy in which they live and (will) work, only to be told that economics is about allocating scarce resources among unlimited wants and then hit with an abstract production possibilities curve to drive home the point.

The problem with neoclassical pedagogy isn't too much math – actually quite the opposite: it uses the wrong math (simple calculus) to study the wrong problem – optimization. And even worse, it is bad math – a distorted and misunderstanding of the limitations of mathematics (Keen 2011, pp. 402–411). Mathematics can elucidate, especially the laws of nature, "natural inquiry succeeds best when the physical ends in the mathematical" (Bacon 2000 [1620] Book II, VIII, p. 108).

Nor is neoclassical economics too complex: as a former physics major who switched to economics, I found it deceptively simple; and perhaps this is its appeal as Keynes wrote on the completeness of the Ricardian victory,

> That it reached conclusions quite different from what the ordinary uninstructed person would expect, added... to its intellectual prestige. That its teaching, translated into practice, was austere and often unpalatable, lent it virtue. That it was adapted to carry a vast and consistent logical superstructure, gave it beauty (Keynes 1936, p. 33).

The problem with neoclassical pedagogy is threefold:
First, a disconnect between what is taught as subject matter and how the world works. Consider a flyer sent by Hugo Radice in 1969, a Cambridge Univesity postgraduate student in economics,[4]

[4] The flyer led to a Conference held in London, January 1970, which developed the Conference of Socialist Economics an important institution in developing heterodox economics in the UK; and the *Bulletin of the Conference of Socialist Economists* which in 1976 was superseded by *Capital and Class* (Lee 2009, pp. 127-130).

> Many of us who study or teach economics feel that much of our subject matter is irrelevant and meaningless in the face of the intense social and economic problems of the world. For the most part, economics takes the existing capitalist system for granted, and is concerned soley with making it work more efficiently, or with making marginal adjustments which are totally inadequate. Furthermore, economists persistently deny that economic problems are inevitably social and political problems as well (quoted in Lee 2009, p. 127).

Simply put, neoclassical economics has failed to construct a workable model that reflects the world in which we live, while "critical thought is pushed aside to make room for apocryphal stories of how human selfishness in an unfettered market environment leads to social progress" Magnuson (2012, p. 13). Rather than teach students how real firms operate in real industries, students are 'bullied' (Fullbook, 2009, passim) into accepting basic axioms as true, which is anathema to science (Fullbrook 2009). Students are then asked to use these axioms in order to analyze hypothetical firms in idealized industries, with "ficticious values invented at the desk of the textbook author in order to fit the courageous assumptions necessary for developing the respective economics model" (Otsch and Kappeller 2010, p. 17).

Second, the wilful ignorance of the social sciences and the physical sciences, particularly physics and mathematics,

> In other sciences, chaos theory, complexity analysis and their close cousin evolutionary theory have had profound impacts. It shows how isolated economics has become from the scientific mainstream of the late 20th and early twenty-first century that such ignorant views could be commonplace (Keen 2012, p. 410).

Third, neoclassical pedagogy is anti-pluralist. Instead of enabling students to grasp the complexity of our problems with a multi-faceted emphasis on different theoretical and empirical approaches, neoclassical economists train students to think like economists – as if all economists think alike – and that only one perspective exists, while denying the legitimacy of all others. Partly this is due to the "incestuous relationship between capitalism and economics" (Dowd 2004, p. xiii) whereby neoclassical economists are ideological apologists for the business community and capitalism" (Lee 2009, p. 49).

So anyone who crticizes the established orthodoxy or thinks beyond the conventional boundaries is instantly attacked as a 'troublemaker and revolutionary' and/or bullied, vilified, black-listed, or worse. Take Diane Coyle's chastisement of John Kenneth Galbraith, as one example among many, the reason many economists think Galbraith wasn't one of us lies in his methodology. His work covers the terrain of economics... but it uses the methods of sociology and history... many of us spurn Galbraith because he wasn't a modeler (Coyle 2007, p. 232). This is notwithstanding Galbraith's presidency of the American Economic Association and his authorship of numerous books explaining in lucid prose how the economy works.[5]

[5] The invidious term 'one of us' comports with the ubiquitous statement found in neoclassical textbooks that the goal is to teach students to think like an economist- as if we all think alike -- its constricting and conformist overtones send shivers down the spine of anyone with an open mind. Shouldn't our goal be to educate students so that they understand history, sociology, psychology, etc., and can work with other social scientists to address the many problems of our generation? No wonder neoclassical economists cannot understand power and the historical evolution of institutions.

And needless to say only one conceptualization of a modeler is taught, tolerated and accepted for publication in the leading neoclassical journals. Economists who challenge the accepted dogma and/or develop alternative model conceptualizations are ostracized, as Lee writes,

> it is not just that [heterodoxy] represented *no* research but that they represented (to use a phrase that is becoming popular with mainstream economists) anti-economists and being the enemy of economics such research and researchers should be cleansed from the profession (Lee 2009, pp. 175-176).

In this sense neoclassical pedagogy is no different from fundamentalism marked by "intolerant zealots presenting themselves as the true guardians of orthodoxy" (Bruce 2008, p.2 and p.100). If we don't tolerate fundamentalism in our universities why should we tolerate the teaching of neoclassical economics?

We have abnegated the lofty goal of educating our students in lieu of the easier (yet ethically questionable) goal of prosyletization.

3: Solutions

I am inspired by William Lloyd Garrison, who began publishing *The Liberator* in 1831 and vowed to continue until the abominable injustice of slavery was outlawed. Our generation is also enslaved by an outdated and unrealistic neoclassical economics that ignores pressing environmental realities and inures its practitioners to our generation's many problems. As Keynes wrote on the Ricardian victory, "That it could explain much social injustice and apparent cruelty as an inevitable incident in the scheme of progress, and the attempt to change such things as likely on the whole to do more harm than good, commended it to authority" (Keynes 1936, p. 33). Reforming and reconceptualization of economics education is our most important task.

As founding editor of *the International Journal of Pluralism and Economics Education,* it is assumed that I fully endorse pluralism as a ubiquitous solution.[6] On the contrary I feel that pluralism is a necessary but not sufficient condition for the reconceptulization of economics education.
While different definitions of pluralism exist (is this surprising?) a simple definition that conveys its essence is, "a mutual respect for the legitimacy of competing views." Perhaps one reason for the different definitions of pluralism is that it exists on several levels – ontological, epistemological, methodological and pedagogical (Negru 2009).

Pluralism is necessary (but not sufficient) for the following reasons. One, pluralism ensures vitality and innovation since, "in ideas, as in nature, *variety is the evolutionary fuel*. When pluralism and variety disappear, innovation and progress may slow to a halt . . . Pluralism is

[6] For an introduction to the historical evolution of pluralism please see (Negru 2009; and Negru 2010). The objective of the IJPEE is to reconceptualize and reform economics education and to foster and encourage inquisitive cooperation between the many disciplines in economics and among the social sciences.

necessary for innovation and scientific advance" (Hodgson 1999, p. 13, emphasis in original). Variety gives competition and competition in the realm of ideas is necessary for economics to advance, and can only do so if "it is genuinely pluralist, stimulating full competition in the market place of ideas" (van Staveren 2011, p. 123) The antithesis of pluralism is monism, and neoclassical economics as currently practiced is monist with fundamentalist zealots protecting against any encroachment on orthodoxy. The "intolerant and anti-pluralist" attitude modus operandi of neoclassical economics has degenerated into an 'intellectual insularity' in which disciples are unaware of economic theory beyond neoclassical economics" (Lee 2009, p. 48).

Two, only pluralism is consistent with democracy and only a democracy in ideas is consistent with the ideals of a university, "Intellectual diversity, free inquiry, and the principle that there is no humanely accessible truth that is not in principle open to challenge are indispensable to the achievement of the central purposes of a university" (Lee 2009, p. 185). And hence,

> an intellectual faction that has a monopoly on truths and wisdom and utilizes state and/or organizational power (such as control over research and testing funding or university budgets) to maintain and enhance this monopoly, that rejects the unsettled character of all human knowledge, and that rejects a diversity of approaches to unsettled questions is not compatible with the idea and nature of a university (Lee 2010, pp. 185-186).

Three, pluralism exposes students to different viewpoints, "so they can debate their relative merits and develop an awareness about the weaknesses and strengths of competing theories" (Ostch and Kapeela 2010, p. 23). Not only is pluralism consistent with a democracy of ideas and a democratic society, but democratic interaction can lead to a 'transformative dialogue,' which can help move economics forward (Soderbaum and Brown 2011).

Four, pluralism is useful because, "no paradigm or theoretical perspective can claim universal applicability, i.e., usefulness for all kinds of all problems. Each paradigm or theoretical perspective may have something to offer and preference for one theoretical perspective over another is… partly a matter of ideology" (Soderbaum 2008, p. 10). In other words, given "the presence of values and ideology in social science research… a complementary relationship between theoretical perspectives or paradigms, each reflecting a specific ideological viewpoint is relevant" (Soderbaum 2008, p. 41). For we "cannot understand contemporary societies very well unless politics, economics, psychology, and the other social science disciplines are all brought together to study the complexities of modern life" [Bowles et al., (2005), p.51].

Five, pluralism enhances student-based learning,

> Developing the ability to ask probing questions is empowering. It draws upon the students' analytic, global perspective taking, and valuing abilities. The assumption inherent in this approach is that students are entitled to inquire and to explore and that economic phenomena are subject to continual investigation (Davis and Emami 2009).

Six, only pluralism can instill passion into economics; and passion is necessary to "identify redressable injustice" (Sen 2009, p. vii). Passion in turn is necessary to give us the intellectual courage to help solve the problems of our generation. As Joan Robinson exhorted, "independent economists ought to be speaking up on the side of humanity" (1980, p. xiii). In

addition, we should be ashamed to hide behind the ideological cloak of positive science, long ago jettisoned by other social scientists. Neoclassical economists, still stuck in the 19th century, have inured their students to "redressable injustice" while fastidiously extirpating passion.

And finally, if a reformed economics is to help make the world a better place – and it must – then economics must be concerned with justice, which in turn is interconnected at many levels with pluralist dialogue since,

> "not only are dialogue and communication part of the subject matter of the theory of justice... it is also the case that the nature, robustness and reach of the theories proposed themselves depend on contributions from discussion and discourse" (Sen 2009, pp. 88-89).

To be passionate about economics requires being able to recognize injustice, which in turn requires an understanding of power and how institutions evolve, which in turn requires an open mind and a willingness to learn from other disciplines. Passion and justice are incommensurate with monism – the current modus operandi of neoclassical economics, especially at the pedagogical level.[7]

Despite the above-mentioned virtues of pluralism, it is a necessary but not sufficient element in the reformation of economics education for two reasons. First, as Fullbrook writes,

> Pluralism, both its ethos and epistemology, is extremely important, but no matter how robust it may become among economists it will never be a sufficient basis for breaking the hegemony of neoclassical economics. That will require a new cohesion of underlying economic ideas other than the neoclassical ones and which heterodox schools will in the main accept and, even more importantly, which their members will become in the practice of relating to their particular school of thought as they currently do with neoclassical ideas. (Fullbrook 2010, p. 101).

Second, pluralism is currently a one-way street, "[although] heterodox economists are willing to engage in pluralism the mainstream economists generally do not reciprocate" (Lee 2009, p. 283, note #26). While neoclassical economists claim to be pluralist and perhaps they are to a very limited extent at the methodolocial level (Coyle 2007, pp. 239-254) they are certainly not at any other level, which explains their fundamentalist 'bullying, cajoling, threatening, expelling, disparaging, etc., (Lee 2009, passim) and their 'irrational tenacity' to hold onto cherished beliefs.

Given this intransigence, real world economists have three options. One, do nothing and to continue letting neoclassical economics dominate and influence the intellectual baggage of all citizens. But as Fred Lee emphatically writes "to do nothing is not an option" (Lee 2009, p. 206). At the same time, "Economics cannot be trusted to reform its own house" (Keen 2011, pp. 23-4) suggesting a concerted action from real world economists.

---

[7] Even Coyle admits, after almost ebullient about the advances made on the frontiers of economics, the disconnect between practice and pedagogy, "I accept that critics of mainstream economics have a point until we economists teach what we preach" (Coyle 2007, p. 250) But alas, keep in mind her strict requisite of an economist!

Second, renounce any attempt at dialogue with neoclassical economics while continuing to develop a robust agenda and a vibrant real world economics research community. Fred Lee delineates what must be done to establish a robust agenda,

> Heterodox economics [must] be taught to more students, more doctoral students be produced, and heterodox economists [must] become more professionally and theoretically engaged through joining multiple heterodox associations, subscribing to multiple heterodox journals, attending multiple heterodox conferences and engaging in open pluralistic theoretical dialogue with other heterodox economists [and must] challenge the research assessment exercises, subject benchmark statements, and the mainstream ranking of journals and departments (Lee 2009, p. 206).

Third, while not necessarily engaging in dialogue – which given the anti-pluralist nature of neoclassical economics is an oxymoron – to actively lessen the tenacious grip of neoclassical economics, with its almost exclusive western thinking and its self-absorption in the scientific methods of the 19th century, such is the explicit goal of the World Economics Association (Fulbrook 2010).

Fourth, while not denying the efficacy of building a robust real world economics agenda and attenuating the grip of the current institutions, it is also important to reform neoclassical education head-on. If we don't, they will continue to bully, exclude, disparage and discredit, while using the powers of the state to cement their ascendancy, dominate and influence public policy, and to infect the baggage of the intellectual elite; while we will be relegated to the status of second class citizens, regardless of how vigorous and robust our research agenda.

It is in the best interest of real world economics, economics in general, our students, and the future well-being of our planet to add the reconceptualizion of neoclassical economics and pedagogy to our agenda. To rest content with building our own research program is self-defeating, as echoed by Zola's Charvet in the *The Belly of Paris*, "Class self-interest is one of the most powerful allies of tyranny" (2007, p. 139). In other words, minding your own business – literally – gives a carte blanche to the continuation of the status quo and allows the "ruling elites to continue to control the discourse" (Leech 2012, p. 96). Thus, in my view, attacking the provenance of the lack of pluralism in neoclassical economics – education – is paramount.

Before we address specific solutions, it is perhaps necessary to briefly address the question – as real world economists, should we continue teaching neoclassical economics in one form or another? Several reasons are usually given to do so. One, if we are to change neoclassical economics we must understand it. Two, neoclassical economics is, for better or worse, the *lingua franca*, so one must understand it. Three, it is often the foundation upon which policy is built. Four, knowledge of neoclassical economics can chip away at the edifice and establish ports of entry in order to establish a pluralist dialogue. Five, exposure to neoclassical economics is necessary in order to understand multiple viewpoints.

Although I see merit in the above arguments, I respectfully disagree with my colleagues that we should continue to teach neoclassical economics. I don't know of any other science that insists on teaching failed, out-dated thinking, particularly since "neoclassical economics is not

really about the economy, so how can it be useful for the analysis of institutional structures such as markets" (Hodgson 1999, p. 44). And as Keen writes,

> Neoclassical economics, far from being the font of economic wisdom, is actually the biggest impediment to understanding how the economy actually works – and why, periodically, it has serious breakdowns. If we are ever to have an economic theory that actually describes the economy, let alone help us manage it, neoclassical economics has to go (Keen 2011, p. 15).

A discipline should move on; there should be no reason why the rest of the profession feels obliged to continue to teach this stuff. Perhaps in a history of thought course; or in a course on logic; or as part of a course that introduces multiple viewpoints, but never alone, and not in a course on the economy, since "neoclassical theory... does not show how real markets work" (Otsch and Kapeller 2010, p. 21).

It is time for a radical break with orthodoxy,

> "it is futile to expect a great advancement in the sciences from overlaying and implanting new things on the old; a new beginning has to be made from the lowest foundations, unless one is content to go round in circles for ever, with meagre, almost negligible results" (Bacon 2000 [1620], Book I, CXXIV, p. 96).

The opportunity cost is too high to continue teaching neoclassical economics, especially if we are to develop sufficient knowledge to help solve our generation's problems, which can only come from a vigorous real world economics research agenda which is first and foremost concerned with the social provisioning process (Lee 2009, p. 8). And conversely, the opportunity cost is too high to acquiesce to the continued teaching of neoclassical economics.

But in the spirit of pluralism, isn't neoclassical economics necessary, especially in light of the virtues mentioned earlier? Yes of course, but only if neoclassical economics can reciprocate and practice pluralism – as of now it cannot. Thus, our goal is to reconceptualize neoclassical economics so its practitioners are no longer obdurate and unwilling to notice, discuss and accept alternatives. Only then can the "universal mindset of the neoclassical project" (Fullbrook 2010) be broken. Easier said than done! And, like William Lloyd Garrison, we are in this for the long haul; but nevertheless, this is a necessary and important battle.

But how to teach open-mindedness and toleration? That such a question must be asked is testimony to the sorry state of economics education; I don't know of any other discipline where this is an issue. While much attention has been devoted to 'how to' for individual courses and 'how to' redesign the curriculum,[8] the remainder of this paper will focus on a neglected issue: that given the contested nature of economics (Lee 2010, passim) and the highly ideological content and anti-pluralism of neoclassical economics, it is necessary for a set of prerequisite courses to be incorporated into the economics curriculum. This comports with the necessity of an integrative and multi-faceted attack on the citadel of neoclassical economics, which in turn requires numerous ports of entry, including students, university officials, and the public (Reardon 2004). Offering a set of prerequisites targets students by enabling them to withstand (and hopefully parry) the inevitable ideological neoclassical

[8] See various issues of the *International Journal of Pluralism and Economics Education* for helpful articles, along with a special issue on the topic in the IJPEE, Vol. IV (No. 4) December 2013.

onslaught from later courses. Thus, this suggestion will help chip away at the neoclassical edifice from within.

Hill and Myatt hope "to help stoke the fires of revolution" (2010, p. 2) from below by peppering their text with '71 Questions for Your Professor'. While many professors welcome the give-and-take in a college classroom and relish the opportunity to learn from their students, these questions go far beyond prepping students with thoughtful questions. They are designed to reveal the ignorance of neoclassical economics professors of their own discipline, their lack of understanding of alternative theories and their wilful neglect of conflicting evidence. That Hill and Myatt's book was written in the first place suggests the seriousness of this problem.

So when a neoclassical professor bullies students into assuming that all consumers are rational or when a textbook claims that markets, left uninhibited, arrive at a beneficent equilibrium for all,[9] students rather than absorbing this like a sponge, can think for themselves, develop their own minds, and challenge their professors.

3.1 Establishing prerequisites for the economics major

Otsch and Kapeller suggest reforming the economics curriculum with, "additional courses in related areas such as economic history, sociology, political science or philosophy in order to provide students with some context knowledge on economic systems (What is the history of an economy? Where do its institutions come from? What's the relation between economy and society?" (Otsch and Kapeller 2010, p. 23).

I agree, but argue that this suggestion should be taken to its next logical step: economics majors should not take any economics courses until after the first year of university study. Instead, they should take (at least) the following courses during their first year: World Literature, History of Capitalist Systems, History of Intellectual Thought, Quantum Physics, and Philosophy with an emphasis on ethics. Here is my rationale for the individual courses:

a. *World Literature* - There is no better primer on the diversity of the human condition than fiction. Properly taught, fiction can explain the myriad forms of behavior and human predicaments as good as, or even better, than any individual academic discipline. As Johann Goethe's main character explains in *The Sorrows of Young Werther*, "things in this world seldom come down to an either-or-down decision, and possible courses of action, and feelings, are as infinitely various as kinds of noses on the gamut from hooked to snubbed" (Goethe 1989 [1774], p. 58). And to parry the highly gratuitous claim that all people are rational, here is Goethe's Werther again, "Human kind is merely human, and that jot of rational sense a man may possess is of little or no avail once passion is raging and the bounds of human nature are hemming him in" (Goethe 1989 [1774], p. 64). And the poet Imlac in Samuel Johnson's *The History of Rasselas, Prince of Abissina*,

> The truth is, that no mind is much employed upon the present: recollection and anticipation fill up almost all our moments. Our passions are joy and

[9] While numerous examples abound, one in particular struck me for its insidious ignorance, "Economists often personify market forces by saying that the market works with an invisible hand. RIDDLE: How many economists does it take to change a light bulb? ANSWER: None. The market will do it" (Froeb and McCann 2010 p. 99). Left unanswered of course, is ignorance over what constitutes the market, who makes the light bulb and the power relationship between the decision makers and the workers who actually install them, and a myriad of other questions.

> grief, love and hatred, hope and fear. Of joy and grief the past is the object, and the future of hope and fear; even love and hatred respect the past, for the cause must have been before the effect" (Johnson (1976 [1759])).

Fiction can also efficaciously describe injustice and can be a powerful call to action. And there are no better examples than Zola's *Germinal* and Upton Sinclair's *The Jungle*. If the goal of economics is to understand the provisioning process and help the world become a better place, then fiction and pluralism are natural allies. As Sen writes, "we have to be able to react spontaneously and resist inhumanity whenever it occurs. If this is to happen, the individual and social opportunities for developing and exercising moral imagination have to be expanded" (Sen 2005, p. 278). While fiction is obviously not history, quite often the apt descriptions and careful dialogue are more evocative and stick in one's memory far longer than any historical description, and thus are instrumentally more efficacious. And for me, one of the most powerful images in Dickens' *Tale of Two Cities* is Madame Defarge's vigilant knitting of names of the condemned once the French Revolution begins. This captures the patient vengeance of the long-oppressed peasants far better than any historical narrative.

This is not the place to debate what type of fiction works best[10] – poetry, novels or drama or even which of the works are best; rather just to place the argument that prerequisites are necessary bulwark against future intimidation and bullying, and fiction is most apt.

b. *History of Capitalist Systems* – It is essential for economics majors to understand how the present system of capitalism has evolved, the role of government and how people respond to contemporary problems by constructing appropriate institutions. There is nothing natural or inevitable about capitalism or any economic system. Neoclassical economics, which is taught from a historical vacuum, tries to prove that capitalism, albeit with less government intervention, can ideally allocate resources.

A course in the History of Capitalist Systems will discuss how and why capitalism developed, who loses and who benefits, as well as the necessary institutions to construct a better society. Such a course is also beneficial since,

> History by giving context and examples, helps when it comes to thinking about the present world. It aids in formulating questions, and without good questions it is difficult to begin to think in a coherent way at all. Knowledge of history suggests what sort of information might be needed to answer those questions (MacMillan 2008, p. 167).

c. History of Intellectual Thought – A course in the history of intellectual thought will elucidate how ideas developed in response to certain problems; and students will understand how and why neoclassical economic theory was developed.[11] And history, within the liberal arts tradition is a natural ally of pluralism: "History can help us to make sense of a complicated world, but it also warns of the dangers of assuming that there is only one possible way of looking at things or only one course of action" (MacMillan 2008, p. 168). And what better introduction to the excitement of college learning than a course in the intellectual development

[10] See Jack Reardon "Teaching Fiction Within a Pluralist Economics Curriculum" *International Journal of Pluralism and Economics Education*" Vol. IV (No. 2, 2013), forthcoming.
[11] While much has been written on necessity of reinstating history of economic thought into the curriculum (Dow 2009) the prerequisites discussed here will prepare students well for such an important course.

of ideas? And as the poet Imlac speaks in Samuel Johnson's *The History of Rasselas, Prince of Abissina,*

> "there is no part of history so generally useful as that which relates the progress of the human mind, the gradual improvement of reason, the successive advances of science, the vicissitudes of learning and ignorance, which are the light and darkness of thinking beings, the extinction and resuscitation of arts, and all the revolutions of the intellectual world" (Johnson (1976 [1759]) pp. 104-105).

d. Quantum Physics – not only are many of the accoutrements of today's economy such as the CD, laser, computer, MRIs and traffic lights the result of the intellectual achievements of quantum physics, but no better example exists of the scientific willingness to test and experiment and the openness to reform theory if necessary than quantum physics. In addition, "the rise of quantum theory is... an outstanding example of the revisionism imposed by physical reality upon the thinking of the scientist" (Polkinghorne 2002, p. 85). This is because, "every interpretation of nature which has a chance to be true is achieved by instances, and suitable and relevant experiments, in which sense only gives a judgement on the experiment, while the experiment gives a judgement on nature and the thing itself" (Bacon 2000 [1620] Book I, L, p. 45). Compare this to the dismal record of neoclassical economics (Keen 2011, passim) and economics textbooks which "often present hypotheses and policy prescriptions with surprisingly little or no supporting evidence, or (worse) ignoring inconvenient contrary evidence" (Hill and Myatt, 2010, p. 6).

No better example exists of how physics progresses as a science than the discovery of the Higgs boson. In a paean to the discipline of physics, *The Economist* wrote that it was,

> the crowning achievement of one of history's most successful scientific theories. It is also certainly the beginning of that theory's undoing, and its replacement by something better. In science, with its constant search for the truth, this is something to celebrate (The Higgs boson- Gotcha, p. 68).

d. *Philosophy* - An introductory course, perhaps with a focus on ethics, aptly illustrates the tradition of philosophy for debating ideas within a pluralist context and the vanity of human understanding. As Bacon writes,

> The human understanding from its own peculiar nature willingly supposes a greater order and regularity in things it finds, and though there are many things in nature which are unique and full of disparities, it invents parallels and non-existent connection" (Bacon 1990 [1620), Book I, XLV, p. 42).

While agreement exists for a need for ethical standards within economics (DeMartino, 2010), today's students of neoclassical economics are taught that not only will the market correctly allocate resources, but there is no need to worry about ethics, since the market, will correctly make such decisions. Consider, for example, a popular managerial economics textbook claiming that the most important lesson of business is, "identifying assets in low-valued uses and devising ways to profitably move them to higher-valued ones" (Freob and McCann, 2010, p. 16). But what is meant by value and how do we conceptualize it? Whose perspective do we use? What ethical standards should help us to decide which assets to move and how to move them?

Philosophy can also help attach meaning to deliberately vague words like "efficiency, rationality, choice, freedom often found in economics textbooks but seldom discussed" (Fullbrook 2009, p. 19).

3.2: Objections to the prerequisites

There are two objections to this proposal. First, these courses will constrict the course offerings for the economics major. But economics education is not working – it is not educating our students; so, if one of the end results is either a diminution in the traditional number of courses or the content of existing courses, so be it. And besides, these suggested prerequisites are fundamental to a university education and will produce better educated (rather than trained) economists, able to converse intelligently with all social scientists. Such prerequisites will also enable students to parry the inevitable ideological onslaught in later neoclassical courses.

Second, who can teach such courses? Certainly not neoclassical economists, which underscores that this proposal must be part and parcel of a long term planning strategy.

4: Conclusion

In a provocative yet disturbing book (Shearman and Smith 2007) the authors argue that our most important problem, bar none is climate change, and that we are inexorably heading toward cataclysmic change. Given recent weather patterns it is hard to disagree. To avoid this, or perhaps at least to attenuate it somewhat, Shearman and Smith advocate dismantling our current university system (which only produces graduates who are ecologically ignorant) and replace it with a real university, producing philosopher-warriors who can understand our ecological predicament,

> The conventional university trains narrow, politically correct thinkers who ultimately become the economic warriors of the system. Our proposal is to counter this by an alternative framework for the training and complete education of a new type of person who will be wise and fit to serve and to rule. Unlike the narrowly focused economic rationalist universities of today, the real university (special institutions in which the opportunity is provided for the much-needed ecowarriors to develop and be nurtured) will train holistic thinkers in all of the arts and sciences necessary for tough decision making that the environmental crisis is confronting us with. These thinkers will be the true public intellectuals with knowledge well grounded in ecology... We must accomplish this education with the dedication that Sparta used to train its warriors. As in Sparta, these natural elites will be especially trained from childhood to meet the challenging problems of our times (Shearman and Smith 2007, pp. 134-135).

Aside from the undemocratic nature of such training, and that such a proposal will disenfranchise large segments of the population – a fundamental objection is 'who is going to educate the educators?' And is this education or proselytization? On what basis will knowledge progress?

Shearman and Smith's book presents a sober warning that with a sudden cataclysmic and irreversible change in climate, democratic debate could very well cease; and despite their abysmal track record, neoclassical economicsts by default might be thrust upon the world stage as the elite corps abetted by the power of the state. Peter Soderbaum reminds us that,

> surprisingly the seriousness of present environmental and development problems has done little to raise questions about the monopoly of neoclassical economics. Instead the tendency is to listen to neoclassical economics and their story about possbile marginal failures (Soderbaum 2005, p. 43).

If a cataclysmic climate event occurs, would the average citizen side with heterodox or mainstream economists, on the basis of name only? Consider the unfortunate appellation for the Mensheviks (Minoritarians) *vis-a-vis* the Bolsheviks (Majoritarians) when several factions opposing Lenin walked out before a key vote among the Social Democrats in pre-revolutionary Russia in 1903, which gave Lenin and his group (or more accurately Lenin himself) a majority. Figes writes,

> "with hindsight it is clear that the Mensheviks were very foolish to allow the adoption of these names. It saddled them with the permanent image of a minority party, which was to be an important disadvantage in their rivalry with the Bolsheviks" (Figes 1996, p. 152).

I realize many of us are proud of the heterodox identifier[12] but perhaps we could experiment to see what name resonates best with the public? In the spirit of this journal why not 'real world economists?' Maybe the latter might resonate well as climate change worsens? Why cede to neoclassicals the word orthodox when the knowledge produced by heterodox economists is fast becoming orthodox? Doesn't this 'saddle' us with the permanent image of a minority party, just like the Mensheviks? After all, we are economists concerned with how individuals and societies provision in the real world. And by adopting this name, we assume the upper hand: all other economists by default are not focused on the real world.

The possibility of a cataclysmic climate event provides one more reason to give diligence to reconceptualizing neoclassical economics and economics education. In the case of an ecological catastrophe,

> the ruling elites control the discourse, thereby determining which ideological pespectives will dominate mainstream debates and which ones will be marginalized. The ideology that the hegemonic discourse of capital promotes is free-market capitalism, regardless of the contradictions that exist in the functioning of the system (Leech 2012, p. 96).

If we are to break the hold of neoclassical economics, we must radically reform economics education. But don't expect this to be a fair fight – it has never been (Lee 2009, passim). Bacon's call for a new age is most appropriate for economics. It is imperative to redirect economics away from syllogisms and the rationalists "who like spiders spin webs from themselves" (Bacon 2000 [1620] Book I, XCV, p. 79) and begin with the "true order of experience [which] first lights the lamp, then shows the way by its light, beginning with experience digested and ordered, not backwards or random, and from that it infers axioms,

[12] For an interesting genesis of the heterodox identifier see (Lee 2009, pp. 189-192).

and then new experiments on the basis of the axioms so formed." (Bacon 2000 [1620] Book I, LXXXII, p. 67). Thus, "from both results and experiments to draw causes and axioms, and from causes and axioms in turn to draw new results and experiments" (Bacon 2000 [1620] Book I, CXVIII, p. 90).

Reformation of economics education is our most important endeavor and the best investment we can make for the next generation. Schumacher wrote that education is "the most vital of all resources" (Schumacher1989, p. 84) and indeed "education is our most important function as human beings: it is an investment in ourselves, future generations and the planet" (Reardon 2009, p. 267). To paraphrase C.P. Snow, "there is no excuse for letting another generation be as vastly ignorant" (Snow 1998, p. 61). We need a radical reformation in economics education.

References

Bacon, Francis (2000 [1620]) *The New Organon*. Cambridge, UK, Cambridge University Press.

Bowles, S., Edwards, M. and Roosevelt, F. (2005) *Understanding Capitalism: Competition, Command and Change*, Oxford University Press, New York.

Bruce, Steve (2008) *Fundamentalism*, 2nd ed. Cambridge, UK, Polity Press.

Coyle, Diane (2007) *The Soulful Science – What Economists Really Do and Why it Matters.* Princeton, N.J. Princeton University Press.

DeMartino, George (2010) *The Economist's Oath- On the Need for and Content of Professional Economic Ethics.* Oxford, UK., Oxford University Press.

Dickens, Charles (2000 [1859]) *A Tale of Two Cities,* New York, Penguin.

Dow, Sheila. (2009) "History of Thought, Methodology and Pluralism" in Jack Reardon, ed., *The Handbook of Pluralist Economics Education,* London, Routledge, pp. 43-53.

Dowd, Douglas (2004) *Capitalism and its Economics – A Critical History*, London, Pluto.

Figes, Orlando (1996) *A People's Tragedy – The Russian Revolution, 1891 – 1924*, New York, Penguin.

Froeb, Luke and Brian McCann (2010) *Managerial Economics- A Problem Solving Approach*, 2nd ed. Mason, Ohio, Cengage Learning.

Fullbrook, Edward (2009) "The Meltdown and Economics Textbooks" in Jack Reardon, ed. *The Handbook of Pluralist Economics Education,* London, Routledge, pp. 17-23.

Fullbrook, Edward (2010) "How to Bring Economics into the 3rd millennium by 2020", *real-world economics review*, issue no. 54, 27 September 2010, pp. 89-102, http://www.paecon.net/PAEReview/issue54/Kessler54.pdf

Goethe, Johann (1989 [1774]). *The Sorrows of Young Werther* London, Penguin.

Hill, Rod and Tony Myatt (2010) *The Economics Anti-Textbook- A Critical Thinker's Guide to Microeconomics.* London, Zed Books.

Hodgson, Geoffrey (1999*) Evolution and Institutions – On Evolutionary Economics and the Evolution of Economics*. Cheltenham, UK, Edward Elgar.

Johnson, Samuel (1976 [1759]) *The History of Rasselas, Prince of Abissina"* New York, Penguin.

Keen, Steve (2011) *Debunking Economics- The Naked Emperor Dethroned?* 2nd Ed. London, Zed Books.

Keynes, J.M. (1936) *The General Theory of Employment Interest and Money*, New York, Harcourt, Brace and Company.

Lee, Frederic (2009) *A History of Heterodox Economics- Challenging the Mainstream in the Twentieth Century*, London, Routledge.

Leech, Garry (2012) *Capitalism- A Structural Genocide*. London, Zed Books.

MacMillan., Margaret (2009) *Dangerous Games- The Uses and Abuses of History*. New York, Modern Library.

Magnuson, Joel (2012) "Economists and Education in A World without Oil" *Interconnections,* Issue 8, pp. 7-15.

Mankiw, N. Gregory (2009) "That Freshman Course Won't Be the Same" *New York Times* , http://www.nytimes.com/2009/05/24/business/economy/24view.html. May 24, Accessed May 24, 2009.
Marshall, Alfred (1946 [1920]) *Principles of Economics.* London, MacMillan.

Negru, Ioana (2009) "Reflections on Pluralism in Economics" *International Journal of Pluralism and Economics Education*, Vol. I, Nos 1/2. pp. 7- 21.

Negru, Ioana (2010) "Plurality to Pluralism in Economics Pedagogy: the Role of Critical Thinking," *International Journal of Pluralism and Economics Education*, Vol. I, No. 3, pp. 185-193.

Otsch, Walter and Jakob Kapeller (2010) "Perpetuating the Failure: Economic Education and the Current Crisis" *Journal of Social Science Education,* Vol. 9, No. 2, pp. 16-25.

Polkinghorne, John (2002) *Quantum Theory- A Very Short Introduction* , Oxford, Oxford University Press.

Raffaelli, Tiziano, Giacomo Becattini,Katia Caldari, Marco Dardi (2010) "Introduction" in Raffaelli, Tiziano, Giacomo Becattini,Katia Caldari, Marco Dardi , eds. *The Impact of Alfred Marshall's Ideas- The Global Diffusion of His Work.* Cheltenham, UK, Edward Elgar.

Reardon, Jack (2004) "Suggestions to Effectuate a Multi-paradigmatic Approach to the Teaching of Principles of Economics" *Journal of Economic Issues* 38 (September), pp. 839-841.

Reardon, Jack (2009) "Conclusion" in Jack Reardon, ed. *The Handbook of Pluralist Economics Education*, London, Routledge, pp. 267-268.

Reardon, Jack (2010) "Foreword" *International Journal of Pluralism and Economics Education,* Vol. I, No. 3, pp. 179-184.

Robinson, Joan (1980) *What are the Questions and Other Essays*. Armonk, New York, M.E. Sharpe.

Schumacher, E.F. (1973, [1989]) *Small is Beautiful- Economics as if People Mattered* New York, Harper Perennial.

Sen, Amaryta (2005) *The Argumentative Indian – Writings on Indian Culture, History and Identity.* London, Penguin.

Sen, Amaryta (2010) *The Idea of Justice.* London, Penguin.

Shearman, D. and Smith, J. (2007) *The Climate Change Challenge and the Failure of Democracy.* Westport, Connecticut, Praeger.

Snow, C.P. (1998) *The Two Cultures* Cambridge, Cambridge University Press.

Söderbaum, Peter (2008) *Understanding Sustainability in Economics- Towards Pluralism in Economics, London*, Earthscan.

Söderbaum, P. and Brown, J. (2011) 'Pluralism and democracy in political economics', *Int. J. Pluralism and Economics Education*, Vol. 2, No. 3, pp.240–243.

"The Higgs boson- Gotcha" *The Economist,* pp. 67-68. July 7th 2012.

van Staveren, I. (2011) 'Mind and matter: developing pluralist development economics', *Int. J.Pluralism and Economics Education*, Vol. 2, No. 2, pp.120–144.

Zola, Emile (2007). *The Belly of Paris*. Oxford, UK: Oxford University Press.

Author contact: jreardon02@hamline.edu

SUGGESTED CITATION:
Jack Reardon, "A radical reformation of economics education: educating real world economists", *real-world economics review*, issue no. 62, 15 December 2012, pp. 2-19,,
http://www.paecon.net/PAEReview/issue62/Reardon62.pdf

You may post and read comments on this paper at: http://rwer.wordpress.com/2012/12/14/rwer-issue-62/

To observe or not to observe:
Complementary pluralism in physics and economics

Edward Fullbrook[1] [University of the West of England, UK]

Introduction

This quotation from **Einstein** expresses the essence of what this paper hopes to say.

> Whether you can observe a thing or not depends on the theory which you use. It is theory which decides what can be observed.
>
> [Said to Werner Heisenberg during his 1926 Berlin lecture, quoted in Salam, 1990]

Rarely, and probably never, has a major discipline experienced systemic failure on the scale that economics has in recent years. Its fall from grace has been two-dimensional. One, economists oversaw, directly and through the prevalence of their ideas, the structuring of the global financial economy that collapsed. Two, except for a few outcasts, economists failed to observe, even before the general public observed, the approach of the biggest financial meltdown of all time. Never has a profession betrayed the trust of society so acutely, never has one been in such desperate need of a fundamental remake.

As an epistemological event, the 2008 meltdown of the global financial system ranks with the observation of the 1919 solar eclipse. If professional practice in economics resembled that in the natural sciences, then in the wake of the recent global disaster economists would be falling over each other to proclaim the falsity of their theories, the inadequacy of their methods and the urgent need for new ones so that they could observe economic reality.

It is now evident to nearly everyone except economists, and increasingly even to many of us, that our collective failure to see the coming of the calamity before it occurred and the fact that the system that collapsed had been tailored to fit mainstream teachings means that our profession harbours fundamental misconceptions about the way economies, most especially their markets, function.

But there exists in economics a malaise more fundamental than its theories themselves. The malaise concerns how economics regards and uses its theories, and it is this and its relation to the teaching of economics that this paper addresses, because it is really this that must be corrected if economics is to be made less a facilitator of human disaster in the future.

I need to be clear about what I mean by the word "pluralism" in an epistemological context. So here is the definition which this paper presumes.

"Pluralism" refers to

- some degree of acceptance

[1] I am indebted to my University of the West of England colleagues for their helpful comments.

- of two or more mutually inconsistent theoretical frameworks
- which pertain to the same or overlapping domains of reality.

So, given multiple theoretical frameworks within a field of study, there are three variables in that definition of pluralism:

1. degree of acceptance
2. degree of mutual inconsistency, and
3. degree or extent of overlapping domains.

With regard to the first of the three variables, the degree to which mutually inconsistent theoretical frameworks are tolerated or accepted or valued by practitioners of a scientific or scholarly discipline, this paper makes a distinction between what I call **competing pluralism** and **complementary pluralism**.

I am going to begin by considering complementary pluralism, because it is the kind with which we as economists are least, or even not at all, familiar. Its paragon exemplification is 20th century physics. And, having begun with Einstein, I am going to continue to draw examples directly from physics.

Physics

Every scientific pursuit launches itself from a conceptual framework, a set of presuppositions about the nature of reality that, by providing a radical simplification of reality, makes investigation possible. These include such things as

- a classification of entities,
- which properties of those entities are taken into account,
- the types of connections recognized,
- whether all events are determinate or not,
- the nature and direction of causal relations,
- and whether or not there exist structural relations as well as aggregate ones.

In this way a conceptual framework defines a particular point of view toward its object of enquiry, and consequently, different conceptual frameworks offer different points of view. Or in Einstein's words, they determine "whether you can observe a thing or not."

For example, what one observes when one looks at Michelangelo's statue of David depends on the standpoint from which it is observed. Therefore, a full appreciation of David requires observing it from more than one perspective. Likewise, knowledge accumulation often depends upon investigating empirical domains through more than one conceptual lens. The acceptance of this view has been embraced by modern physics, because the profession realizes that the advancement of knowledge of the physical world ultimately depends on it.

The celebrated physicist David **Bohm** describes the pluralist nature of knowledge accumulation as follows.

> What is called for is not an *integration* of thought, or a kind of imposed unity, for any such imposed point of view would itself be merely another fragment. Rather, all our different ways of thinking are to be considered as different ways of looking at the one reality, each with some domain in which it is clear and adequate. One may indeed

> compare a theory to a particular view of some object. Each view gives an appearance of the object in some aspect. The whole object is not perceived in any one view but, rather, it is grasped only *implicitly* as that single reality which is shown in all these views. When we deeply understand that our theories also work in this way, then we will not fall into the habit of seeing reality and acting toward it as if it were constituted of separately existent fragments corresponding to how it appears in our thought and in our imagination . . . [Bohm, 1983, pp. 7-8]

It is this ethos regarding the advancement of knowledge within a discipline that I call "complementary pluralism". My term "competitive pluralism" refers to a very different state of affairs, one where different theories are routinely treated as competitors, and where implicitly the theories are seen not as means contributing to understanding but rather as ends in themselves.

In the economics profession there appears to be a common and ingrained misconception regarding the role and nature of pluralism in the natural sciences. If asked whether the statement "Physics has a long tradition of encouraging pluralism" is true or false, many economists would, I suspect, answer "false". So I feel obliged to present some more primary examples directly from the literature of physics to show that this view is fundamentally mistaken. I am concerned with the period roughly from the 1880s to the present. For evidence I will, in addition to Einstein and Bohm, look at what four other preeminent physicists, who together roughly span this period, have said regarding pluralism in physics.

I begin with Heinrich **Hertz** (1857-1894). Hertz was first to detect the electromagnetic waves predicted by Maxwell's unification of electricity and magnetism. Subsequently Hertz wrote a textbook, *The Principles of Mechanics Presented in a New Form.* In it he offered a new theoretical framework congenial to the new developments. In the book's introduction, intended for advanced physics students, he sets out what he understands to be the prevailing epistemological ethos in his profession in the late 19th century. He writes:

> In endeavouring thus to draw inferences as to the future from the past, we always adopt the following process. We form for ourselves images or symbols of external objects. . . . The images of which we here speak are *our conceptions of things*. [Heisenberg, 1962, p. 154]
>
> . . . various images of the same objects are possible, and these images may differ in various respects . . . [Heisenberg, 1962, p. 155]
>
> . . . we cannot decide without ambiguity whether an image is appropriate or not; . . . One image may be more suitable for one purpose, another for another . . . [Heisenberg, 1962, p. 156]

It is important to understand that Hertz was not making a case for pluralism here, but instead merely describing to the physics student the basis of the ethos of complementary pluralism that he saw as characterizing his profession, and thereby as being the context into which his book was introducing a "new system of mechanical principles", a new "mode of conception", a new "mode of treatment", a new "mode of thought". All those are Hertz's phrases.

A second account of the operation of pluralism in physics is provided by Louis **de Broglie** (1892-1987), one of the principal founders of particle physics. He writes as follows:

> . . . the quantum of action compels us today to employ "complementary" descriptions to account for the phenomena on the atomic scale. By this term we are to understand descriptions which are certainly complementary but at the same time, taken strictly, incompatible . .. ; each of these complementary descriptions is an "idealiztion" *permitting us to present certain aspects of the phenomena under consideration, but not all the aspects*. [emphasis added]
>
> The best known instance of such complementary descriptions is supplied by the two descriptions of Matter and Light by means of waves on the one hand and of corpuscles on the other. The employment of each idea . . . *has proved essential for the interpretation of some phenomenon or other*; but the two ideas still remain, despite every effort, incapable of being reduced to terms of the other, and the only connection that can be established between them is of a statistical nature. [emphasis added] [Broglie, p. 277]

This is an even more robust pluralism than the one Hertz describes, as it identifies the necessity of deploying within the same domain theories that are incompatible.

Werner **Heisenberg**'s [1901-1976] understanding of the need for an ongoing pluralism is perhaps even more radical. He writes:

> . . . it was found that already in the theory of electricity an analysis using these concepts was no longer possible, and therefore in the investigation of this new domain of experience there emerged new systems of concepts leading to a final mathematical formulation of the laws of electricity.

And then speaking generally of systems of concepts and laws, Heisenberg writes:

> . . . we cannot expect [its] concepts and laws to be suitable for the subsequent description of new realms of experience. It is only in this limited sense that quantum-theoretical concepts and laws can be considered as final, and only in this limited sense can it ever happen that scientific knowledge is finally formulated in mathematical or, for that matter, in any other language. [Heisenberg, 1962, p. 27]

And there is a quote from near the end of Heisenberg's life that is very close to the Einstein quote with which I began.

> What we observe is not nature itself, but nature exposed to our method of questioning. [Wikiquote]

The leaders of the next generation of physicists continued to emphasize the importance of pluralist practice as a basic requirement for the advancement of their science. For example, Richard **Feynman** [1918-1988], celebrated for expanding the theory of quantum electrodynamics and particle theory, spoke to his students as follows in one of his published lectures.

> As long as physics is incomplete, and we are trying to understand the other laws, then the different possible formulations may give clues about what might happen in other circumstances.

and

> We must always keep all the alternative ways of looking at a thing in our heads, so physicists . . . pay but little attention to the precise reasoning from fixed axioms.
>
> One of the amazing characteristics of nature is the variety of interpretational schemes which is possible. [Feynman, 1965, pp. 53-54]

The direct contradiction between the basic concepts of relativity and quantum theory, the pinnacles of physics, has almost inevitably led physicists both to emphasize pluralism's necessity for advancement of scientific knowledge and to articulate the epistemological logic underlying the criterion of "appropriateness" asserted by Hertz.

The complementary pluralism of physicists takes it for granted that without utilizing different conceptual systems that often contradict each other, our understanding of physical matter would be a small fraction of what it is. For example, compare the two best known and most important post-Newtonian theories with regards to how they conceive the basic entities, properties and connections of the physical realm.

> General relativity conceives of space and time as continuous; quantum theory conceives of them as discontinuous.
>
> General relativity conceives of matter as particulate; quantum theory conceives of it as a wave-particle duality.
>
> General relativity conceives of physical objects as having actual properties; quantum theory describes them as having only potential properties within the given physical situation.
>
> General relativity conceives all physical reality as determinate and all events as in principle having a causal explanation; quantum theory admits indeterminacy and events incapable of causal explanation.

Conceptual differences greater than these are virtually unimaginable. And yet physicists perceive relativity and quantum mechanics not as competing theories, but rather as different and complementing conceptual approaches to the fundamentals of physical reality. This radical complementary pluralism, which physicists as a group embrace, is physics' response to the complexity of the domain, physical matter, which they wish to understand. They know and appreciate deeply that, as Einstein said, "Whether you can observe a thing or not depends on the theory which you use."

And they want to observe as much as possible. So they use more than one theory, more than one conceptual system. Economics could be conducted in similar fashion if various cultural, institutional and sociological barriers were broken down.

Ideology

These examples from physics show why conceptual pluralism of the complementary sort has proven essential for the broad advancement of knowledge. But in the social sciences, complementary conceptual pluralism is required for another and for some of us a no less important reason: the preservation of democracy. The fact, as explained by Einstein, Hertz,

de Broglie, Heisenberg, Feynman and Bohm, that a conceptual system defines, at the exclusion of others, a point of view toward its object of enquiry has in the social sciences, in addition to its epistemological consequence, an ideological one.

There are two reasons why this is so.

First, the conceptual systems of social sciences can alter the objects of their enquiries by becoming part of the conceptual and belief systems through which humans conceive of themselves and of others and by which they make choices. In the daily functioning of societies this recursive dimension of the social sciences, economics especially, becomes increasingly significant as mass higher education becomes the norm, even more so when as in the United States there is a social science input into most undergraduate degrees.

Second, the social sciences, economics especially, provide means by which governments preserve or reconstruct, sometimes fundamentally, the basic realities of societies. Different conceptual systems, such as institutional and neoclassical economics, present different sets of choices, real or imagined, to be chosen and acted upon by human populations at large.

It can never be the case that each of these sets of choices will equally favour every group in society, so that when a social science falls victim to anti-pluralism it becomes inescapably and profoundly ideological. *If only one conceptual framework is permitted, with the consequence that it alone is inculcated into the citizenry and its leaders, then the choices that in a democracy should be out in the open and belong to the people are hidden from view and the free discussion and informed debate upon which all democracy depends is silently eliminated*.

The neoclassical monopoly in the classroom has meant that it has brainwashed successive generations of students into viewing economic reality exclusively through its concepts.

The key word is “exclusively”. I would be violently opposed to the elimination of neoclassical economics from the economics curriculum because, in its limited way, it offers insights into economic phenomena and should be part of the democratic debate. It is not neoclassical economics itself, but rather the forbidding of all the other approaches to understanding and gaining knowledge of economic phenomena that is so dangerous because it fosters ignorance and undermines democracy.

Nor is the menace limited to economics students. Through journalism, their indoctrination is transferred to the general population, so much so that today many leaders of society, including Presidents and Prime Ministers, no longer know how to think about economic matters outside the neoclassical conceptual system. The solution is simple, economics departments should, like other university departments, be barred from acting in effect as political propaganda centres.

Of course complementary pluralism, the epistemological ethos of modern physics, remains a minority position in economics. It may even remain such among non-neoclassical economists. Here, traditionally pluralism has been indulged only in the competitive sense. But not so long ago even this was daring.

In the context of late 20th century economics, the idea of encouraging pluralism of any kind was regarded as profane. And complementary pluralism was unthinkable. This is manifest in the history of the International Confederation of Associations for Pluralism in Economics

(ICAPE), formerly named the International Confederation of Associations for Reform in Economics (ICARE). The "aims and purposes" spelled out by its brave and ahead-of-their-time founders in 1993 included the following:

> to promote a new spirit of pluralism in economics, involving critical conversation and tolerant communication among different approaches, within and across the barriers between the disciplines ….

The very idea that they were seeking to promote "tolerant communication" reveals a desperate state of affairs. But beyond the virtue of tolerance and perhaps some enhancement of career opportunities it was not altogether clear why they were promoting pluralism.

However, ICAPE's avowed reason for supporting pluralism changed decisively in 2000. That was the year the organization changed its name, "pluralism" superseding "reform". Along with the name change, the board issued a statement that, knowingly or unknowingly, embraced the ethos of modern physics:

> the belief that theoretical pluralism and intellectual progress are complements ….

Coming from a generation of economists who had no comprehension of complementary pluralism, this was a courageous and seriously innovative move. It was also an idea nearing its time. That same year the idea was also put forward in Paris by a small group of French economics students. And those students put forward the idea of complementary pluralism for economics with such vigour and flair and optimism, and articulated it so well that they started a world-wide movement. Their Autisme Economie Manifesto, included the following.

> Out of all the approaches to economic questions that exist, generally only one is presented to us. This approach is supposed to explain everything by means of a purely axiomatic process, as if this were THE economic truth. We do not accept this dogmatism. We want a pluralism of approaches adapted to the complexity of the objects and to the uncertainty surrounding most of the big questions in economics.

The students phrase, "approaches adapted to the complexity of the objects" is an in-your-face radicalization of the demand for a complementary-pluralist economics because it inverts the traditional but implicit philosophical idealism of economics, whereby the approach takes precedent over the object of inquiry, the observation and reality of the latter being admitted only to the extent that it is illuminated by the former.

In the past this disposition has characterised not just neoclassical economists, but the various schools generally. In the context of this tradition, the naked spirit of empiricism in the students' petition, their demand that economics should observe the real world, was, and for many economists continues to be, shocking.

Conclusion

The eminent contemporary physicist Jean-Philippe **Bouchaud** [2008, pp. 9, 291] recently commented as follows:

> the crucial difference between physical sciences and economics . . . is . . . the relative role of concepts, equations and empirical data. Classical economics [meaning today's mainstream] is built on very strong assumptions that quickly become axioms: the

> rationality of economic agents, the invisible hand and market efficiency, etc. An economist once told me, to my bewilderment: "These concepts are so strong that they supersede any empirical observation."

Regarding this refusal to observe, Bouchaud writes:

> there is a crucial need to change the mindset of those working in economics . . .. They need to move away from what Richard Feynman called Cargo Cult Science: a science that follows all the apparent precepts and forms of scientific investigation, while still missing something essential.
>
> [Bouchaud, 2008, p. 292]

Economics missing essential, the will to observe, will not be acquired until the profession embraces full-heartedly the elemental truth emphasized by Einstein:

> Whether you can observe a thing or not depends on the theory which you use.

And elaborated by Hertz:

> We form for ourselves images or symbols of external objects. . . . One image may be more suitable for one purpose, another for another . . .

And by Broglie:

> each of these complementary descriptions is an "idealization" permitting us to present certain aspects of the phenomena under consideration, but not all the aspects.

And by Heisenberg:

> we cannot expect concepts and laws to be suitable for the subsequent description of new realms of experience.

And by Feynman:

> We must always keep all the alternative ways of looking at a thing in our heads, so physicists . . . pay but little attention to the precise reasoning from fixed axioms.

And by Bohm:

> One may indeed compare a theory to a particular view of some object. Each view gives an appearance of the object in some aspect.

This complementary pluralism voiced by the most eminent members of the physics profession over the past 130 years should be the goal of the economics profession. The path for economics from epistemological degeneracy to respectability will be long and arduous. But so also was physics' escape from the axiomatic monism policed by the Vatican.

References

Bohm, David, *Wholeness and the Implicate Order*, Routledge, London, 1983.

Bouchaud, JP, "Economics needs a scientific revolution", *real-world economics review*, issue no. 48, 6 December 2008, pp. 291 - 292, http://www.paecon.net/PAEReview/issue48/Bouchaud48.pdf

Broglie, Louis de, *Matter and Light: The New Physics*, Dover, New York, 1939.

Feynman, Richard, *The Character of Physical Law*, MIT Press, Cambridge, Mass., 1965.

Heisenberg, Werner, *The Physicist's Conception of Nature*, The Scientific Book Guild, London, 1962.

Salam, Abdus, *Unification of Fundamental Forces*, Cambridge University Press, Cambridge, 1990, pp. 98-101.

Wikiquote: http://en.wikiquote.org/wiki/Werner_Heisenberg, from *Physics and Philosophy: The Revolution in Modern Science* (1958) Lectures delivered at University of St. Andrews, Scotland, Winter 1955-56.

Author contact: edward.fullbrook@btinternet.com

SUGGESTED CITATION:
Edward Fullbrook, "To observe or not to observe: Complementary pluralism in physics and economics", *real-world economics review*, issue no. 62, 15 December 2012, pp. 20-28,
http://www.paecon.net/PAEReview/issue62/Fullbrook62.pdf

You may post and read comments on this paper at: http://rwer.wordpress.com/2012/12/14/rwer-issue-62/

Trend, randomness, and noise:
exogenous vs. endogenous explanation in complex heterodox analysis (A note on Nicolas Bouleau in *RWER* 60)

Yinan Tang, Wolfram Elsner, Torsten Heinrich and Ping Chen[1] [China and Germany]

In his paper[2] on the role of stochastics in economics, Nicholas Bouleau argues that the role of randomness has in general been underestimated in economics, that "excessive mathematization"[3] of economic theories creates the illusion that only the models need to be perfected, while there is nothing wrong with the economy. This in turn hides the dangers brought about by neoliberalism in general and recent developments in the financial sector in particular. While we sympathize with the main point Bouleau is making, we disagree with several other important points of his analysis.

Two aspects of the theoretical context of Bouleau's analysis seem particularly important:

First, Bouleau's view on randomness is a phenomenological approach stemming from probability theory in mathematics, not a naturalist view as employed for instance in physics. For physicists, trajectory and probability representations are complementary tools for dynamic description. For example, quantum mechanics formulates its theory in deterministic wave equation, but its wave function has a probabilistic explanation. Problems of classical mechanics do not require this approach. In case of a two-body problem in planet motion, its trajectory is well defined. For a three-body problem, the trajectory may be chaotic with limited predictability. With gases or fluids with large numbers of molecules, as in the case of weather prediction, a nonlinear system of deterministic partial differential equations can be used to describe the system and make sufficiently accurate predictions. The critical issue in physics is its space scale. The central problem in economics, however, is its wide range of time scales. Resource depletion and the debate on the limits of growth mainly address issues of energy, resources and the environment in the time scale of decades or centuries; adding some short-term randomness to the trajectory may not change the long-term dynamics. For the behavior of financial markets environmental changes are an issue of secondary importance. For financial market dynamics the relevant time scale may be hours, minutes, seconds, or shorter.

Second, the question of microfoundations of macrodynamics has been raised, for instance in growth theory, which is closely linked to Bouleau's key issue of the debate on the limits of growth following Meadows et al.'s report to the Club of Rome in 1972. However, the best approaches to realize microfoundations so far have not been simple models relying on simple

[1] *Yinan Tang* is a Senior Researcher, Fudan University Shanghai, China.
Wolfram Elsner is a Professor of Economics, University of Bremen, Germany.
Torsten Heinrich is an Assistant Professor, University of Bremen, Germany.
Ping Chen is a Professor of Economics, Peking University Beijing, China.
[2] Bouleau, Nicolas. (2012), "Limits to growth and stochastics". *real-world economics review*, **60,** 92-106.
[3] Ibid., p. 94.

stochastic processes (as apparently favored by Bouleau) but population dynamics and the agent-based models of evolutionary economics.[4]

Bouleau suggests that in economic analyses of time series and system dynamics, *randomness* should be the central issue instead of *trend*. However, this is a perspective also assumed by conventional neoclassical approaches to growth and dynamics. In neoclassical models, trend is eliminated by applying different filters and the analysis then is focused on the noise term. Bouleau uses the same starting point as also used in behavioral finance, i.e., noise still is considered *exogenous*, although it may be complex.

We do not contest the observation of Bouleau that randomness easily can make it impossible to yield a stable single *equilibrium* as predicted by neoclassical economics. Our contention rather is that complex deterministic mechanisms do affect randomness, and that *complexity* can be better understood in a framework of *endogenous* noise, particularly in a population dynamics framework. Starting from a heterodox theoretical framework and related modeling and systems analysis, we may obtain better insights into empirical dynamics such as, e.g., into the critical dynamics of the speculation sector ("financial markets").

We also agree with Bouleau that a conception of *uncertainty* different from that given by just *volatility* is required in critical economic analysis of growth and dynamics. However, the main issue is not just a question of how *randomness* affects the *trend*. Going beyond that, we contend that there is no strict separation between trend and uncertainty. We suggest using *endogenous noise* based on a *population process* rather than exogenous noise. Exogenous noise, in the last instance, leads to a representative-agent model as in neoclassical theory. However, in the real world and hence also in realistic models, agents who generate the trend are exactly those who generate the fluctuations, thus randomness and trend are both endogenous.

This all is also not a question of the relative weights of randomness and deterministic functions but rather one of the *length of the time window,* in which we observe the trend-volatility interaction. For example, we may pursue a historical analysis with a trend in a long-run time window or a psychological analysis with randomness in a short-run time window, or analyze the *feedback between trend and noise* in another appropriate and feasible time window. A more general framework would not only consider randomness to be added to the trend but also the trend to be imposed on randomness. The trend is not only masked by volatility; the stochastic patterns may, in fact, not be constant and may change with the trend. This will still be consistent with a proper stochastic process because all exogenous noises are special cases of a population process with endogenous noise. A broader and theoretically more appropriate deterministic analysis in this sense does not mean simplicity, and it is different from, and incompatible with, the core of neoclassical economics. For example, *innovation* is not an exogenous random event that can hide some trend in empirical dynamics of systems, but it endogenously interacts with trends of, say, the exhausting of fossil fuels.

Those different perspectives on noise may determine how to deal with the issues raised in Meadows et al.'s report to the Club of Rome. If we used exogenous noise here, exhausting fossil fuel would have to be considered a shock to the efficient market. Otherwise, in the perspective we indicated above, governments would have to do something to ensure that the

[4] For an overview, see for instance Heinrich, Torsten. (forthcoming 2013), "Technological Change and Network Effects in Growth Regimes: Exploring the Microfoundations of Economic Growth", London: Routledge.

random innovation process can catch up with the fossil fuel exhaustion, as neoliberalism may turn out not to be a reliable and sufficient mechanism to ensure a proper interaction of the exhausting of fossil fuel and innovation. As Bouleau argues "it is impossible to tell from the trajectory what would have happened without that randomness".[5] But endogenous noise is interrelated with a deterministic trend, and it is impossible to tell from randomness what would have happened without that deterministic mechanism.

For example, financial market behavior typically shows turbulences, which are rooted in social interactions among agents. If agents make decisions independently (i.e. with weak interactions), the aggregate series would look like a short-term correlated time series without trend. If, however, decision-making is not independent (i.e. with strong interactions), the aggregate series is highly correlated with changing trends. The neoclassical perspective in finance simply ignores social correlations and thus changing trends. Behavioral economists realize the existence of social interaction, but do generally not attempt to create modified financial models to include population behavior and changing trends.

In empirical observations and analyses by Tang and Chen,[6] for instance, the particular conditions of the *financial crisis* could be calculated (before the crisis) and observed from both deterministic and random mechanics perspectives. The background and mechanisms basically were the same but the positive feedbacks in the process of blowing up the bubble eventually ended and the trend changed its direction. It was found that then, suddenly, the speculation sector panicked. This was a combined effect of endogenous deterministic and 'random' mechanisms. In the *long-term* financial-market dynamics, deterministic transition probabilities as those rooted in complexity theory were observed by averaging daily price ups and downs in a long-term time window. However, the *short-term* possibility of a financial crisis could be observed and analyzed using stochastic methods, particularly by monitoring the *higher moments* of the data distribution, ranging from 3rd to 5th order, i.e. *randomness by moments higher than the variance*.

Our answer to Bouleau's question "whether price formation in markets is truly stochastic in nature or whether it is governed by some complex, chaotic mechanism"[7], therefore, is: It depends on the *time horizon* of the analysis, as stochastic and chaotic mechanisms are critically depending on the time window in which we observe human behavior.

In the case of the financial sector we contend, that it was the *phase of de-regulation during the Reagan administration* that caused the instability of this sector and eventually the current financial crisis and bubble implosion (so far moderated by sinking current and future taxpayers' money). The sector may be described as consisting of *two different regimes of sector dynamics*. One is a "*calm regime"*, where *randomness is restricted by the trend*. The other one is a "*turbulent regime"* with a high crisis probability, where *randomness interacts with the trend* through particular feedback mechanisms. In the period 1950-1980, the financial sector largely was in the "calm regime"; since 1981, however, it has become ever more turbulent and fragile. In sum, in our understanding and approach of *endogenous noise*,

[5] Bouleau, Nicolas. (2012), "Limits to growth and stochastics". *real-world economics review*, **60,** 92-106, p. 97.
[6] Tang, Yinan and Chen, Ping. (2012), "Time Varying Moments, Dynamic Instability, and Crisis Warning", working paper. Tang, Yinan and Chen, Ping. (2012), "Transition Probability, Dynamic Regimes, and Diagnosis of Financial Crisis", working paper.
[7] Bouleau, Nicolas. (2012), "Limits to growth and stochastics". *real-world economics review*, **60,** 92-106, p. 99.

deterministic analysis will yield the opposite conclusion of neoclassical economics, models and measurement.

Put more philosophical, *exogenous noise* has a fundamental problem that mirrors the inertial reference of Newtonian mechanics in physics: Whenever it is attempted to describe the motion of an inertial reference in Newtonian mechanics, a new inertial reference must be introduced. And whenever one tries to endogenously explain something in the exogenous noise approach, one must introduce another exogenous noise. This will trigger an infinite recourse until, figuratively speaking, we find the "God" who produces the initial noise and the absolute inertial reference. For example, if we take *innovation* as an exogenous shock for stock prices, there must be some other exogenous shock to analyze, say, R&D expenses, when trying to explain innovation. In this recourse, we will find the new introduced noises becoming simpler and simpler. Hence exogenous-noise models can hardly challenge neoclassical theory; this would come down to the mere assumption that "God" is inefficient.

The epistemological status of an endogenous-noise approach, in contrast, appears similar to the relativity theory of Einstein with weakened assumptions: Relativity theory does not need an inertial reference, and our approach does not need an exogenous noise source.

Finally, when we try to deal with the microfoundations of the complex dynamics of human society, we will not be hampered by deterministic mechanisms, but would be hampered by exogenous noise. Trend and randomness in endogenous-noise approaches show that human behavior has a particular time structure. This is related to the idea of *evolutionary modeling*. For example, in an *evolutionary model* of structural emergence, agents may make decisions in a deterministic initial institutional setting, and the randomness of agents' decisions usually will change the initial institutional setting through institutional emergence and change[8]. This implies a feedback mechanism between endogenous 'trend' and 'noise' in a population model, where the main randomness of agents' decisions is not from reacting to exogenous shocks but from uncertainty, individual search behavior, and particular agency capabilities.

Bouleau tried to use the extended implication of randomness to question the validity of the IPCC (Intergovernmental Panel on Climate Change) positions. This implies that uncertainty in the financial sector would impose analytical difficulties in modeling macrodynamics. We doubt this reasoning. Historically, climate change is the driving force for biological evolution. In human society, technological change has a tremendous impact on climate and ecological change, which in turn has a fundamental impact on social and economic behavior. The financial sector may have a short-term impact on social behavior, but little influence on long-term technological trends.

However, we do appreciate Bouleau's insight that interest groups may have a different framework when addressing social issues. That is why European countries do have a strong support for a zero-growth paradigm, while developing countries do not and while U.S. governments have strong ties with the financial sector. We all know the simple truth that says: "Traders like volatility."

[8] See, e.g., Elsner, Wolfram and Heinrich, Torsten. (2011) "Coordination on 'Meso'-Levels: On the Co-evolution of Institutions, Networks and Platform Size", in: S. Mann (Ed.), *Sectors Matter! Exploring Mesoeconomics*, Berlin, Heidelberg: Springer, 115-63.

Bouleau offers an important critique of the way models are constructed in economics, to the degree to which this may mask crucial factors instead of highlighting them. We do, however, believe that the problem does not lie with randomness in general, but rather with the bewildering lack of proper microfoundations on the one hand and the failure to devise models able to consider complex feedback mechanisms, systems with different regimes, and other common traits of complex systems.

Author contacts:
Yinan Tang: ynan.tang@gmail.com
Wolfram Elsner: welsner@uni-bremen.de
Torsten Heinrich: torsten.heinrich@uni-bremen.de
Ping Chen: pchen@ccer.pku.edu.cn

SUGGESTED CITATION:
Yinan Tang, Wolfram Elsner, Torsten Heinrich and Ping Chen, "Trend, randomness, and noise: exogenous vs. endogenous explanation in complex heterodox analysis A note on Nicolas Bouleau in *RWER* 60", *real-world economics review*, issue no. 62, 15 December 2012, pp. 29-33,
http://www.paecon.net/PAEReview/issue62/TangElsnerHeinrichChen62.pdf

You may post and read comments on this paper at http://rwer.wordpress.com/2012/12/14/rwer-issue-62/

Rational expectations – a fallacious foundation for macroeconomics in a non-ergodic world

Lars Pålsson Syll [Malmö University, Sweden]

> Strangely perhaps, the most obvious element in the inference gap for models ... lies in the validity of any inference between two such different media – forward from the real world to the artificial world of the mathematical model and back again from the model experiment to the real material of the economic world. The model is at most a parallel world. The parallel quality does not seem to bother economists. But materials do matter: it matters that economic models are only representations of things in the economy, not the things themselves.
>
> Mary Morgan: *The World in the Model*

Introduction

In the wake of the latest financial crisis many people have come to wonder why economists never have been able to predict these manias, panics and crashes that intermittently haunt our economies. In responding to these warranted wonderings, some economists have maintained that it is a fundamental principle that there cannot be any reliable way of predicting a crisis.

This is a totally inadequate answer, and more or less trying to make an honour out of the inability of one's own science to give answers to just questions, is indeed proof of a rather arrogant attitude.

The main reason given for this view is what one of its staunchest defenders, David K. Levine (2012), calls "the uncertainty principle in economics" and the "theory of rational expectations":

> In simple language what rational expectations means is 'if people believe this forecast it will be true.' By contrast if a theory is not one of rational expectations it means 'if people believe this forecast it will not be true.' Obviously such a theory has limited usefulness. Or put differently: if there is a correct theory, eventually most people will believe it, so it must necessarily be rational expectations. Any other theory has the property that people must forever disbelieve the theory regardless of overwhelming evidence – for as soon as the theory is believed it is wrong.
>
> So does the crisis prove that rational expectations and rational behavior are bad assumptions for formulating economic policy? Perhaps we should turn to behavioral models of irrationality in understanding how to deal with the housing market crash or the Greek economic crisis? Such an alternative would have us build on foundations of sand. It would have us create economic policies and institutions with the property that as soon as they were properly understood they would cease to function.

These are rather unsubstantiated allegations. To my knowledge, there are exceptionally few (if any) economists that really advocates constructing models based on irrational expectations. And very few of us are unaware of the effects that economic theory can have on the behaviour of economic actors.

So – to put it bluntly – Levine fails to give a fair view of the state of play among contemporary economists on the issue of rational expectations. This essay is an attempt at substantiating that verdict.

Rational expectations – a concept with a history

The concept of rational expectations was first developed by John Muth (1961) and later applied to macroeconomics by Robert Lucas (1972). In this way the concept of *uncertainty* as developed by Keynes (1921) and Knight (1921) was turned into a concept of quantifiable *risk* in the hands of neoclassical economics.

Muth (1961:316) framed his rational expectations hypothesis (REH) in terms of probability distributions:

> Expectations of firms (or, more generally, the subjective probability distribution of outcomes) tend to be distributed, for the same information set, about the prediction of the theory (or the "objective" probability distributions of outcomes).

But Muth (1961:317) was also very open with the non-descriptive character of his concept:

> The hypothesis of rational expectations *does not* assert that the scratch work of entrepreneurs resembles the system of equations in any way; nor does it state that predictions of entrepreneurs are perfect or that their expectations are all the same.

To Muth its main usefulness was its generality and ability to be applicable to all sorts of situations irrespective of the concrete and contingent circumstances at hand. And while the concept was later picked up by New Classical Macroeconomics in the hands of people like Robert Lucas and Eugene Fama, most of us thought it was such a patently ridiculous idea, that we had problems with really taking it seriously.

It is noteworthy that Lucas (1972) did not give any further justifications for REH, but simply applied it to macroeconomics. In the hands of Lucas and Sargent it was used to argue that government could not really influence the behavior of economic agents in any systematic way. In the 1980s it became a dominant model assumption in New Classical Macroeconomics and has continued to be a standard assumption made in many neoclassical (macro)economic models – most notably in the fields of (real) business cycles and finance (being a cornerstone in the "efficient market hypothesis").

Keynes, genuine uncertainty and ergodicity

REH basically says that people on the average hold expectations that will be fulfilled. This makes the economist's analysis enormously simplistic, since it means that the model used by the economist is the same as the one people use to make decisions and forecasts of the future.

This view is in obvious ways very different to the one we connect with John Maynard Keynes. According to Keynes (1937:113) we live in a world permeated by unmeasurable uncertainty – not quantifiable stochastic risk – which often force us to make decisions based on anything but rational expectations. Sometimes we "simply do not know."

Keynes would not have accepted Muth's view that expectations "tend to be distributed, for the same information set, about the prediction of the theory." Keynes, rather, thinks that we base

our expectations on the confidence or "weight" we put on different events and alternatives. To Keynes expectations are a question of weighing probabilities by "degrees of belief," beliefs that have preciously little to do with the kind of stochastic probabilistic calculations made by the rational expectations agents modeled by Lucas *et consortes*.

REH only applies to ergodic – stable and stationary stochastic – processes. Economies in the real world are nothing of the kind. In the real world, set in non-ergodic historical time, the future is to a large extent unknowable and uncertain. If the world was ruled by ergodic processes – a possibility utterly incompatible with the views of Keynes – people could perhaps have rational expectations, but no convincing arguments have ever been put forward, however, for this assumption being realistic.

REH holds the view that people, on average, have the same expectations. Keynes, on the other hand, argued convincingly that people often have *different* expectations and information, and that this constitutes the basic rational behind macroeconomic needs of coordination. This is something that is rather swept under the rug by the extreme simple-mindedness of assuming rational expectations in representative actors models, which is so in vogue in New Classical Economics. Indeed if all actors are alike, why do they transact? Who do they transact with? The very reason for markets and exchange seems to slip away with the sister assumptions of representative actors and rational expectations.

Mathematical tractability is not enough

It is hard to escape the conclusion that it is an enormous waste of intellectual power to build these kinds of models based on next to useless theories. Their marginal utility have long since passed over into the negative. That people are still more or less mindlessly doing this is a sign of some kind of not so little intellectual hubris.

It would be far better to admit that we "simply do not know" about lots of different things, and that we should try to do as good as possible given this, rather than looking the other way and pretend that we are all-knowing rational calculators.

Models based on REH impute beliefs to the agents that are not based on any real informational considerations, but simply *stipulated* to make the models mathematically-statistically tractable. Of course you can make assumptions based on tractability, but then you do also have to take into account the necessary trade-off in terms of the ability to make relevant and valid statements on the intended target system. Mathematical tractability cannot be the ultimate arbiter in science when it comes to modeling real world target systems. Of course, one could perhaps accept REH if it had produced lots of verified predictions and good explanations. But it has done nothing of the kind. Therefore the burden of proof is on those who still want to use models built on ridiculously unreal assumptions – models devoid of obvious empirical interest.

In reality REH is a rather harmful modeling assumption, since it contributes to perpetuating the ongoing transformation of economics into a kind of science-fiction-economics. If economics is to guide us, help us make forecasts, explain or better understand real world phenomena, it is in fact next to worthless.

Learning and information

REH presupposes – basically for reasons of consistency – that agents have complete knowledge of *all* of the relevant probability distribution functions. And when trying to incorporate learning in these models – to take the heat off some of the criticism launched against it up to date – it is always a very restricted kind of learning that is considered (cf. Evans & Honkapohja (2001)). A learning where truly unanticipated, surprising, new things never take place, but only a rather mechanical updating – increasing the precision of already existing information sets – of existing probability functions.

Nothing really new happens in these ergodic models, where the statistical representation of learning and information is nothing more than a caricature of what takes place in the real world target system. This follows from taking for granted that people's decisions can be portrayed as based on an existing probability distribution, which by definition implies the knowledge of every possible event – otherwise it is, in a strict mathematical-statistical sense, not really a probability distribution – that can be thought of as taking place.

But in the real world it is – as shown again and again by behavioural and experimental economics – common to mistake a conditional distribution for a probability distribution. These are mistakes that are *impossible* to make in the kinds of economic analysis that are built on REH. On average REH agents are always correct. But truly new information will not only reduce the estimation error but actually change the entire estimation and hence possibly the decisions made. To be truly new, information has to be unexpected. If not, it would simply be inferred from the already existing information set.

In REH models new information is typically presented as something only reducing the variance of the parameter estimated. But if new information means truly new information it actually could increase our uncertainty and variance (information set (A, B) => (A, B, C)). Truly new information gives birth to new probabilities, revised plans and decisions – something the REH cannot account for with its finite sampling representation of incomplete information.

In the world of REH, learning is like being better and better at reciting the complete works of Shakespeare by heart – or at hitting bull's eye when playing darts. It presupposes that we have a complete list of the possible states of the world and that by definition mistakes are non-systematic (which, strictly seen, follows from the assumption of "subjective" probability distributions being equal to the "objective" probability distribution). This is a rather uninteresting and trivial kind of learning. It is a closed world learning, synonymous to improving one's adaptation to a world which is fundamentally unchanging. But in real, open world situations, learning is more often about adapting and trying to cope with genuinely new phenomena.

REH presumes consistent behaviour, where expectations do not display any persistent errors. In the world of REH we are always, on average, hitting the bull's eye. In the more realistic, open systems view, there is always the possibility (danger) of making mistakes that may turn out to be systematic. It is presumably one of the main reasons why we put so much emphasis on learning in our modern knowledge societies.

On risk, uncertainty and probability distributions

REH assumes that the expectations based on "objective" probabilities are the same as the "subjective" probabilities that agents themselves form on uncertain events. It treats risk and uncertainty as equivalent entities.

But in the real world, it is not possible to just *assume* that probability distributions are the right way to characterize, understand or explain acts and decisions made under uncertainty. When we "simply do not know," when we "haven't got a clue," when genuine uncertainty prevails – REH simply will not do. In those circumstances it is not a useful assumption. The reason is that under those circumstances the future is not like the past, and henceforth, we cannot use the same probability distribution – if it at all exists – to describe both the past and future.

There simply is no guarantee that probabilities at time x are the same as those at time x+i. So when REH assumes that the parameter values on average are the same for the future and the past, one is – as Roman Frydman and Michael Goldberg (2007) forcefully argue – not really talking about uncertainty, but rather knowledge. But this implies that what we observe are realizations of pure stochastic processes, something – if we really want to maintain this view – we have to *argue* for.

In physics it may possibly not be straining credulity too much to model processes as ergodic – where time and history do not really matter – but in social and historical sciences it is obviously ridiculous. If societies and economies were ergodic worlds, why do econometricians fervently discuss things such as structural breaks and regime shifts? That they do is an indication of the unrealisticness of treating open systems as analyzable with ergodic concepts.

The future is not reducible to a known set of prospects. It is not like sitting at the roulette table and calculating what the future outcomes of spinning the wheel will be. A more realistic foundation for economics has to encompass both ergodic and non-ergodic processes, both risk and genuine uncertainty. Reading advocates of REH one comes to think of Robert Clower's (1989:23) apt remark that

> much economics is so far removed from anything that remotely resembles the real world that it's often difficult for economists to take their own subject seriously.

Where do probabilities come from in REH?

In REH models, events and observations are as a rule interpreted as random variables, as if generated by an underlying probability density function, and *a fortiori* – since probability density functions are only definable in a probability context – consistent with a probability.
When attempting to convince us of the necessity of founding empirical economic analysis on probability models, advocates of REH actually force us to (implicitly) interpret events as random variables generated by an underlying probability density function. This is at odds with reality. Randomness obviously is a fact of the real world. Probability, on the other hand, attaches to the world via intellectually constructed models, and is only a fact of a probability generating machine or a well constructed experimental arrangement or "chance set-up". Just as there is no such thing as a "free lunch," there is no such thing as a "free probability." To be able at all to talk about probabilities, you have to specify a model. If there is no chance set-up or model that generates the probabilistic outcomes or events – in statistics one refers to any

process where you observe or measure as an *experiment* (rolling a die) and the results obtained as the *outcomes* or *events* (number of points rolled with the die, being e. g. 3 or 5) of the experiment –there strictly seen is no event at all.

Probability is a relational element. It always must come with a specification of the model from which it is calculated. And then to be of any empirical scientific value it has to be *shown* to coincide with (or at least converge to) real data generating processes or structures – something seldom or never done!

And this is the basic problem with economic data. If you have a fair roulette-wheel, you can arguably specify probabilities and probability density distributions. But how do you conceive of the analogous – to speak with science philosopher Nancy Cartwright (1999) – "nomological machines" for prices, gross domestic product, income distribution, etc.? Only by a leap of faith. And that does not suffice. You have to come up with some really good arguments if you want to persuade people into believing in the existence of socio-economic structures that generate data with characteristics conceivable as stochastic events portrayed by probabilistic density distributions.

From a realistic point of view we have to admit that the socio-economic states of nature that we talk of in most social sciences – and certainly in economics – are not amenable to analysis as probabilities, simply because in the real world open systems that social sciences (including economics) analyze, there are, strictly seen, no probabilities to be had!

The processes that generate socio-economic data in the real world cannot *simpliciter* be assumed to always be adequately captured by a probability measure. And, so, it cannot convincingly be maintained, as in REH, that it should be mandatory to treat observations and data – whether cross-section, time series or panel data – as events generated by some probability model. The important activities of most economic agents do not usually include throwing dice or spinning roulette-wheels. Data generating processes – at least outside of nomological machines like dice and roulette-wheels – are not self-evidently best modeled with probability measures.

If we agree on this, we also have to admit that theories like REH, lacks a sound justification. I would even go further and argue that there is no justifiable rationale at all for this belief that all economically relevant data can be adequately captured by a probability measure. In most real world contexts one has to *argue* one's case. And that is obviously something almost never done by practitioners of REH and its probabilistically based econometric analyses.

The conception of randomness in REH

Deep down there is also a problem with the conception of randomness in REH models. In REH models probability is often (implicitly) defined with the help of independent trials – two events are said to be *independent* if the occurrence or nonoccurrence of either one has no effect on the probability of the occurrence of the other – as drawing cards from a deck, picking balls from an urn, spinning a roulette wheel or tossing coins – trials which are only definable if somehow set in a probabilistic context.

But if we pick a sequence of prices – say 2, 4, 3, 8, 5, 6 – that we want to use in an econometric regression analysis, how do we know the sequence of prices is random and *a*

fortiori being able to treat it as generated by an underlying probability density function? How can we argue that the sequence is a sequence of probabilistically independent random prices? And are they really random in the sense that is most often applied in REH models (where X is called a *random variable* only if there is a sample space S with a probability measure and X is a real-valued function over the elements of S)?

Bypassing the scientific challenge of going from describable randomness to calculable probability by simply assuming it, is of course not an acceptable procedure. Since a probability density function is a "Gedanken" object that does not exist in a natural sense, it has to come with an export license to our real target system if it is to be considered usable.
Among those who at least honestly try to face the problem – the usual procedure is to refer to some artificial mechanism operating in some "games of chance" of the kind mentioned above and which generates the sequence. But then we still have to show that the real sequence somehow coincides with the ideal sequence that defines independence and randomness within our nomological machine, our probabilistic model.

So why should we define randomness with probability? If we do, we have to accept that to speak of randomness we also have to presuppose the existence of nomological probability machines, since probabilities cannot be spoken of – and actually, to be strict, do not at all exist - without specifying such system-contexts (how many sides do the dice have, are the cards unmarked, etc.)

If we do adhere to the REH paradigm we also have to assume that all noise in our data is probabilistic and that errors are well-behaving, something that is hard to justifiably argue for as a real phenomena, and not just an operationally and pragmatically tractable assumption. Accepting the usual REH domain of probability theory and sample space of infinite populations – just as Fisher's (1922:311) "hypothetical infinite population, of which the actual data are regarded as constituting a random sample", von Mises' "collective" or Gibbs' "ensemble" – also implies that judgments are made on the basis of observations that are actually never made!

Infinitely repeated trials or samplings never take place in the real world. So that cannot be a sound inductive basis for a science with aspirations of explaining real world socio-economic processes, structures or events. It's not tenable. As David Salsburg (2001:146) notes on probability theory:

> [W]e assume there is an abstract space of elementary things called 'events' … If a measure on the abstract space of events fulfills certain axioms, then it is a probability. To use probability in real life, we have to identify this space of events and do so with sufficient specificity to allow us to actually calculate probability measurements on that space … Unless we can identify [this] abstract space, the probability statements that emerge from statistical analyses will have many different and sometimes contrary meanings.

Just as e. g. Keynes (1921) and Georgescu-Roegen (1971), Salsburg (2001:301f) is very critical of the way social scientists – including economists and econometricians – uncritically and *without arguments* have come to simply assume that one can apply probability distributions from statistical theory on their own area of research:

> Probability is a measure of sets in an abstract space of events. All the mathematical properties of probability can be derived from this definition. When we wish to apply probability to real life, we need to identify that abstract space of events for the

> particular problem at hand … It is not well established when statistical methods are used for observational studies … If we cannot identify the space of events that generate the probabilities being calculated, then one model is no more valid than another … As statistical models are used more and more for observational studies to assist in social decisions by government and advocacy groups, this fundamental failure to be able to derive probabilities without ambiguity will cast doubt on the usefulness of these methods.

This importantly also means that if advocates of REH cannot show that data satisfies *all* the conditions of the probabilistic nomological machine – including e. g. the distribution of the deviations corresponding to a normal curve – then the statistical inferences used lack sound foundations!

Of course one could treat our observational or experimental data as random samples from real populations. I have no problem with that. But probabilistic econometrics does not content itself with that kind of populations. Instead it creates imaginary populations of "parallel universe" and assumes that our data are random samples from that kind of populations. But this is actually nothing but hand-waving! And it is inadequate for real science. As eminent mathematical statistician David Freedman(2009:27) writes:

> With this approach, the investigator does not explicitly define a population that could in principle be studied, with unlimited resources of time and money. The investigator merely *assumes* that such a population exists in some ill-defined sense. And there is a further assumption, that the data set being analyzed can be treated *as if* it were based on a random sample from the assumed population. These are convenient fictions ... Nevertheless, reliance on imaginary populations is widespread. Indeed regression models are commonly used to analyze convenience samples ... The rhetoric of imaginary populations is seductive because it seems to free the investigator from the necessity of understanding how data were generated.

REH and the applicability of econometrics

A rigorous application of econometric methods in REH models presupposes that the phenomena of our real world economies are ruled by stable causal relations between variables. 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 more or less 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 is no other ground than hope itself.

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 models can never be more than a starting point in that endeavour. 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.

This is a more fundamental and radical problem than the celebrated "Lucas critique" has 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 (cf. Chatfield (1995)) causal mechanisms being atomistic and additive. When causal mechanisms operate in real world social target systems they only do it in ever-changing and unstable combinations where the whole is more than a mechanical sum of parts. If economic regularities obtain they do (as a rule) only because we engineered them for that purpose. Outside man-made nomological machines they are rare, or even non-existant. Unfortunately that also makes most of the achievements of econometrics – as most of contemporary endeavours of economic theoretical modeling based on REH – rather doubtful.

Where is the evidence?

Instead of assuming REH to be right, one ought to confront the hypothesis with the available evidence. It is not enough to construct models. Anyone can construct models. To be seriously interesting, a model has to come with an aim, it has to have an intended use. If the intention of REH is to help us explain real economies, it has to be evaluated from that perspective. A model or hypothesis without a specific applicability does not really deserve our interest.

To say, as Prescott (1977:30) that

> one can only test if some theory, whether it incorporates rational expectations or, for that matter, irrational expectations, is or is not *consistent* with observations

is not enough. Without strong evidence, all kinds of absurd claims and nonsense may pretend to be science. When it comes to rationality postulates, we have to demand more of a justification than this rather watered-down version of "anything goes." Proposing REH, one also has to *support* its underlying assumptions. None is given, which makes it rather puzzling how REH has become the standard modeling assumption made in much of modern macroeconomics. Perhaps the reason is, as Paul Krugman (2009) has it, that economists often mistake "beauty, clad in impressive looking mathematics, for truth." But I think Prescott's view is also the reason why REH economists are not particularly interested in empirical examinations of how real choices and decisions are made in real economies. In the hands of Lucas *et consortes*, REH has been transformed from being an – in principle – testable *hypothesis* to being an irrefutable *proposition*.

Rational expectations, the future, and the end of history

REH basically assumes that all learning has already taken place. This is extremely difficult to vision in reality, because that means that history has come to an end. When did that happen? It is indeed a remarkable assumption, since in our daily life, most of us experience a continuing learning. It may be a tractable assumption, yes. But helpful to understand real world economies? No. REH builds on Savage's (1954) "sure thing principle," according to which people never make systematic mistakes. They may "tremble" now and then, but on average, they always make the right – the rational – decision. That kind of models is not useful "as-if" representations of real world target systems.

In REH agents know all possible outcomes. In reality, many of those outcomes are yet to be originated. The future is not about known probability distributions. It is not about picking the right ball from an urn. It is about new possibilities. It is about inventing new balls and new urns to put them in. If so, even if we learn, uncertainty does not go away. As G. L. S. Shackle (1972:102) argued, the future "waits, not for its contents to be discovered, but for that content to be originated."

As shown already by Davidson (1983) REH implies – by the implicit ergodicity assumption – that relevant distributions have to be *time independent*. But this amounts to assuming that an economy is like a closed system with known stochastic probability distributions for all different events. In reality it is straining one's beliefs to try to represent economies as outcomes of stochastic processes. An existing economy is a single realization *tout court*, and hardly conceivable as one realization out of an ensemble of economy-worlds, since an economy can hardly be conceived as being completely replicated over time.

The arrow of time and the difference between time averages and ensemble averages

In REH we are never disappointed in any other way than as when we lose at the roulette wheels, since "averages of expectations are accurate" (Muth 1961:316). But real life is not an urn or a roulette wheel, so REH is a vastly misleading analogy of real world situations. It is not even useful for non-crucial and non-important decisions that are possible to replicate perfectly (a throw of dices, a spin of the roulette wheel etc.).

Time is what prevents everything from happening at once. To simply assume that economic processes are ergodic – *a fortiori* in any relevant sense timeless – and concentrate on ensemble averages is not a sensible way for dealing with the kind of genuine uncertainty that permeates open systems such as economies.

Since ergodicity and the all-important difference between time averages and ensemble averages are somewhat difficult concepts, let me just try to explain the meaning of these concepts by means of a couple of simple examples. Let's say you're offered a gamble where on a roll of a fair die you will get €10 billion if you roll a six, and pay me €1 billion if you roll any other number. Would you accept the gamble?

If you're a neoclassical economist you probably would, because that's what you're taught to be the only thing consistent with being rational. You would arrest the arrow of time by imagining six different "parallel universes" where the independent outcomes are the numbers from one to six, and then weight them using their stochastic probability distribution.

Calculating the expected value of the gamble – the ensemble average – by averaging on all these weighted outcomes you would actually be a odd person if you didn't take the gamble (the expected value of the gamble being 5/6*€0 + 1/6*€10 billion = €1.67 billion).

If you're not a neoclassical economist you would probably trust your common sense and decline the offer, knowing that a large risk of bankrupting one's economy is not a very rosy perspective for the future. Since you can't really arrest or reverse the arrow of time, you know that once you have lost the €1 billion, it's all over. The large likelihood that you go bust weights heavier than the 17 % chance of you becoming enormously rich. By computing the time average – imagining one real universe where the six different but dependent outcomes occur consecutively – we would soon be aware of our assets disappearing, and *a fortiori* that it would be irrational to accept the gamble. [From a mathematical point of view you can somewhat non-rigorously describe the difference between ensemble averages and time averages as a difference between arithmetic averages and geometric averages. Tossing a fair coin and gaining 20 % on the stake (S) if winning (heads) and having to pay 20 % on the stake (S) if loosing (tails), the arithmetic average of the return on the stake, assuming the outcomes of the coin-toss being independent, would be [(0.5*1.2S + 0.5*0.8S) - S)/S] = 0 %. If considering the two outcomes of the toss not being independent, the relevant time average would be a geometric average return of square-root[(1.2S *0.8S)]/S - 1= -2 %.]

Why is the difference between ensemble and time averages of such importance in economics? Well, basically, because when – as in REH – assuming the processes to be ergodic, ensemble and time averages are identical. [Assume we have a market with an asset priced at €100. Then imagine the price first goes up by 50 % and then later falls by 50 %. The ensemble average for this asset would be €100 – because we here envision two parallel universes (markets) where the asset price falls in one universe (market) with 50 % to €50, and in another universe (market) it goes up with 50 % to €150, giving an average of 100€ ((150+50)/2). The time average for this asset would be 75 € – because we here envision one universe (market) where the asset price first rises by 50 % to €150, and then falls by 50 % to €75 (0.5*150).]

From the ensemble perspective nothing, on average, happens. From the time perspective lots of things, really, on average, happen. Assuming ergodicity there would have been no difference at all. When applied to the neoclassical theory of expected utility – which usually comes with REH models – one thinks in terms of “parallel universe” and ask what is the expected return of an investment, calculated as an average over the “parallel universe”? In our coin-tossing example, it is as if one supposes that various “I” is tossing a coin and that the loss of many of them will be offset by the huge profits one of these “I” does. But this ensemble average does not work for an individual, for whom a time average better reflects the experience made in the “non-parallel universe” in which we live.

Time averages gives a more realistic answer, where one thinks in terms of the only universe we actually live in, and ask what is the expected return of an investment, calculated as an average over time. Since we cannot go back in time – entropy and the arrow of time make this impossible – and the bankruptcy option is always at hand (extreme events and “black swans” are always possible) we have nothing to gain from – as in REH models – thinking in terms of ensembles.

Actual events follow a fixed pattern of time, where events are often linked in a multiplicative process (as e. g. investment returns with “compound interest”) that is basically non-ergodic.

Instead of arbitrarily assuming that people have a certain type of utility function – as in the neoclassical theory – time average considerations show that we can obtain a less arbitrary and more accurate picture of real people's decisions and actions by basically assuming that time is irreversible. When our assets are gone, they are gone. The fact that in a parallel universe it could conceivably have been refilled, is of little comfort to those who live in the one and only possible world that we call the real world.

REH and modeling aspirations of Nirvana

REH comes from the belief that to be scientific, economics has to be able to model individuals and markets in a stochastic-deterministic way. It's like treating individuals and markets as the celestial bodies studied by astronomers with the help of gravitational laws. But – individuals, markets and entire economies are not planets moving in predetermined orbits in the sky.

To deliver, REH has to constrain expectations on the individual and the aggregate level to actually be the same. If revisions of expectations take place in the REH models, they typically have to take place in a known and pre-specified precise way. This squares badly with what we know to be true in the real world, where fully specified trajectories of future expectations revisions are non-existent.

Most REH models are time-invariant and so give no room for any changes in expectations and their revisions. The only imperfection of knowledge they admit is included in the error terms – error terms that are assumed to be additive and have a given and known frequency distribution, so that the REH models can still fully pre-specify the future even when incorporating these stochastic variables into the models.

In the real world there are many different expectations and these cannot be aggregated in REH models without giving rise to inconsistency (acknowledged by Lucas (1995:225) himself). This is one of the main reasons for REH models being modeled as representative actors models. But this is far from being a harmless approximation to reality (cf. Pålsson Syll (2010)). Even the smallest differences of expectations between agents would make REH models inconsistent, so when they still show up they have to be considered "irrational."

It is not possible to adequately represent individuals and markets as having one single overarching probability distribution. Accepting that, does not imply – as advocates of REH seem to think – that we have to end all theoretical endeavours and assume that all agents always act totally irrationally and only are analyzable within behavioural economics. Far from it – it means we acknowledge diversity and imperfection, and that economic theory has to be able to incorporate these empirical facts in its models. Incompatibility between actual behaviour and REH behaviour is not a symptom of "irrationality". It rather shows the futility of trying to represent real world target systems with models flagrantly at odds with reality.

Methodological implications of the critique

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 homogeneity, invariance, additivity, etc. – 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 – as long as the assumptions made are not unrealistic in the wrong way or for the wrong reasons.

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.

To some theoretical economists it is deemed quite enough to consider economics as a mere "conceptual activity" where the model is not so much seen as an abstraction from reality, but rather a kind of "parallel reality." By considering models as such *constructions*, the economist distances the model from the intended target, only demanding the models to be *credible*, thereby enabling him 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. To argue otherwise would surely be an untenable overestimation of the epistemic reach of "credible" models".

Models do not only face theory. They also have to look to the world. 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 in one sense 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.

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. 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 when we export them from are models to our target systems they do not change from one situation to another, 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.

The obvious ontological shortcoming of the epistemic approach that REH so well represents, 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, or tendencies. No matter how many convoluted refinements of concepts made in the model, if the model is not similar in the appropriate respects – such as structure, isomorphism, etc. – it 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. Constructing "credible" models 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 standardly made in REH models are *restrictive* rather than *harmless* and could therefore not in any sensible meaning be considered approximations at all.

The modeling tradition of economics – and certainly REH models – may be characterized as one concerned with "thin men acting in small worlds." But, as May Brodbeck (1968[1959]) had it: "Model ships appear frequently in bottles; model boys in heaven only."

Why should we be concerned with economic models that are purely hypothetical constructions? Even if a constructionist approach should be able to accommodate the way we learn from models, it is of little avail to treat models as some kind "artefacts" or "heuristic devices" that produce claims, if they do not also connect to real world target systems.

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 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. Building on assumptions such as REH, economics becomes exact, but exceedingly narrow, and in a realist perspective, rather irrelevant. 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.

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 that 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" neoclassical economists 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. And the reason is simple: economic causes never act in a 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 – such as those building on REH – they appear as

unrealistic assumptions, usually playing a decisive role in getting the deductive machinery deliver "precise" and "rigorous" results. 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.

Conclusion

The financial crisis of 2007-08 hit most laymen and economists with surprise. What was it that went wrong with mainstream neoclassical macroeconomic models, since they obviously did not foresee the collapse or even make it conceivable?

As I have tried to show in this essay, one important reason ultimately goes back to how these models handle data. In REH-based modern neoclassical macroeconomics – Dynamic Stochastic General Equilibrium (DSGE), New Synthesis, New Classical, "New Keynesian" – variables are treated as if drawn from a known "data-generating process" that unfolds over time and on which one therefore have access to heaps of historical time-series. If one does not assume the "data-generating process" to be known – if there is no "true" model – the whole edifice collapses.

Building on REH, modern macroeconomics obviously did not anticipate the enormity of the problems that unregulated "efficient" financial markets created. Why? Because it builds on the myth of us knowing the "data-generating process" and that we can describe the variables of our evolving economies as drawn from an urn containing stochastic probability functions with known means and variances.

This is like saying that you are going on a holiday-trip and that you know that the chance the weather being sunny is at least 30%, and that this is enough for you to decide on bringing along your sunglasses or not. You are supposed to be able to calculate the expected utility based on the given probability of sunny weather and make a simple decision of either-or. Uncertainty is reduced to risk. But this is not always possible. Often we "simply do not know." According to one model the chance of sunny weather is perhaps somewhere around 10 % and according to another – equally good – model the chance is perhaps somewhere around 40 %. We cannot put exact numbers on these assessments. We cannot calculate means and variances. There are no given probability distributions that we can appeal to.

In the end this is what it all boils down to. We all know that many activities, relations, processes and events are of the Keynesian uncertainty type. The data do not – as REH

models assume – unequivocally single out one decision as the only "rational" one. Neither the economist, nor the deciding individual, can fully pre-specify how people will decide when facing uncertainties and ambiguities that are ontological facts of the way the world works.

Some macroeconomists, however, still want to be able to use their hammer. So they decide to pretend that the world looks like a nail, and pretend that uncertainty can be reduced to risk. So they construct their mathematical models on that assumption. The result: financial crises and economic havoc.

How much better – how much bigger chance that we do not lull us into the comforting thought that we know everything and that everything is measurable and we have everything under control – if instead we would just admit that we often "simply do not know," and that we have to live with that uncertainty as well as it goes. Fooling people into believing that one can cope with an unknown economic future in a way similar to playing at the roulette wheels, is a sure recipe for only one thing – economic catastrophy. The *unknown knowns* – the things we fool ourselves to believe we know – often have more dangerous repercussions than the "Black Swans" of Knightian unknown unknowns, something quantitative risk management – based on the hypotheses of market efficiency and rational expectations – has given ample evidence of during the latest financial crisis.

Defenders of REH, like David K. Levine (2012), maintains that "the only robust policies and institutions – ones that we may hope to withstand the test of time – are those based on rational expectations – those that once understood will continue to function." As argued in this essay, there is really no support for this conviction at all. On the contrary – if we want to have anything of interest to say on real economies, financial crisis and the decisions and choices real people make, it is high time to place the rational expectations hypothesis where it belongs – in the dustbin of history.

Interestingly enough, the main developer of REH himself, Robert Lucas – in an interview with Kevin Hoover (2011) – has himself had some second-thoughts on the validity of REH:

> Kevin Hoover: The Great Recession and the recent financial crisis have been widely viewed in both popular and professional commentary as a challenge to rational expectations and to efficient markets … I'm asking you whether you accept any of the blame … there's been a lot of talk about whether rational expectations and the efficient-markets hypotheses is where we should locate the analytical problems that made us blind.
>
> Robert Lucas: You know, people had no trouble having financial meltdowns in their economies before all this stuff we've been talking about came on board. We didn't help, though; there's no question about that. We may have focused attention on the wrong things, I don't know.

We're looking forward to see some more future second-thoughts on the subject from other advocates of REH as well. Better late than never.

References

Brodbeck, May (1968[1959]), Models, Meaning and Theories, in M. Brodbeck (ed.), *Readings in the Philosophy of the Social Sciences*, New York: Macmillan.

Cartwright, Nancy (1999), *The Dappled World*, Cambridge: Cambridge University Press.
Chatfield, Chris (1995), Model Uncertainty, Data Mining and Statistical Inference, *Journal of the Royal Statistical Society*.
Clower, Robert (1989), The State of Economics: Hopeless but not Serious, in *The Spread of Economic Ideas*, eds. D. Colander and A. W. Coats, Cambridge University Press.
Davidson, Paul (1983), Rational expectations: a fallacious foundation for studying crucial decision-making processes, *Journal of Post Keynesian Economics* 5.
Evans, George W. & Honkapohja, Seppo (2001), *Learning and expectations in macroeconomics*. Princeton: Princeton University Press.
Fisher, Ronald (1922), On the mathematical foundations of theoretical statistics. *Philosophical Transactions of The Royal Society*.
Freedman, David (2009), *Statistical Models and Causal Inference: A Dialogue with the Social Sciences,* Cambridge: Cambridge University Press.
Frydman, Roman and Michael Goldberg (2007), *Imperfect Knowledge Economics*, Princeton: Princeton University Press.
Georgescu-Roegen, Nicholas (1971), *The Entropy Law and the Economic Process*, Harvard University Press.
Haavelmo, Trygve (1944), The probability approach in econometrics, Supplement to *Econometrica* 12.
Hicks, John (1979), *Causality in Economics*, New York: Basic Books.
Hoover, Kevin (1988), *The New Classical Macroeconomics*, Oxford: Basil Blackwell.
----------– (2011), Rational Expectations: Retrospect and Prospect: A Panel Discussion with Michael Lovell, Robert Lucas, Dale Mortensen, Robert Shiller, and Neil Wallace, *Macroeconomic Dynamics,* forthcoming http://econ.duke.edu/~kdh9/
Keynes, John Maynard (1964 [1936]), *The General Theory of Employment, Interest, and Money*, London: Harcourt Brace Jovanovich.
----------– (1937), The General Theory of Employment, *Quarterly Journal of Economics* 51:209-23.
----------– (1951 [1926]), *Essays in Biography*, London: Rupert Hart-Davis
–--------- (1971-89), *The Collected Writings of John Maynard Keynes*, vol. I-XXX, D. E. Moggridge & E. A. G Robinson (eds.), London: Macmillan.
–---------- (1973 (1921)), *A Treatise on Probability*. Volume VIII of The Collected Writings of John Maynard Keynes, London: Macmillan.
Knight, Frank (1921), *Risk, Uncertainty and Profit,* Boston: Houghton Mifflin.
Krugman, Paul (2000), How complicated does the model have to be? *Oxford Review of Economic Policy* 16.
----------– (2009), How Did Economists get It So Wrong? *The New York Times* September 6.
Levine, David K (2012), Why Economists Are Right: Rational Expectations and the Uncertainty Principle in Economics, *Huffington Post* *http://www.huffingtonpost.com/david-k-levine/uncertainty-principle*
Lucas, Robert (1972), Expectations and the Neutrality of Money, *Journal of Economic Theory.*
----------– (1981), *Studies in Business-Cycle Theory*. Oxford: Basil Blackwell.
---------- (1995), The Monetary Neutrality, *The Nobel Lecture*, Stockholm: The Nobel Foundation.
Morgan, Mary (2012), *The World in the Model*, Cambridge: Cambridge University Press.
Muth, John (1961), Rational expectations and the theory of price movements, *Econometrica* 29.
Pålsson Syll, Lars (2007), *John Maynard Keynes*, Stockholm: SNS Förlag.
---------- (2010) What is (wrong with) economic theory? http://www.paecon.net/PAEReview/issue55/Syll55.pdf
Prescott, Edward (1977), Should Control Theory be Used for Economic Stabilization?, in K. Brunner and A. H. Meltzer (eds) *Optimal Policies, Control Theory and Technology Exports*, Carnegie-Rochester Conference Series on Public Policy, volume 7, Amsterdam: North Holland.
Salsburg, David (2001), *The Lady Tasting Tea*, Henry Holt.
Savage, L. J. (1954), *The Foundations of Statistics,* John Wiley and Sons, New York.
Shackle, G. L. S. (1972), *Epistemics & Economics: A Critique of Economic Doctrines*, Cambridge: Cambridge University Press.

Author contact: lars.palsson-syll@mah.se

SUGGESTED CITATION:
Lars Pålsson Syll, Rational expectations – a fallacious foundation for macroeconomics in a non-ergodic world", *real-world economics review*, issue no. 62, 15 December 2012, pp. 34-50,
http://www.paecon.net/PAEReview/issue62/Syll62.pdf

real-world economics review, issue no. 62
subscribe for free

Rethinking economics: Logical gaps – empirical to the real world[1]

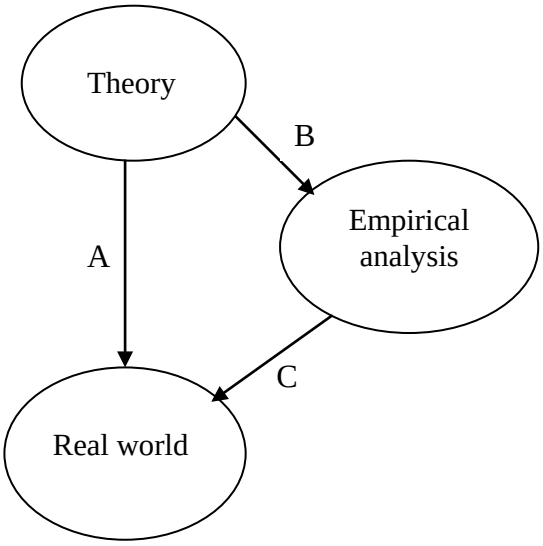
Stuart Birks [Massey University, New Zealand]

Abstract
One aspect of simplification that is apparent at the level of public debate is the way that policy conclusions are frequently drawn from limited statistical evidence. While economists and econometricians are generally cautious about specifying policy implications arising from econometric analyses, at the level of broader debate and media coverage there are fewer reservations. This paper explores some of the limitations and potential opportunities for policy-relevant findings from econometrics. In particular, it considers what can and cannot be deduced as a result of an explanatory variable being found to be statistically significant. In addition, it indicates what aspects to address or questions to raise if econometricians and economists are to extend this work to the point where it may be directly applicable in policy debate.

1. Introduction

This paper draws on a three path structure as in Figure 1 and described in (Birks, 2012c). That paper covered Path A, theory to the real world. A second paper (Birks, 2012b) considered Path B, the transition from theory to empirical formulation. This paper covers Path C, moving from empirical results to application to policy in the real world when research results may be used as a basis for policy.

Figure 1: Logical errors, Types A, B and C



There is often a tenuous relationship between research and policy, with research sometimes playing little or no part. There are several other components in the process of policy making, including political and media debate, response to pressure groups, and shaping or reacting to public opinion. Research is not necessarily directly focused on policy, and the approaches taken by researchers do not necessarily directly address policy questions. Nevertheless

[1] Thanks are due to staff of the University of the West of England, Bristol, for helpful comments while visiting on sabbatical, with special thanks to Don Webber for his suggestions.

researchers sometimes describe policy implications arising from their findings, research findings are sometimes used directly in policymaking and implementation, and findings can influence general understanding of issues. Consequently, the role of research in the policy process is worth exploring.[2]

There are several forces at work that result in a tendency to favour simplified views of issues.[3] They can be observed at each of the three "levels of discourse" described by Desai, namely theory, data analysis, and policy (Desai, 1981, p. 93). At the theoretical level, there is the value judgment associated with Occam's razor whereby simpler theories are preferred over more complex ones, *ceteris paribus*.[4] At the level of data analysis there are constraints of available data, limitations of techniques and problems with degrees of freedom.[5] At the policy level, public acceptance can be important, in which case a simple message is often required (Birks, 2012a). People do not have the time or motivation to understand in detail complex issues which may have little direct impact on them. Any influence is likely to arise through group action, where groups promote preferred agendas. This can be observed through the importance of interest groups and in the limited range of options presented for consideration.

One aspect of simplification that is apparent at the level of public debate is the way that policy conclusions are frequently drawn from limited statistical evidence. While economists and econometricians are generally cautious about specifying policy implications arising from econometric analyses, at the level of broader debate and media coverage there are fewer reservations. This paper explores some of the limitations and potential opportunities for policy-relevant findings from econometrics. In particular, it considers what can and cannot be deduced as a result of an explanatory variable being found to be statistically significant. In addition, it indicates what aspects to address or questions to raise if econometricians and economists are to extend this work to the point where it may be directly applicable in policy debate.

Section 2 briefly considers the link between statistical findings and policy recommendations by academic and public sector researchers and through media coverage of research. Section 3 outlines some basic statistical considerations, while section 4 considers issues associated with the step from statistically meaningful findings to more comprehensive policy analysis.

2. Using statistics for policy

One channel for statistical analysis to influence policy is through public presentation of research findings. This may affect general understanding of issues, shaping public opinion and influencing political priorities. This can happen even if the research was not intended for that purpose and if the results are misinterpreted at the public reporting stage. Where attention is created for political purposes the focus may be on a specific finding. In a small economy this can be associated with a visiting expert deliberately invited to promote a preferred perspective (as with agenda setting and framing, see Birks, 2012a). This is unlikely to result in high-level debate on alternative, possibly contradictory research findings.

[2] For a recent contribution, see Wolf (2007).
[3] See also Birks (2007)
[4] While theoretical simplicity is commonly lauded, more complex analyses with longer equations, more advanced mathematics and/or larger data bases are also associated high status.
[5] Concerns about techniques used by economists, especially econometrics, have been raised by various writers, including Swann (2006) and Thurow (1983). Alternative techniques are described in Swann (2006) and Allen (1978).

This section uses Desai's structure to briefly consider the research phase and then focus on the less commonly discussed but potentially very significant media phase. Specific analytic considerations are then discussed in more detail in section 3.

2.1 The research phase

McCloskey and Ziliak have identified problems in academic papers in the interpretation of statistical findings as being of significance for policy (McCloskey, 1998; Ziliak & McCloskey, 2004, 2008)[6]. One of their central points is that policy decisions should not be determined on the basis of statistical significance alone.[7]

Looking at recent issues of such economic journals as *Applied Economics*[8], *The Review of Economic Studies, Economic Record* and *Southern Economic Journal*, few articles actually refer to policy implications. This may reflect a difference in focus between academic economists and economists working as policy analysts.[9] Some of the discussion papers from the Reserve Bank of New Zealand use econometric models of the macroeconomy and relate the results to policy decisions.[10] The New Zealand Department of Labour research publications tend to rely heavily on more discursive forms of analysis with graphical representation of data.[11] The Ministry of Economic Development has papers outlining econometric analyses on microeconomic issues using disaggregated data.[12] The policy conclusions tend to be tentative, however, as in Maré and Timmins (2007, p. 53) on firm productivity. Given the range of industries and firms and the number of geographically related factors that can affect productivity, this study's findings are not entirely surprising. A strong statistical association would only arise if there is a fixed underlying structure that applies to highly heterogeneous units. This is unlikely to be the case. The same point could be made for many other studies using similar methodology.

2.2 The media phase

Tentative conclusions are less commonly observed at Desai's third level, that of the media and policy discourse. Politicians are expected to appear clear and decisive, despite all the actual uncertainties surrounding policy issues. The public want information that has a clear point to make, or, for personal interest, that relates to a need to change behaviour, presented

---

[6] Ziliak and McCloskey (2008) has been critically reviewed (Spanos, 2008). However, the criticisms relate to proposed solutions to the problem. If anything, Spanos suggests that the problems themselves are more severe than suggested by Ziliak and McCloskey.

[7] This point has been made also in relation to policy in education:

> "Most research articles, after finding a set of things that is correlated with student performance, immediately go to a section on policy conclusions. The steps between the statistical analysis and the section on policy conclusions are seldom discussed." (Hanushek, 1997, p. 303)

[8] Based on their abstracts, econometrics was central to 10 of 11 articles in *Applied Economics* 39(21), December 2007. Of these, three drew some possible implications for decisions/policy.

[9] As a separate exercise, it may be interesting to see to what extent academic research impacts on policy decisions, and, if considered, whether the findings are correctly interpreted. Example 2 below is a case in point.

[10] http://www.rbnz.govt.nz/research/discusspapers/. Approximately 7 of the 15 papers in 2007 would fit into this category. The greater emphasis on policy implications from econometric analysis may be due to the Reserve Bank having defined objectives and a limited number of policy instruments. This to a degree constrains the range of analysis required, reducing the alternatives and associated costs and benefits to be considered.

[11] http://www.dol.govt.nz/publications-browse.asp?BrowseBy=Date&Year=2007, None of the 11 listed publications relied on econometric methods.

[12] http://www.med.govt.nz/templates/StandardSummary____22733.aspx. 3 of 5 papers for 2007 had significant econometric components and drew tentative policy-relevant conclusions.

without many complicating qualifications. Journalists may also lack the specialist knowledge required to handle complex issues, and they are constrained by the nature of their media to be concise and entertaining (Birks, 2008). Consequently, recommendations may be based on limited evidence and analysis, perhaps merely on a statistical association or ascribed to some designated "expert"[13]. To give three examples[14]:

Example 1: alcohol and brain damage

A *Dominion Post* article suggested that binge drinking 'damages brains' (Hill, 2007, 5 November). Arbias (Acquired Brain Injury Service) chief executive Sonia Burton suggested that "[e]ven so-called 'social drinking' could cause permanent brain damage". On the basis of this association, she called for an education programme and screening by health professionals that "should be as routine as a cholesterol check".

Example 2: Single parenthood and childhood risk

This is an example in a policy context where lack of statistical significance was used to draw policy conclusions. In paragraph 616 and footnote 299 of the Law Commission's *Preliminary Paper 47: Family Court Dispute Resolution* (Law Commission, 2002) there is reference to Fergusson (1998).[15] The paper is quoted in the footnote, "Collectively, the findings suggest that single parenthood, in the absence of social or family disadvantage, is not a factor that makes a major contribution to childhood risk".

This statement refers to a statistical finding on the significance of a variable. It is used to suggest that single parenthood may not be a concern as associated childhood problems are not observed when the study controls for certain factors.[16] The interpretation of this finding is a more complex matter. It must recognise the interconnectedness of many determining factors, such that the factors that are controlled for may be closely associated with single parenthood. It is therefore not realistic to simply treat single-parenthood as being independent of these determinants. This is made clear in the published study. Hence Fergusson states:

"The implications of these conclusions are clearly that social programmes and policies that are likely to be most effective in addressing the needs of at-risk families and their children are likely to involve multi-compartmental approaches that have sufficient breadth and flexibility to address the wide range of social, economic, family, individual and related factors that contribute to the development of childhood problems." (Fergusson, 1998, p. 172)

The Law Commission paper uses lack of statistical significance to contend that a factor is not important. The journal article presents its results with great care, but at the policy level it is selectively quoted to provide apparent support for a specific position. In fact, the impact of the factor may well be felt through other, related variables. This can happen due to more complex causal relationships, or because some variables (such as household income) are acting as a proxies for others.

[13] Note that one of Dunn's "modes of argumentation" in policy debate is "reasoning from authority" based on the achieved or ascribed status of the person presenting the information. (Dunn, 2004, p. 395)
[14] See also NZPA and Reuters (2007, 1 November) on obesity and cancer, (Palmer, 2007, 30 November) on job cancer risks, Perry (2008, 18 January) and Medical update (2002). It may not be coincidental that so many examples are health related. The media considers reader interest and this often requires a personal angle (Hamilton, 2004). The recommendations in the articles may shape perceptions, behaviour and policy.
[15] This example is discussed further in (Birks, 2002).
[16] Note the discussion of control variables in Birks (2012b).

Example 3: TV watching and attention problems

A research paper published in *Pediatrics* found a link between children's television watching and attention problems some years later (Landhuis, Poulton, Welch, & Hancox, 2007). On this basis, despite voicing reservations, the researchers recommended restricting children to no more than two hours watching per day. This example is discussed in more detail in section 0 below.

As a general point to draw from these examples, the information that is presented in reports of research contributes to the shaping of opinions and views on alternative issues and policies. At the very least, the news media do not always apply due caution in presenting these results. This is in part a consequence of inadequate specialist training and expertise. There may also be incentives to sensationalise.

The distortions may be widespread. Quite apart from statistical estimation and functional form problems, the information deduced from these findings may be flawed. This raises a fundamental question, how should we present findings to generate more effective interpretation, especially for policy formation?[17] In addition, given the answer to this first question, what additional questions should be asked to more effectively address the requirements for good policy decisions?

3. Consideration of the problems

A paper at a health economics conference in Auckland in November 2005 illustrates a common problem with the use of statistical results for policy purposes. To give fictitious data, imagine a prevalence of 18 percent for some negative health measure for low income groups, compared to 16 percent for high income groups. This indicates a possible relationship between income and the prevalence of this problem. Does this justify policies to improve the income of low income groups? Quite aside from causality and the issue of the costs of the problem and the costs of alleviating the problem, income may be the wrong measure to look at. Changing income may not be effective, and even if it is, the best that could be achieved is a two percent improvement for those on low income, and no gain for those on high income. This might be considered fairly minimal in terms of addressing the problem, even though it is the type of policy inference commonly made.[18]

The following discussion will be based on a simple regression equation as it provides a useful structure for explanation. Consider a basic single equation multiple regression model where Y is a target variable of policy interest and X_1 can be affected by policy:

$$Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_nX_n + u$$

[17] For a discussion of the use of econometrics in law, including reservations and qualifications, see Harkrider (2005).
[18] Stringer's justification for action research is based on the limited value of studies seeking generalised patterns such as these (see also section 3.3 of Birks, 2012b).

Statistical analysis can give results such as a finding based on whether or not X_1 is statistically significant as a determinant of Y.[19] With a superficial assessment, it might be concluded that:

- If it is not significant, there is no relationship, so the variable can be ignored.
- If it is significant, there is a relationship, so there can be a policy recommendation to change X_1.

In other words, there is heavy emphasis on the statistical significance of the estimate of b_1. Such reasoning is flawed. Statistical significance cannot be interpreted as answering all the questions required for deciding on policy intervention. Even if the relationship is one between a policy variable and a target variable, many aspects remain to be considered. For policy, it is important to know the magnitudes of impact, the variability of impact, the costs and possible side-effects of intervention, and, ideally, alternative policy options should also be considered. The first two of these are basic but often overlooked. They are briefly discussed here. A more fundamental issue relating to statistical hypothesis testing is then considered, followed by an issue of option identification from statistical results. The second two points are addressed in section 00.

i) Magnitude of policy impact – if X is changed, how much change is there in Y?

Harkrider gives a good legal example of this point when he distinguishes between "practical significance" and statistical significance:

"Practical significance means that the magnitude of the effect being studied is not de minimis – it is sufficiently important substantively for the court to be concerned. For example, econometric evidence in the context of a publishing merger may reveal that titles published by new entrants are .0001 percent less profitable than titles published by existing entrants. That result may be statistically significant, but not substantively important." (Harkrider, 2005, p. 15)

Similarly for policy, it could be asked whether the relationship between the variables and the available options for change in X_1 result in realistic and effective policy options. In addition to required magnitudes of change and costs of change, the apparent answer could be a result of the representation of the issue, as in the formulation of the equations that are estimated. These problems have been discussed in relation to Path B in Birks (2012b).

ii) Variability of policy impact

Often relatively little attention is given to the overall R-squared for an equation. Sometimes a relationship may be only poorly specified by the equation. A statistically significant explanatory variable may then be a small factor in the overall determination of the value of the dependent variable.

Also, even though the significance of a coefficient is commonly discussed (as with the t-test results), this may not be carried over to consider the possible variability of response to a policy of changing X_1. The estimated coefficient may be significantly different from zero, but

[19] There is scope to debate the criteria for determining whether results are "statistically significant". This discussion takes statistical findings as given, looking at the subsequent stage of interpretation of results for policy purposes.

the true value may still be quite different from the estimated value, and the effect of a change in X_1 on Y may also be variable across individual cases.

3.1 McCloskey and Ziliak on interpretation of statistical significance

McCloskey and Ziliak have repeatedly identified problems in academic papers in the way that policy inferences are drawn from statistical findings. These are described in detail in Ziliak and McCloskey (2008), which includes a quote from Thomas Schelling on the back cover:

"McCloskey and Ziliak have been pushing this very elementary, very correct, very important argument through several articles over several years and for reasons I cannot fathom it is still resisted."

3.1.1 A digression on rhetoric

The reason for the resistance may be found by noting the focus of logic on proof, and rhetoric on persuasion. McCloskey's *The rhetoric of economics* is now in its second edition (McCloskey, 1998). It may have proved its point (the arguments are logical), but it has not persuaded many economists (the rhetoric is weak).

In economic theory, little attention is generally paid to processes and persuasion. This is perhaps inevitable, given the focus on static analysis and assumptions of exogenous preferences and rationality. However, persuasion may be important in terms of both our understanding of economic phenomena and the development of economics as a discipline.

There is other literature that incorporates concepts such as traction, agenda setting, and framing. This shows clearly that it is not enough simply to present a correct argument. One reference that addresses these issues in a political context is Cobb and Ross (1997). The title, *Cultural strategies of agenda denial: Avoidance, attack, and redefinition*, suggests that there are reasons why people with a heavy investment in established positions may be unwilling to change.[20] [21]

---

[20] Consider the discussion on accepting or rejecting a theory in Birks (2012c).

[21] This point is frequently made and illustrated. To quote Simon, "Legitimacy may sometimes be achieved (and even attention secured) by the usual credentials of science…[b]ut many an impeccable report is ignored, and many a report without proper credentials gains a high place on the agenda" (Simon, 1971, p. 50). Note also:

> "Science can destroy religion by ignoring it as well as by disproving its tenets. No one ever demonstrated, so far as I am aware, the nonexistence of Zeus or Thor, but they have few followers now." (Clarke, 1953, p. 21)

And, "[M]ost papers are never read at all. No matter what a paper did to the former literature, if no one else does anything else with it, then it is as if it had never existed at all." (Latour, 1987, p. 40)

Reasoned assessment may prove more complex than this, as indicated by Pope John Paul II:

> "[T]here are in the life of a human being many more truths which are simply believed than truths which are acquired by way of personal verification...This means that the human being—the one who seeks the truth—is also *the one who lives by belief.*" (Pope John Paul II, 1998, para.31)

Political motivation on gender issues is suggested by Margaret Mayman when she said: "Stereotypical notions of femininity have tended to obscure women's violence or alternatively, it has been actively denied by feminists, both first and second-wave, because it complicates the interpretation of women's 'innocence' and non-culpability in intimate violence" (Mayman, 2003). Durie on ethnicity also cautioned that it is, "important that the researcher should not to be captured by current ideologies that manicure a perception of the past to suit a current purpose" (Durie, 1999). This may also help to explain why the figures from one New Zealand study on the economic costs of family violence (Snively, 1994) continue to be used despite the study having serious flaws (Birks, 2000), whereas a PhD thesis identifying gender biases in sentencing (Jeffries, 2001) has had little impact.

In relation to challenges to statistical significance, economists may still be involved in avoidance. Cobb and Ross talk of "identification groups", people who raise an issue in the first place, and "attention groups" who then promote the issues more widely (Cobb & Ross, 1997, p. 7). Without the latter, the issue will not get off the ground.[22]

3.1.2 Interpretation of statistical significance

As Schelling states, McCloskey and Ziliak's points are elementary. Two of their central points are outlined here. They can both be simply illustrated.

On the first point, the impact of sample size on statistical results, consider the gender pay gap:

1. With earnings data for one man and one woman, nothing can be said about the significance of any difference between them as nothing is known about the distribution of male and female earnings. More than one observation for each is required.

2. With a larger sample, assumptions can be made and tests undertaken for a difference in average incomes.

3. At the other extreme, if observations are available for every man and every woman in the population, the average male and female earnings can be calculated precisely. The estimate equals the true population value, the variance of the estimate is therefore zero. A difference as low as 1c is therefore statistically significant.

Hence, a finding that a gender pay gap does or does not exist depends on the sample size. However, this has nothing to do with significance for policy.

To state this point more generally, statistical results depend on the underlying situation and the test that is applied, where the test is sensitive to sample size, N. N is generally not related to the underlying situation. Consequently, policy decisions should not be determined on the basis of statistical significance alone.

There is a second criticism of the interpretation of statistical significance. It involves a problem with the conventional interpretation of null hypothesis significance tests. It has been illustrated through a class of examples that have been presented in several places (such as Cohen, 1994, pp. 998-999; Taleb, 2005, pp. 206-207). The examples have tended to take the following form. There is a test for some illness that picks up say 95 per cent of true cases. Someone gets a positive result. What is the likelihood that the person has the illness? Many assume that the answer is 95 per cent, but they are wrong. While only 5 per cent of those

[22] Cobb and Ross's more detailed formulation (identification groups, the attentive public and attention groups, and the mass public) has parallels with an earlier description by Bryce of:

> "…three classes of person who have to do with the making of public opinion…the men who seriously occupy themselves with public affairs…those who, though comparatively passive, take an interest in politics…[and] all that large residue of the citizens which is indifferent to public affairs, reading little and thinking less about them." (Bryce, 1929, pp. 176-177)

The need for a small pressure group to gain wider support is also stated in, "...this kind of group is wholly dependent on the socialization of conflict...this is a trigger organisation which may start a chain reaction..." (Schattschneider, 1960, pp. 47-48)

without the illness are expected to have positive test results, this could be a large proportion of results if many of those tested are well.

The explanation involves computing tables, and/or equations of conditional probabilities. These present the underlying logic, but have done little to change behaviour. Apparently, logical arguments are not necessarily very persuasive. It may be helpful to illustrate the point in the example by taking an extreme case. This reduces the detail required.

Consider a society that has such advanced technology that all coins are so well made that none of them are ever biased. Someone tosses a coin 6 times. Whatever side came up on the first toss is repeated for the next 5 tosses. The chance of such a result with an unbiased coin is $(½)^5$ or about 3%. An analyst is likely to reason that the chance of this occurring with an unbiased coin is so low that the null hypothesis of unbiasedness would be rejected, concluding that there is a high likelihood that the coin is biased. For this example, **this would be wrong every single time** that the reasoning is followed. It is known that false positives can occur, but, it cannot be determined if a positive result is a false or a true positive (e.g. biased coins in this example) without using additional information.

There is a difference between a statement that the outcome is unlikely if the coin is unbiased and a statement that, given the outcome has been observed, the coin is likely to be biased. The reasoning uses the former to claim the latter. Ziliak and McCloskey refer to this as the "fallacy of the transposed conditional" (Ziliak & McCloskey, 2008, p. 17).[23]

David Hendry also demonstrates the importance of an awareness of the fallacy, "If, say, 1000 possibly lagged, non-linear functions of a set of candidate exogenous variables in a model with many breaks are checked for relevance at a significance level of 0.1%, and all are indeed irrelevant, then on average **one** will be retained adventitiously..." (Hendry, 2009, p. 41)

It also appears in Gorard, Prandy and Roberts (2002, p. 11), who then describe the "prosecutor fallacy", giving an example of a fingerprint or DNA test:

"Prosecutors tend to use the probability of such a match (e.g. 1 in 10,000) as though it were the reverse of a probability of guilt (9,999 in 10,000). However, they have to argue also that there is no human error in the matching process, that the match signifies presence of the suspect at the crime scene, that presence at the scene necessarily entails guilt, and so on.

[23] Consider the following table where A-D are the four possible outcomes of a hypothesis test:

	Null Hypothesis True	Null Hypothesis False
Reject Null Hypothesis	A (false positive)	B
Accept Null Hypothesis	C	D (false negative)

The 5 percent significance level means that 19xP(A|Ho) = P(C|Ho). In other words, there is a 5 percent probability of rejecting the null hypothesis, given that the first **column** applies. It is then often assumed to mean that there is a 5 percent chance of being wrong, when the null hypothesis is rejected. This is relating A to B and is conditional on being in the first **row**. The reject criterion is unlikely to be met if the null hypothesis is true (column 1). If the reject criterion is met (row 1), it is then commonly assumed that the null hypothesis is unlikely to be true. The condition has been transposed from the column to the row. This assumption is wrong because it considers no information about the situation when the null hypothesis is false. It is based solely on probabilities assuming the null hypothesis to be true. Hence the fallacy. Note also that Type I errors (A) and Type II errors (D) are both conditional in their respective columns. When an analyst has a test result the concern is for the row-conditional probability. See also Schmidt (1996) for misinformation from significance tests in a paper written for psychologists.

Above all, they have to demonstrate that the number of potential suspects is so small that a 1 in 10,000 chance is the equivalent of 'beyond reasonable doubt'." (Gorard, et al., 2002, p. 12)

A legal example is also given by Volokh. He describes how a claim that few women make false rape claims can be misinterpreted as meaning that claims of rape are unlikely to be false (Volokh, 2005).[24] In an example based on case law, Robertson points out that it is wrong to use the point that "36 per cent of adult survivors of abuse suffered from PTSD", to assert that the presence of PTSD is evidence of this abuse (Robertson, 2003). As Robertson states, "Its value as evidence cannot be assessed without a figure for similarly placed non-abused people..."

3.2 Interpretation: change X_1 or change b_1?

There is a fundamental point that is often overlooked. Even when the policy options under consideration are restricted to the relationship between X_1 and Y, the outcome depends on both the value of X_1 and the relationship between X_1 and Y. Researchers tend to pick one of these, most commonly a change in X. For example, more education is statistically associated with higher earnings, and so a recommendation aimed at increased earnings could be to provide more education (a change in X). For some variables, such an option is not available. Consider a statistical relationship between gender and earnings. As a general rule, a person's gender cannot be changed, so a policy recommendation might be for a change in the relationship between gender and earnings through regulation or market intervention such as affirmative action on pay and/or employment. These amount to policy changes to alter b_1 rather than X_1. For many policy questions, both X_1 and b_1 may be variable, so both options should be available for consideration.

A common economics textbook illustration of this point can be seen with the treatment of externalities. Consider a market for a product with external costs of production. The standard treatment involves the addition of a "social cost" curve which comprises marginal private cost plus marginal external cost. A tax can be imposed to move the supply curve in recognition of this external cost (Doyle, 2005, p. 148; Stiglitz, 1993, p. 180). Some texts describe such an equilibrium point as the social optimum or the efficient point (Gwartney, Stroup, & Sobel, 2000, p. 128; Mankiw, 2007, p. 206; McTaggart, Findlay, & Parkin, 2003, p. 353; Sloman & Norris, 2008, p. 162). The assumption for this latter claim to be true is that there is a fixed relationship between the marginal cost of the externality and the output of the good.[25] An alternative, if the option is available, would be to target the externality directly. This would acknowledge the possibility of varying the external cost at any given level of output, which is analogous to a variation of b_1 (Mankiw, 2007, p. 217; McTaggart, et al., 2003, p. 352; Stiglitz, 1993, p. 589). Even if an optimal reduction in external costs is achieved, the outcome may not be optimal overall, given that losers are not compensated.

The approach of targeting the externality directly can be taken further. In the supply and demand diagram, the externality is measured not in terms of the volume, but in terms of the value of the externality associated with an additional unit of output. Policies that target the externality directly and vary the volume of the externality assume a fixed value (cost) per unit of externality. Instead, it may be possible to alter this value. Coase (1960) gives the example where people who are affected by an externality could move away so as to avoid the effects,

[24] Douglas Adams, in *The hitchhiker's guide to the galaxy* used the same flawed reasoning in his "proof" of the non-existence of God (Adams, Moore, Jones, Jones, & Moore, 1981, p. 60).
[25] Even that is not enough as there is no compensation paid to the losers.

thereby reducing the costs of the externality. In other words, a reduction in an external cost can be achieved through altering output, altering the production process, or altering the behaviour of those affected by the externality. In general, there may be many options available to alter the relationship between a variable, X_1 and another variable, Y.

There is an additional stage that could be added to Coase's assessment. His starting point is where the activities are in place. The courts then allocate property rights, after which the parties can then negotiate a mutually beneficial agreement.[26] As this discussion illustrates, an issue can be considered in increasing detail by allowing changes in additional variables. Instead of starting with activities in place as in Coase's farming example, consider a set of rules, or possible rules, on allocation of property rights and people considering strategies on location of an activity. The rules open up the possibility of game playing, or one party threatening or actually imposing costs on another. Coase writes of a cattle raiser expanding his activity when he would have to compensate a neighbouring crop farmer for any damage caused. He rightly suggests that this would not result in the neighbour expanding production to benefit from the compensation (assuming the crop farmer is a price taker). However, consider two cattle raisers as neighbours. If a crop farmer where to consider buying the land from one of the cattle raisers, this would impose costs on the remaining cattle raiser not directly involved in the purchase transaction. Consequently, existing rules can be used strategically (just as they can in sport, as with forcing or conceding penalties). In other words, economic analysis can become more complex, but also possibly, more realistic, through increased relaxation of ceteris paribus conditions. The role of law in Coase's example should be noted. A further step could relate to the determination of the rules. Beyond this, there are additional aspects to consider, including process and development over time with path-dependent changes in institutions and expectations, phenomena discussed further below. This illustrates the limited extent of the explanation contained in the initial supply and demand depiction of the effects of externalities. It also indicates that estimated models are bounded in their assumptions as to what can be changed, thereby limiting the range of policy options considered.

4. There are standard policy questions not covered by the econometrics

The examples in subsection 2.2 above indicate that policy conclusions may be drawn or behaviour changes suggested on the basis of statistically significant relationships between variables. This can lead to poor decisions as there are additional aspects that must be considered for a proper assessment. To illustrate, Example 3 is discussed here in more detail. While laws are unlikely to be drafted on the basis of this particular analysis, it illustrates the sort of thinking that may be used to justify policy interventions, and in some instances these involve legislative measures or decisions.

4.1.1 An example – TV watching and attention problems

In September 2007 there was media coverage of a study on childhood television viewing and attention problems (Landhuis, et al., 2007). It serves as a useful illustration of the potential problems that can arise if policy recommendations are made on statistical association alone.

[26] Coase recognised the significance of transaction costs and suggested that this might limit the negotiation. Consequently he considered it important for efficient activity that the courts make the right allocation in the first place. This point has often been missed, as he indicated in his Nobel Prize lecture (Coase, 1991).

One report in *The Press* (Hann, 2007) included the sort of information contained in a media release by the researchers (Hancox, 2007), together with further information from one of the researchers and a personal angle from a Christchurch mother. The main finding of the study was that "children who watched at least two hours of television a day were more likely to have short attention spans, and have difficulty concentrating on tasks".

Hann quoted Hancox, "Although teachers and parents have been concerned that television may be shortening the attention span of children, this is the first time that watching television has been linked to attention problems in adolescence". To put this in other words, people had suspected a causal relationship, but until now there had not even been any observed statistical relationship. Readers might be excused for thinking that a causal relationship had been found, although that is not what was said. The published study says, "As with any observational study, we were unable to prove that childhood television causes attention problems in adolescence". It also presents possible alternative explanations for the observed relationship, but reasonably suggests that there may be some causal link, and that some limiting of viewing may be prudent for heavy viewers. The study includes a recommendation, "It, therefore, seems prudent to observe the recommendation of the American Academy of Pediatrics to limit children's television viewing to a maximum of 2 hours per day" (Landhuis, et al., 2007, p. 536).[27]

There are several additional questions that could have been asked. On the statistical findings, it was found that childhood television viewing was associated with adolescent attention problems with a standardised regression coefficient of 0.12 and p of 0.0001. When adolescent television viewing was added to the equation, the coefficient fell to 0.06 and p rose to 0.0515, with results for adolescent television viewing being 0.16 and $p < 0.0001$ (Landhuis, et al., 2007, p. 534). If television viewing hours when young are correlated with viewing hours when older as this suggests, care should be taken in concluding that younger viewing causes problems later. It may not be possible to separately identify the effects of earlier viewing as suggested.

Questions could also be asked on the interpretation of the results in terms of recommended actions. Should the matter be a concern? What are "attention problems"? Are they really problems, and how serious are they? How many children have these problems, and what is the actual difference associated with extra hours of television viewing? What magnitude of benefits might be expected from reducing younger children's viewing? If viewing is reduced, what would the affected children be doing otherwise (do the average results apply to all)? If there are benefits from improved attention, what other ways might there be to bring about this change? Might any of these alternatives be easier to achieve or more effective? Are there benefits from television watching that might counterbalance the costs? It would appear that there are a number of additional questions that should be considered before deciding on policy responses.

4.1.2 Policy questions

As indicated by the example in 0, not only are there statistical issues to consider when drawing policy conclusions, but there are also a number of specific policy questions to ask. An

[27] Figure 1 of the study (Landhuis, et al., 2007, p. 535) indicated fewer attention problems among those watching for 1-2 hours per day compared to those watching less than 1 hour per day, which suggests first that the relationship may be non-linear, and second that increased viewing may be beneficial for low watchers (if the relationship is causal).

"ideal" economic approach to policy decisions (assuming perfect information and zero costs of analysis) involves identifying all the available policy options, determining their effects, valuing them to calculate costs and benefits, and then applying a decision rule to select the best option. A statistically significant relationship in a regression equation tells nothing about alternative options. Nor does it address the question of costs and benefits. All it demonstrates is that it **may** be possible to alter the value of Y by changing the value of X_1. Outstanding questions[28] include:

a. Can you change X?
b. How can X be changed?
c. At what cost?
d. How much control is there over this change (how precise are the changes in X)?
e. How variable are the effects on Y?
f. What lags are there?
g. What is the **value** of the resulting change in Y (what is the benefit, does it outweigh the cost)?[29]
h. Are there any distributional effects (gainers, losers)?
i. Are there any side-effects?
j. Are there other policy options available (including changing the relationship)?

In summary, it is important to consider the ability to change the target variable, and the costs and benefits of such a change, along with those of alternative policy options to address the same problem. This information is not provided through a t-test.

While this point may be readily understood, there is an additional dimension to consider. It illustrates a group having its own perspectives, techniques and conventions. The above questions do not fit many of the conventions and standard dimensions for critical assessment of econometric analyses. The same could apply to other disciplines and to professions. Each may have its own perspectives, techniques and conventions, and these may not be regularly re-evaluated. Group cultures and group beliefs that may not match those of other groups, and which may not stand up to careful scrutiny, are to be expected within disciplines, professions, and political and social groups. Collier presents a telling comment which may demonstrate a key the institutional barrier to broader criticism:

"Particular Institutions and false beliefs about them may be in a *functional* relation, such that the false beliefs serve to preserve the institutions that they are about...to propound the truth is not just to criticise, but to undermine the institution." (Collier, 1994, p. 172)

5. Conclusions

This paper has shown that there is a large rhetorical component in the application of results from econometric models to real world issues.

[28] While these questions are raised in relation to econometric studies, they apply to all policy options where one (policy) variable is altered so as to bring about a change in another (target) variable.
[29] This is one of the key concerns raised in Ziliak and McCloskey (2008). Note that effects on Y, and the policy significance of the resulting Y, may not always be continuous. This can cause particular problems, especially where variability of outcome assumes particular significance. Consider the difference, for a non-swimmer standing in a tank of water, between a situation where the water level is exactly at shoulder height and one where the water level is, on average, at shoulder height. Econometric estimation gives average impacts only.

At the policy stage, type C errors may arise for those who go straight from quantitative analysis to policy recommendations. This is due in part to problems in the nature of statistical tests and the interpretation of the results. The criterion commonly used in statistical tests has been questioned, especially in terms of misinterpretation of results due to the fallacy of the transposed conditional. A bigger difficulty is the limited value of econometric results for addressing many of the questions which economists might wish to ask when considering choice of policy options. The results from regression models provide estimates of specified relationships between the chosen variables. This provides part of the information required for a subset of policy options. It is part of the information because it does not consider aspects such as the changes that can be achieved, the cost and value of those changes, and alternative policy options. It is a subset of policy options because the focus is on changing variables, not relationships, to achieve the outcomes, and the search is for common determinants that might be widely effective, while policies more closely focused on individual circumstances are not considered. Economic analysis is commonly tightly structured within a theoretical framework. While that can be very helpful, it means that certain aspects are excluded or assumed away.

While many analysts may present their findings carefully, there is also the danger that others, including the media and the public, will draw false inferences from the results. They could also be misused in a political environment, as suggested by Dunn's argumentation by method (See section 2 of Birks, 2012a). Consideration of these factors and attention to the additional issues could increase the value of econometric analyses by placing them in a wider analytical context. Recognitions of the issues also results in an additional range of research questions, types of data to consider, and associated research methods, that economists could profitably consider.

References

Adams, D., Moore, S., Jones, S., Jones, P., & Moore, R. (1981). *The hitch-hiker's guide to the galaxy*: Music for Pleasure.

Allen, T. H. (1978). *New methods in social science research: policy sciences and futures research*. New York: Praeger.

Birks, S. (2000). Comments on the economic cost of family violence. In S. Birks & G. Buurman (Eds.), *Research for policy: informing or misleading* (pp. 17-25). Palmerston North, New Zealand: Centre for Public Policy Evaluation, Massey University.

Birks, S. (2002). Submission to the Law Commission on Preliminary Paper 47: Family Court Dispute Resolution. Retrieved 7 January, 2008, from http://econ.massey.ac.nz/cppe/issues/LCPP47sub.htm

Birks, S. (2007). To KISS or not to KISS. *Asymmetric Information,* (28, March), 11-12. Retrieved from http://www.nzae.org.nz/news/newsletters/AINo28-March2007.pdf

Birks, S. (2008). The Media and an Informed Electorate - An Economist's Perspective. *Power & Place: Refereed Proceedings of the Australian & New Zealand Communication Association Conference, Wellington, July 9-11*. Retrieved from http://www.massey.ac.nz/?aaac11238s

Birks, S. (2012a). Rethinking economics: Downs with traction. *Bristol Business School Economics Papers Series, 12*(14). Retrieved from http://www2.uwe.ac.uk/faculties/BBS/BUS/Research/economics2012/1214.pdf

Birks, S. (2012b). Rethinking economics: Logical gaps - theory to empirical. *Bristol Business School Economics Papers Series, 12*(16). Retrieved from http://www2.uwe.ac.uk/faculties/BBS/BUS/Research/economics2012/1216.pdf

Birks, S. (2012c). Rethinking economics: theory as rhetoric. *Bristol Business School Economics Papers Series, 12*(13). Retrieved from http://www2.uwe.ac.uk/faculties/BBS/BUS/Research/economics2012/1213.pdf

Bryce, J. (1929). *Modern democracies* (Vol. 1). London: Macmillan.

Clarke, A. C. (1953). *Childhood's end*. New York: Harcourt, Brace and World.

Coase, R. H. (1960). The Problem of Social Cost. *Journal of Law and Economics, 3*, 1-44.

Coase, R. H. (1991). The institutional structure of production - Nobel Prize lecture. Retrieved 3 March 2012, from http://nobelprize.org/nobel_prizes/economics/laureates/1991/coase-lecture.html

Cobb, R. W., & Ross, M. H. (Eds.). (1997). *Cultural strategies of agenda denial: Avoidance, attack, and redefinition*. Lawrence: University Press of Kansas.

Cohen, J. (1994). The Earth Is Round (p < .05). *American Psychologist, 49*(12), 997-1003.

Collier, A. (1994). *Critical realism: an introduction to Roy Bhaskar's philosophy*. London: Verso.

Desai, M. (1981). *Testing monetarism*. London: Pinter.

Doyle, E. (2005). *The economic system*. Chichester: Wiley.

Dunn, W. N. (2004). *Public policy analysis: an introduction* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Durie, E. T. (1999). Ethics and values. *Indigenous peoples and the law,* (November). Retrieved from http://www.kennett.co.nz/law/indigenous/1999/39.html

Fergusson, D. M. (1998). The Christchurch Health and Development Study: an overview and some key findings. *Social Policy Journal of New Zealand,* (10), 154-176.

Gorard, S., Prandy, K., & Roberts, K. (2002). An introduction to the simple role of numbers in social science research (ESRC Occasional Paper Series, Paper 53) Available from http://www.tlrp.org/rcbn/capacity/Papers/roleofnumbers.pdf

Gwartney, J. D., Stroup, R. L., & Sobel, R. S. (2000). *Economics: Private and public choice* (9 ed.). Fort Worth: Dryden.

Hamilton, J. T. (2004). *All the news that's fit to sell: how the market transforms information into news*. Princeton, N.J.: Princeton University Press.

Hancox, R. J. (2007). Childhood TV viewing linked to teenage attention problems, Media release, 4 September, Dunedin School of Medicine, Department of Preventive and Social Medicine. Retrieved from http://dunedinstudy.otago.ac.nz/Publications%20and%20Documents/Summary%20and%20Media%20Sheets/TV%20attention%20FINAL.pdf

Hann, A. (2007, 5 September). TV linked to teen attention problems. *The Press*. Retrieved from http://www.stuff.co.nz/4190202a7144.html

Hanushek, E. A. (1997). Outcomes, Incentives, and Beliefs: Reflections on Analysis of the Economics of Schools. *Educational Evaluation and Policy Analysis, 19*(4), 301-308.

Harkrider, J. (Ed.). (2005). *Econometrics: Legal, Practical, and Technical Issues*: American Bar Association.

Hendry, D. F. (2009). The Methodology of Empirical Econometric Modelling: Applied Econometrics Through the Looking-Glass. In T. C. Mills & K. Patterson (Eds.), *Palgrave Handbook of Econometrics* (Vol. 2: Applied Econometrics, Chapter 1, pp. 3-67). Basingstoke: Palgrave Macmillan.

Hill, R. (2007, 5 November). Binge drinking 'damages brains'. *The Dominion Post*. Retrieved from http://www.stuff.co.nz/4261574a20475.html

Jeffries, S. (2001). *Gender Judgments: An Investigation of Gender Differentiation in Sentencing and Remand in New Zealand*. Christchurch: University of Canterbury.

Landhuis, C. E., Poulton, R., Welch, D., & Hancox, R. J. (2007). Does Childhood Television Viewing Lead to Attention Problems in Adolescence? Results From a Prospective Longitudinal Study. *Pediatrics, 120*(3), 532-537.

Latour, B. (1987). *Science in action: how to follow scientists and engineers through society*. Cambridge, Mass.: Harvard University Press.

Law Commission. (2002). Preliminary Paper 47: Family Court Dispute Resolution Available from http://www.lawcom.govt.nz/UploadFiles/Publications/Publication_87_207_PP47.pdf

Mankiw, N. G. (2007). *Essentials of Economics* (4 ed.). Mason: Thomson.

Maré, D. C., & Timmins, J. (2007). Geographic Concentration and Firm Productivity Available from http://www.med.govt.nz/upload/51016/07-01.pdf

Mayman, M. (2003). Raised voices: ending intimate violence: Lecture two - heroes of their own lives: women and children empowered (2 December). Retrieved from http://satrs.standrews.org.nz/mmiv2of2.doc

McCloskey, D. N. (1998). *The rhetoric of economics* (2nd ed.). Madison, Wis.: University of Wisconsin Press.

McTaggart, D., Findlay, C., & Parkin, M. (2003). *Economics* (4 ed.). Frenchs Forest: Pearson Education.
Medical update. (2002, July). Smoke screen. *Reader's Digest (New Zealand Edition), 161,* 19.

NZPA and Reuters. (2007, 1 November). Obesity, inactivity 'strongly linked to cancer'. *Stuff,* (1 November). Retrieved from http://www.stuff.co.nz/4257962a20475.html

Palmer, R. (2007, 30 November). Cancer study uncovers job risks. *The Dominion Post*. Retrieved from http://www.stuff.co.nz/4297221a19716.html

Perry, M. (2008, 18 January). Solariums found to raise skin cancer risk in young. *New Zealand Herald*. Retrieved from http://www.nzherald.co.nz/section/story.cfm?c_id=204&objectid=10487507

Pope John Paul II. (1998). Encyclical letter fides et ratio of the Supreme Pontiff John Paul II to the Bishops of the Catholic Church on the relationship between faith and reason (September 14). Retrieved from http://www.vatican.va/holy_father/john_paul_ii/encyclicals/documents/hf_jp-ii_enc_15101998_fides-et-ratio_en.html

Robertson, B. (2003). Evidence. *New Zealand Law Journal,* (July), 252.

Schattschneider, E. E. (1960). *The semisovereign people; a realist's view of democracy in America*. New York: Holt, Rinehart and Winston.

Schmidt, F. L. (1996). Statistical Significance Testing and Cumulative Knowledge in Psychology: Implications for Training of Researchers. *Psychological Methods, 1*(2), 115-129.

Simon, H. A. (1971). Designing organisations for an information-rich world. In M. Greenberger (Ed.), *Computers, communications, and the public interest* (pp. 38-52). Baltimore: The Johns Hopkins Press.

Sloman, J., & Norris, K. (2008). *Principles of economics* (2nd ed.). Frenchs Forest, N.S.W.: Pearson Education Australia.

Snively, S. L. (1994). *The New Zealand economic cost of family violence*. Wellington, N.Z.: Family Violence Unit, Dept. of Social Welfare.

Spanos, A. (2008). Review of Stephen T. Ziliak and Deirdre N. McCloskey's The cult of statistical significance: how the standard error costs us jobs, justice, and lives. *Erasmus Journal for Philosophy and Economics, 1*(1), 154-164.

Stiglitz, J. E. (1993). *Economics*. New York: Norton.

Swann, G. M. P. (2006). *Putting econometrics in its place: a new direction in applied economics*. Cheltenham, UK: Edward Elgar.

Taleb, N. N. (2005). *Fooled by randomness: the hidden role of chance in life and in the markets* (2nd ed.). New York: Random House Trade Paperbacks.

Thurow, L. C. (1983). *Dangerous currents: the state of economics*. Oxford: Oxford University Press.

Volokh, E. (2005, 15 April). Research on false rape reports. Retrieved 15 December, 2008, from http://volokh.com/posts/1113597035.shtml

Wolf, A. (2007). Misleading statistical studies. *Policy Quarterly, 3*(4), 22-29.

Ziliak, S. T., & McCloskey, D. N. (2004). Size matters: the standard error of regressions in the American Economic Review. *Journal of Socio-Economics, 33*(5), 527-546.

Ziliak, S. T., & McCloskey, D. N. (2008). *The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives*. Ann Arbor, MI: University of Michigan Press.

Author contact: K.S.Birks@massey.ac.nz

SUGGESTED CITATION:
Stuart Birks, "Rethinking economics: Logical gaps – empirical to the real world", *real-world economics review*, issue no. 62, 15 December 2012, pp. 51-67, http://www.paecon.net/PAEReview/issue62/Birks62.pdf

You may post and read comments on this paper at http://rwer.wordpress.com/2012/12/14/rwer-issue-62/

‘When the facts change, I change my mind…’

Some developments in the economic scientific community and the situation in Germany*

Arne Heise [Hamburg University, Germany]

1. Introduction

According to Thomas S. KUHN (1962), scientific progress does not advance straightforwardly but is marked again and again by key breaking points, which can be referred to as scientific revolutions. The trigger for these breaking points in the cognitive process, which is associated with a change in the basic explanatory pattern or paradigm[1], is the deviation of the model predictions from the empirically measurable reality. In the natural sciences, such crisis-laden developments are often due to new and improved measurements based on new technologies. In the humanities and social sciences, it is sudden socio-economic developments that (seem to) bust down the framework of the paradigm.

A “crisis” of this sort, however, is a necessary but insufficient condition for a scientific revolution.[2] The existence of an alternative explanation – a new scientific paradigm – is a further condition that must be met. In this sense, the “Keynesian revolution” after the Great Depression of the 1930s can be interpreted as a paradigm shift from the neoclassical, partial analytical theory of marginal utility to total analytical macroeconomics, just as the return of the microeconomic-based general equilibrium theory in the form of new classical macroeconomics (NCM) can be understood as a “counterrevolution” (or as it is sometimes called, a “rational expectations revolution”) after the stagflation of the 1970s that was so empirically fatal for Keynesianism.

On a politically pragmatic level, the global financial crisis of 2008-2009, which sparked the world's worst depression since the 1930s, swept away the state intervention scepticism that derived from the market euphoria of NCM as abruptly as it did the certainty of academic economists that they had actually found in NCM an analytical instrument that was compatible with reality. For example, Olivier Blanchard (2008), professor at the elite US university MIT

* Many thanks go to Derek Kruse for the translation of a first version of this article from German into English.

[1] Thomas KUHN’s notion of a ‘paradigm’ carries many similarities with Imre LAKATOS’ ‘research programmes’(see LAKATOS 1978) and they are often used interchangeably. However, KUHN’s approach is more conducive to understanding radical changes, while LAKATOS’ approach sheds more light on the resilience of (dominating) research programmes (or paradigms). I will refer to each of the concepts in its due context.

[2] A ‘referee’ maintains that “Kuhn did not argue that paradigms are undermined by predictive failure per se. He argues e.g. Chp 6 & 7, that science involves puzzle solving and that normal science standardises the rules for puzzle solving but that novelty and anomalies accrue, which the current theories within the rules of normal science fail to account for - this includes predictive failure but is not reducible to predictive failure only - it involves new areas of insights, new observation possibility, new social contexts (social pressure (p. 69) - a crisis of normal science rather than a crisis of reality per se is what Kuhn emphasises”. This appears to be either a misunderstanding of my remarks or a misinterpretation of Kuhn. Kuhn is explicit about the necessary (though still not sufficient!) ingredients of a scientific revolution: “Discovery commences with the awareness of anomaly, i.e., with the recognition that nature has somehow violated the paradigm-induced expectations that govern normal science. It then continues with a more or less extended exploration of the area of anomaly. And it closes only when the paradigm theory has been adjusted so that the anomalous has become the expected. Assimilating a new sort of fact demands a more than additive adjustment of theory, and until that adjustment is completed—until the scientist has learned to see nature in a different way—the new fact is not quite a scientific fact at all” (KUHN 1962: 52f.).

and chief economist of the IMF, affirmed in 2008 that macroeconomics was in good condition because after the long debates during the "counterrevolution" in the 1970s, a broader consensus (or what KUHN would describe as a paradigm) had taken hold in economics: the so-called D(ynamic) S(tochastic) G(eneral) E(quilibrium) models, which were, in particular, also seen as empirically saturated once they allow some rigidities in their assumptions.[3]

Barely two years later (BLANCHARD/DELL'ARICCIA/MAURO 2010) – after the global financial crisis – he had to admit that the stability of the economic interactions in the DSGE models and economic policy's single-minded focus on price stability (combined with the simultaneous failure of fiscal policy intervention) had had too much of a "lulling" effect and that economics required a reorientation. The Institute for New Economic Thinking (INET), which was founded in the fall of 2009 by a multimillion dollar donation by financial guru George Soros, and whose Advisory Board[4] consists of a number of well-known representatives of the DSGE mainstream, from George AKERLOF and Joseph STIGLITZ to Kenneth ROGOFF and Jeffrey SACHS, supports these reorientation efforts and recognises "problems and inadequacies within our current economic system and the modes of thought used to comprehend recent and past catastrophic developments in the world economy. The Institute embraces the professional responsibility to think beyond these inadequate methods and models and will support the emergence of new paradigms in the understanding of economic processes." (INET n.d.)

So is economics about to experience a new scientific revolution? In addition to the "crisis" as a trigger, alternative approaches that could replace the dominant mainstream paradigm are also necessary. In the following discussion, an assessment of heterodox developments as a basis for such a paradigm shift (Section 2) will be provided. Based on developments within mainstream thinking, it will be investigated whether the ground is fertile for an effective reorientation (Section 3). Finally, the design of the German academic economics market will be briefly discussed in order to appraise the specific German conditions for a paradigm shift (Section 4).

2. The neoclassical benchmark model and recent developments in the global community?

"Normal" economic science[5] is undoubtedly represented by the neoclassical paradigm of a market or exchange economy. It consists of various schools within the exchange-theoretical

[3] Such rigidities then make New Keynesian macroeconomics (NKM) out of new classical macroeconomics (NCM), but paradigmatically both versions of the DSGE approach make up the neoclassical mainstream benchmark model, as BLANCHARD (2008:. 5ff) maintains: "The new tools developed by the new classicals came to dominate. The facts emphasised by the new-Keynesians forced imperfections back into the benchmark model. A largely common vision has emerged, …: It starts from a general equilibrium structure, in which individuals maximise the expected present value of utility, firms maximise their value, and markets clear. Then, it introduces a twist, be it an imperfection or the closing of a particular set of markets, and works out the general equilibrium implications. It then performs a numerical simulation, based on calibration, showing that the model performs well. It ends with a welfare assessment." This "fraternity" between NKM and NCM leaves post-Keynesians doubtful as to whether NKM should actually refer to itself as "Keynesian"; see ROTHEIM (1998), DAVIDSON (1994).

[4] Indeed, of the current 31 members of the Advisory Board, only two - Duncan FOLEY und Paul DAVIDSON – had vigorously advocated for a "New Economic Thinking" before the world financial crisis.

[5] Occasionally, social science is presented as a pre-paradigmatic science in which no consensus on an axiomatic core has yet emerged. This is certainly not the case for economics, as K.W. ROTHSCHILD (2005: 440) corroborated: "More than in any other social science, we have in economics a sharp division between a ruling mainstream and a multitude of 'heterodox' theories which have in common that they diverge in one way or another from the neoclassical mainstream."

axiomatics – NCM or NKM – and is challenged by alternative paradigms – e.g. post-Keynesianism or neo-Ricardianism. Protests by French university students provide evidence that dissatisfaction with the self-referentiality and compartmentalisation ("autism") of the highly formalised neoclassical paradigm has transformed into a worldwide attack on neoclassical orthodoxy. Many "critical" economists have joined this movement (see FULLBROOK 2003), which received further fuel from the developments of the "real global financial crisis". In the following, the hallmarks of the "neoclassical benchmark model" will be explicated and the burgeoning critiques of the model will be presented. This is followed by a consideration of possible alternatives, which is important because science does not permit any "theory vacuums". If there were no available alternatives that could provide consistent substitute interpretations in addition to mere theory criticism, the dominance of neoclassical economics would remain safe for now[6].

The objective is not to build a straw man which can then be arbitrarily knocked around but rather to describe the "neoclassical benchmark model" – the exemplar of normal science – as accurately as possible. Only in this manner can we prevent criticism from getting lost in the fog of unclear concepts. And I would like to try to examine this description with the help of the LAKATOSIAN idea of an axiomatic core, the assumptions of the "protective belt" and the resultant postulates. The exchange theoretical core of neoclassical economics can be summarised in three axioms:

(1) The gross substitution axiom,
(2) the rationality axiom, and
(3) the ergodicity axiom.

The gross substitution axiom states that, in principle, all goods (and services) are mutually interchangeable. This ensures that the relative price can function as an allocation tool and guarantees the existence of market equilibria (see REIJNIERSE/VAN GELLEKOM/POTTERS 2002). The rationality axiom states that all economic activity is goal-oriented and consistent – a prerequisite for the benefit-maximising *homo economicus*. Finally, the ergodicity axiom allows for the idea of the stochastic-deterministic development of all variables that are important for economic decisions and necessary for the formation of rational expectations (see DAVIDSON 1984) – rational expectations being a stochastic extension of the overly simplistic assumption of perfect foresight. Economic agents are only able to do what neoclassical economics demands of them if these axioms are valid: optimal consumption, investment, labour supply and labour demand plans have all been established. Furthermore, portfolio decisions and numerous other decisions must also be optimised. In short, every circumstance must be optimised.

If certain assumptions from the "protective belt" are added to these core axioms – typically assumptions about atomistic market competition, infinite adjustment speeds, complete price flexibility and the absence of transaction and information costs – then the following postulates can be derived:

(1) the postulate of a general market equilibrium in either its classical (Say's Law) or neo-classical garb (Walras's Law);

[6] Actually, this appears to be the approach of some mainstream economists: simply to deny any valuable alternative: see SCHULTZ (2012). However, my approach is not the extreme opposite – i.e. to deny mainstream (neoclassical) economics its status as scientific theory (as has been done by LEE (2012) or to reduce it to 'pseudo-knowledge' (as has been done by LATSIS 1972) – but normatively to deny a monistic understanding of economics and positivistically to inquire into the likelihood of a paradigmatic shift (or, for that matter, paradigmatic opening).

(2) (the monetary neutrality postulate (classical quantity theory) with its implicit dichotomy of real and monetary economic spheres;
(3) the policy ineffectiveness postulate (Ricardo-Barro equivalence theorem); and
(4) the welfare and harmony postulate. The critics concentrate on these four extremely strong implications of the neoclassical benchmark model, but first we should highlight their importance again.

The particular strength of the neoclassical benchmark model lies in its deductive rigor and coherence. However, this does not mean anything other than that the aforementioned postulates represent more than just doctrines that can either be accepted or (often intuitively) simply rejected. Rather, when the axioms (core) and basic assumptions (the "protective belt") are ultimately accepted, transcendental logic leads to several logically indisputable results.[7] First, there is one "best of all worlds".[8] Perfect markets always reproduce optimal results, even if they are hit by so-called "exogenous shocks". These results show that the existing supply will always find its corresponding demand and that economic agents are free from monetary or nominal illusions; therefore, neither monetary nor fiscal policy interventions can have any positive influence whatsoever on economic agents, who are oriented toward real variables (real income, relative exchange values, real balance, etc.). Ultimately, this interpretation of reality culminates in the conclusion that this "best of all worlds" not only maximises individual economic agents' welfare under the restriction of finite resources, but also does not even require them to engage in any trite behaviour such as benevolent altruism. Instead, individual, self-interested, "rational" behaviour will lead to this result. Adam SMITH's famous "invisible hand" guarantees that the common good does not have to suffer under the (supposedly realistically described) behaviour of self-interested individuals.

I have no intention of suggesting that it requires a denial of reality to accept the predictions of this "Panglossian" model.[9] All too easily, the assumptions of the "protective belt" – especially the assumption of atomistic competition and full price flexibility – can be altered with reference to disruptive institutions and organisations, restrictive (e.g. in the labour market) or missing rules (e.g. for competition) in such a manner that reality is restored into the explanatory framework of the model. It seems more significant to me that this Panglossian world provides an incredible intellectual stimulus as a reference scale and, more particularly, it strongly advocates some exceedingly clear economic policy implications: of course, the basic assumptions are rarely fulfilled in the real world, but it is imperative to approximate them as closely as possible through market-creating, market-enhancing and market-liberalising measures.

Whenever this is impossible or undesired, for example due to social or sociopolitical reasons, the consequences – namely, declining welfare and market imbalances – must be accepted and legitimised. The "protective belt" creates a buffer against reality but also protects the

[7] To my knowledge, there has thus far been only one successful strike against the deductive rigor of the neoclassical benchmark model: the refutation of the price-driven exchange equilibrium during the so-called Cambridge capital controversy. As fundamental as this criticism was, it failed to yield any consequences. The neoclassical side (U.S. Cambridge) had to admit that the equilibrium postulate could logically be properly sustained only under further restrictive assumptions – the "single capital good world" – but argued that, on the other hand, the anomaly exposed by the classical proponents (UK Cambridge) was empirically insignificant and therefore did not warrant further consideration. This continues to be the *modus operandi* today. (see HODGSON 1999: 46ff.; COHEN/HARCOURT 2003)
[8] Reference is made here to VOLTAIRE's critique of the optimistic world view of Gottfried Wilhelm LEIBNIZ's religious philosophy; see VOLTAIRE (1759/1971).
[9] Dr. PANGLOSS is Candide's instructor in VOLTAIRE's *Candide: or, The Optimist*; see VOLTAIRE (1759/1971).

axiomatic core for it is all too easily forgotten that on the one hand, the postulates are ultimately grounded in the axioms, and on the other, that the retained image of actors rationally optimising their actions is a synthetic one with no analytical epistemological value. In other words, these axioms were established *a priori*; they did not arise *a posteriori* from the analysis of economic events.[10]

The most well-known criticism takes aim at the basic assumptions of the "protective belt". The call for "microfoundations" has led to the prominence of numerous theoretical approaches which not only introduce ad hoc deviations from the assumption of full price flexibility, for instance, but which also derive these deviations from the rational behaviour of economic agents. It would not be wrong to see this as the common link among all the models that are labelled or operate under the name "neo-Keynesianism".[11] The Keynesian element is generally limited to describing persistent market imbalances, especially in the labour market in the form of unemployment.[12] Ultimately, this means either that there are contradictions between the axioms of the "core" and the basic assumptions of the "protective belt" or that there is room for interpretation within the basic assumptions and thus deductive divergences must exist. In fact, the rationality axiom can enter into conflict with the price flexibility assumptions if a collective (political) rationality (rational choice) is justifiable beyond the individual (economic) rationality. Institutions and regulations which increase the benefits of the collective (to the detriment of the community of individuals) by limiting price flexibility can thus be explained (see OLSON 1965). In this case, the attractiveness of the neoclassical benchmark model remains justified, as it continues to explain how such incentives must be designed in order to stop the welfare-impairing rent seeking of the collective (cartels, trade unions, etc.) (see OLSON 1982).

The situation looks a little different when the assumption of complete information is put into practical effect, such that all information may indeed be present but not equally available to all economic agents and there are rational reasons to exploit these information asymmetries. Joseph STIGLITZ's information economy is certainly the most well-known approach that not only develops the consequences of information asymmetry – i.e. market failure due to moral hazard and adverse selection, resulting in long-lasting supply disequilibria or massive temporary aberrations, as recently experienced – but increasingly emphasises that such market failure is not an occasional anomaly of otherwise optimally functioning markets but rather an extremely widespread and therefore universal, nearly systematic phenomenon of market interaction. Information asymmetries acquire particular significance in futures markets such as the monetary, credit and financial markets. Labour markets are also affected to a great extent. None of the previously mentioned postulates hold up under such conditions. The Panglossian world is thus suddenly rendered completely unrelated to a satisfactory interpretation of reality, although the core axioms remain untouched. STIGLITZ sees in this a new economic paradigm (see STIGLITZ 2002), because the concept of the "perfect market" is consistently replaced by the concept of the "failing market". In accordance with my proposed distinction between different paradigms on the one hand and different schools within a paradigm on the other hand, the latter would probably apply (see also DAVIDSON 2012: 60). In any case, the "failing market" implies broad regulatory and political interventions and thereby

[10] Although axioms are distinguished by their normativity, economists have always tried to portray exchange as a fundamental anthropological fact of human activity; see e.g. SMITH (1776/1977: 16). For criticism, see e.g. HEINSOHN (1983) and HEISE (1990).
[11] See GORDON (1990); MANKIW/ROMER (1991).
[12] Especially in German-speaking countries, this occasionally led to discussions of "critical neoclassicists"; see e.g. SCHNEIDER (1988).

justifies a "strong" and present state, which could not be further removed from the "neoclassical benchmark model".

The criticism aimed at the axioms of the paradigmatic core has a broader scope. On the one hand, the rationality axiom of the neoclassical benchmark model is rejected by the experimental, evolutionary and institutional complexity economics[13]; on the other hand, the ergodicity and the gross substitution axioms are regarded as unacceptable by post-Keynesianism. The former criticism is aimed at the allocative decision logic of economic agents – and is therefore microeconomically oriented – while the latter emphasises primarily the macroeconomic implications, in particular the representation of multiple equilibria in a rejection of the general equilibrium of the neoclassical benchmark model.

The rationality axiom states that the actions of economic agents are target-oriented and consistent. In order for this axiom to be deductively expanded to the above mentioned postulates and to action predictions that are testable, it must be specified: the material utility maximisation (e.g. as income or profit maximisation) is assumed as guidance and consistency is understood as the transitivity of preference orderings. Economics Nobel Laureate Vernon L. SMITH labels such a rationality axiom[14] produced by a self-interested and rational *Homo economicus* "constructivist" and contrasts it against the "ecological" rationality axiom, in which economic agents can act with "bounded rationality" in different environments. Experimental economics shows on the one hand that the "constructivist" rationality axiom clashes with the "harmony postulate" when behaviour interdependencies lead to non-cooperative behaviour (prisoner and other cooperation dilemmas or free rider behaviour) of rational, self-interested individuals and thus lead to sub-optimal social welfare; a phenomenon which is sometimes called "rationality with regret". Fortunately, this need not overly worry us, as experimental, evolutionary and institutional economics all describe numerous environments (norms such as reciprocity or institutions such as collective bargaining systems) in which "irrationality without regret" leads to cooperation among economic agents and thus increases social welfare. But of course this is also bad news for the neoclassical benchmark model: people all too rarely behave like the idealised *Homo economicus*. In Adam SMITH's time, the assumption of a rational, self-interested economic agent was merely an attempt to hint at the harmony of utility maximisation for both the individual and society as a whole without recourse to an overly optimistic view of man. But in the neoclassical benchmark model, the individual optimiser has been turned into a necessary building block for a Panglossian world, without whom it could not be consistently sustained.[15]

Post-Keynesianism ultimately rejects the ergodicity and gross substitution axioms. One of the central propositions of John Maynard KEYNES' General Theory is that in the neoclassical benchmark model the necessary information for the optimisation of decisions by economic agents is neither equally available to all market participants nor can it be sufficiently processed by all. Above all, in many cases – especially when it comes to information about future developments – it simply does not exist, and thus no probability distributions can be

[13] In no way are experimental, evolutionary and institutional economics identical. Experimental economics can be understood as a research laboratory of strategic interaction in which the behavioural hypotheses of normal science are tested (see e.g. AMANN 2007). Evolutionary and institutional economics, on the other hand, emphasise the importance of norms, conventions, routines, etc. for human behaviour and investigate their formation and variations (see M. HODGSON 1999: 127ff.). In the broadest sense, the neo-Marxist approaches of the French Regulation School and the American Social Structure of Accumulation School (see e.g. BOYER 1990; KOTZ/MCDONOUGH/REICH 1994).

[14] And he imputes it to his version of the neoclassical benchmark model: the "Standard Socioeconomic Science Model" (SSSM); see SMITH (2002).

[15] And with whom it is also unsustainable: see "rationality with regrets".

objectively set. The issue is one of fundamental uncertainty, not merely one concerned with risk-carrying situations. In order to take any action in such a situation – any discussion of optimisation in the commonly used sense can be dispensed with – the existence of behavioural norms/routines, instincts and institutions is required. Keynes and post-Keynesianism place particular emphasis on one institution – money – and one instinct – the animal spirits – in their considerations. The "animal spirits" are surely the attempt to create a rudimentary and expandable theory of expectation formation – in the face of fundamental uncertainty – where money is the one asset that secures economic agents' reproduction ability and is thus assigned a liquidity premium. Money is by no means being "invented" in this theoretical consideration in order to reduce exchange costs; rather, economic agents project their uncertainty about the future onto those assets whose excess of liquidity premium over carrying costs are greatest.

The disposability of money ultimately determines the neutral position of an economy – thus money is neither a neutral exchange medium (neutrality postulate) nor is the economy's neutral position necessarily or even typically in a state of overall balance (equilibrium postulate). Furthermore, the policy effectiveness postulate can also no longer be maintained under these conditions. In this far-reaching rejection of the Panglossian postulates, the friendly relationship of post-Keynesianism to neo-Keynesianism can no doubt be seen, though as shown above, the basis for the rejections are quite different.

As already noted, criticism alone is insufficient if it fails to offer a constructive and consistent alternative interpretation of reality. And of course it is to be expected that the neoclassical "model tree" is much more thickly covered with leaves than the trees in the gardens of post- or neo-Keynesianism and experimental, evolutionary and institutional economics, considering the imbalance in the number of gardeners cultivating them. However, some quite serious intrinsic problems and shortcomings of the critics have been identified, which may be able to explain why the dominance of the neoclassical benchmark model is still so strong: (1) In spite of all the objections to the constructivist rationality axiom, there is still no replacement construction in sight which could substitute the *Homo economicus*. And perhaps there is no simple model of action upon which economics can build – but then comprehensive micro-based, prescriptive models would be nearly unthinkable. Perhaps this perspective is so worrying that even experimental economists such as Vernon L. SMITH refuse to reject the constructivist rationality axiom categorically (cf. SMITH 2002: 505), claiming instead that only personal, strategic interaction has been experimentally debunked. For more impersonal, market-based and contractual interaction, however, there is much to be said for stricter selfish-materialistic rational behaviour, though with limited information. (2) To this day, post-Keynesian theory has neglected one of its central elements: a comprehensive theory of expectation formation.[16] Without a clearer idea of how expectations are formed in conditions of fundamental uncertainty, the *ex ante* forecast quality of this construction of reality remains limited, and the *ex post* forecast test can be passed all too easily via the introduction of *ad hoc* "animal spirits" (see HEISE 1993). On the other hand, post-Keynesianism can be connected to all the evolutionary and institutional "bounded rationality" approaches as well as to a reductionist expectancy theory and to a constructive dialogue with neo-Keynesianism. (3) Neo-Keynesianism is probably the most advanced in its development of a "new neoclassical synthesis" as a substitute for the neoclassical benchmark model[17] – which is certainly also

[16] This is particularly surprising, as the concept of "bounded rationality" from Herbert SIMON (1968) and George SHACKLES (1955) was an early attempt to do so, and the neoclassical theory of rational expectations would really have to have been challenge enough.
[17] See e.g. WOODFORD (2003); CARLIN/SOSKICE (2006).

due to the fact that it is not an alternative paradigm but simply an alternative theoretical school within the same paradigm. However, its derivable postulates ("failing markets") are sufficiently removed from the criticised mainstream model so as to appear heuristically as an alternative, although one which can not be epistemologically separated from the mainstream model at all. It might be more consistent here to take the paradigmatic step out of the exchange theoretical basis of the neoclassical benchmark model and seek to close ranks with post-Keynesianism and evolutionary and institutional economics.

3. Dominant mainstream or "new plurality" – where is the journey heading for?

Long before the recent global financial crisis and its consequences for the self-image of the economics profession, Robert CLOWER (1989) described the state of economics as "hopeless, but not serious". His intention was to criticise the constriction of economics to the reductionism of the formal, axiomatic DSGE mainstream. Economics had grown too far removed from the type of science that could contribute solutions to real problems, and instead was wallowing in the self-referentiality of the unending "footnote discussions" it generated. Robert SOLOW (1989: 37) rightly points out that a science that develops a paradigmatic core will become a "normal science" in which droves of economists will produce scientific results that range "from very bad to excellent, with a median somewhere near O.K." Criticism is thus reserved here not for the sprouting of findings that fail to promise to directly solve major global problems, but rather for the size and dominance of this "knowledge tree" which no longer lets in enough light for the growth of other "knowledge trees". But don't the aforementioned variety of alternative theories and perhaps even alternative paradigms point to a sufficient plurality that can in turn flourish now that the mainstream approach has been beset by skepticism? Is it still true that "When the facts change, I change my mind"?[18]

Before this question can be answered, one must first note that the alternative theories and paradigms have received very little propagation, and in recent decades economics has been increasingly restricted to the DSGE mainstream. Let's take the German case: While in the early 1980s only about half of German academic economists considered neoclassical mainstream monism worthwhile, 20 years later this figure had grown to 80%, and it continues to rise, as the more critical opinions are predominantly held by elderly scientists striving toward retirement (cf. FREY/HUMBERT/SCHNEIDER 2007). Fred LEE (2009) puts the number of heterodox academic economists in Germany at about 30, which is no more than 5% of all economists (at the professorial level) teaching at German universities. The most serious problem, though, is that this vast majority of orthodox mainstream economists – due to their monistic concept of science – simply do not take note of heterodox approaches (in terms of a plurality of economics) (LEE/HARLEY 1998).

Under these conditions, a new scientific revolution – i.e. a paradigm shift away from the equilibrium-centred harmony postulate of the DSGE models that are optimistically inclined toward the market and sceptical of intervention, away from the methodology of optimisation analysis, away from the notion that monism alone has the right to explain economic phenomena – could be expected only if the older economists were to accept an extensive loss of identity and a devaluation of their hard-earned qualifications and the younger economists were willing to risk starting almost completely anew. But what incentives do they have to confront all of the associated uncertainties?

[18] This saying is attributed to John Maynard KEYNES, who was responding to a perceived change in his position; see MALABRE (1994: 220).

If we consider the economist as a non-self-interested individual whose sole desire is to be able to understand and describe the economic interrelations of the real world as accurately as possible, then the imminent arrival of a broad reorientation phase in economics would doubtlessly be expected. If not now, then when? However, if economists were such a species, then it would be incomprehensible for the plurality of methods and paradigms to be so strongly and consistently limited, as described above. This becomes understandable, though, when the career interests of economists – in the face of a limited employment market characterised by great uncertainty regarding the utilisation of human capital investment – are taken into account. Under these conditions, the pursuit of acceptance in the scientific community, i.e. attention and reputation, often replaces the search for objective knowledge. Economists research into topics that can be published, and these topics are limited to a methodological and paradigmatic standard[19] designated as mainstream or normal science.

In the development of this standard[20], an important role is played by certain individuals with distinguished reputations – e.g. Nobel Memorial Prize in Economic Sciences winners or the presidents of major research organisations, in particular the American Economic Association (AEA) – and various journals (also note the correlation of these individuals with the editors of these particularly reputable journals form the "elite" of the scientific community).[21] And because of the English language's status as the international language of science and the cultural hegemony of the United States since World War II, the US maintains a dominant role in the setting of standards.[22]

So if the "elite of the US-dominated scientific community" – or a number of them with loud voices – were to call for a reorientation or at least for greater openness with regard to the acceptance of reality constructions, the likelihood of a paradigm shift or at minimum a pluralisation of economics would be significantly increased.[23]

In fact, one can make out the beginnings of a trend in the U.S. of critics from within the normal science paradigm (though not necessarily critics of the entire DSGE paradigm) being allowed to achieve prominent roles. Influential figures are also increasingly expressing criticism of the normal science paradigm. Of the last twenty presidents of the AEA, five had a critical attitude toward the DSGE paradigm: George AKERLOF, Robert FOGEL, Amartya SEN, William VICKREY and Robert EISNER. However, there were at least as many AEA presidents who were distinct representatives of the radical DSGE paradigm, e.g. Avinash DIXIT, Thomas SARGENT, Robert LUCAS, Gerard DEBREU and Gary BECKER.

[19] FREY (2004) thus writes about "Publishing as Prostitution".
[20] See SWANN (2000) regarding the meaning of standards in the scientific market.
[21] Without Keynes' outstanding reputation as an internationally renowned economist at one of the international centres of economic research in the early 20th century – the University of Cambridge – and as editor of the leading international academic journal of the time for economists – the *Economic Journal* – the "Keynesian revolution" probably never would have occurred. The same applies to Milton FRIEDMAN (a former president of the AEA) and the Chicago-based *Journal of Political Economy*.
[22] This is shown by the fact that the "scientifically" relevant journals – the so-called A-journals – are published almost exclusively in the U.S., textbooks written by U.S. economists have long been used in universities worldwide as a matter of course and the various international economist rankings are comprised nearly exclusively of U.S.-based economists.
[23] There was in fact a call for the diversification of the discipline in the *American Economic Review* that was signed by several Nobel laureates in 1992, but it seems that the timing was not optimal, as a "crisis of normal science" triggered by new socio-economic developments was not obvious enough to assure the success of the initiative.

The list of Nobel laureates in economics in recent years tells a similar story. Although these prizes generally honour accomplishments which were achieved quite some time ago, the timing of the award can be interpreted as a signal. Thus, it is quite astounding that four of the last ten Nobel prizes went to economists who must be regarded as representatives of complexity economics or neo-Keynesianism, while only three Nobel prizes were awarded to economists from the radical DSGE paradigm.

Overall, it can be said that there are developments in the hegemonic U.S. economics market outside or at the margins of the DSGE paradigm – as well as from within its core – that will no doubt increasingly call into question the dominance of at least the radical NCM variant. As the pendulum between the NCM and NKM models had already swung back strongly in the direction of the more realistic NKM models even before the recent global economic crisis – or in the American parlance, owing to the regional distribution of the main protagonists of the two variants of the DSGE paradigm, the "saltwater economists"[24] had begun dominating the "freshwater economists"[25] again – the sharp criticism of well-known economists such as Nobel laureates Paul KRUGMAN (2009) and Joseph STIGLITZ (2009a; 2009b) could contribute to making economics a more pluralistic discipline.

4. Institutional incentives of the 'economics market' in Germany

The German university system and with it the study of economics are subject to a significant process of transformation. Firstly, the generational turnover after the founding phase of many (reform) universities at the end of the 1960s and the beginning of the 1970s will soon be completed. Additionally, a profiling process has begun that was created in equal measure by the universities themselves as well as imposed upon them from the outside. The reform of the universities in the '60s and '70s was motivated by the demand for the "democratisation" of higher education institutions both inwardly and outwardly (see, e.g., VON DER VRING 1975). All stakeholders – professors, scientific and administrative staff, and students – should be entitled to participate in the organisation, just as research should be accessible to all social groups. In addition to tripartite representation on boards and committees, this included an alignment of scientific approaches that was as broadly pluralistic as possible. This applied particularly to economics, which was to be broadened from the narrow scientism and reductionism of neoclassical economics to a more comprehensive understanding of political economy (see, e.g., VOGT 1973; KADE 1973; NUTZINGER 1973). Chairs and professorships at many of the newly founded universities were filled with representatives who embraced Marxist and (post-)Keynesian worldviews.

Before the Bologna process started to Europeanise the EU's higher education system, there was yet another university reform process – one regulated not based on input ("democratisation"), but rather on output. As part of the wave of globalisation, universities see themselves in an international competition fuelled by rankings lists (e.g. the international "Shanghai list" or the German rankings of the Centre for Higher Education and the *Handelsblatt*). The particularly poor rankings of non-American universities in general and German universities in particular ostensibly indicate provincialisation and a loss of international prominence; they also subliminally imply a reduction in the quality of European and German science and higher education. What is true for the university as a whole applies

[24] From universities on the East and West Coasts of the US: e.g. UC Berkeley, Princeton, Harvard, MIT.
[25] From universities near the Great Lakes: e.g. University of Chicago, Carnegie Mellon University, University of Minnesota.

equally to most individual academic disciplines, including economics. The near-universal response throughout Europe has been to adopt "excellence initiatives". In Great Britain, for example, a sizable portion of universities' funding has now been made dependent on an assessment of their research outputs (Research Assessment Exercise – RAE), although the quality of research performance is nearly impossible to measure objectively. Since the measurement of quality almost inevitably conforms to the "international standard", which in economics is set by American journals, which in turn are almost exclusively committed to the DSGE paradigm, the result was (and is) a mainstreaming of academic economics in Great Britain (see LEE/HARLEY 1998; LEE 2007).

In Germany such formal regulation does not yet exist. However, non-university economic research is increasingly subject to evaluations, the results of which determine whether the major research institutes (the so-called "blue list institutes") continue to receive public funding. The research funding from the German Research Foundation (DFG) and the research rankings carried out by private institutions like the Centre for Higher Education (CHE) can also be viewed as informal forms of regulation.[26] However, German universities' shortage of (public) basic founding, which has increased the pressure on them to seek out external funding, mainly through the DFG (making such external funding a prerequisite for the internal allocation of funds according to the so-called "performance and load-dependent allocation of funds" process being recently introduced in most German universities), and the federal government's recent "Excellence Initiative" ought to be quite similar to the RAE in its effects. On the one hand, there are no reliable studies yet on the effectiveness of these regulations, and on the other hand, they are in part still too new (the rankings and the German "Excellence Initiative") for us to expect noticeable impacts on the paradigmatic development of economics. The trend towards an increasingly monistic discipline as described above is thus apparently more a matter of self-referential processes within the scientific community (see, e.g., PIETERS/BAUMGARTNER 2002; LOCKETT/MCWILLIAMS 2005; MÜNCH 2007), which are increasingly perpetuated by supposedly thoughtful incentive systems to "assure excellence".

According to Max Planck, "(a) new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it" (PLANCK 1928:22; own translation). If this is true, then the formal and informal frameworks of the German 'economics market' most likely contributed to the fact that the generational turnover at German universities and the reorientation of the university landscape in East Germany since 1990 could not be used for a pluralisation – let alone a paradigm shift – in economics.

5. A sceptical outlook

"Economics today is a discipline that must either die or undergo a paradigm shift—to make itself both more broadminded, and more modest. It must broaden its horizons to recognise the insights of other social sciences and historical studies and it must return to its roots. Smith, Keynes, Hayek, Schumpeter and all the other truly great economists were interested in economic reality. They studied real human behaviour in markets that actually existed. Their insights came from historical knowledge, psychological intuition and political understanding.

[26] MÜNCH (2006) shows that the allocation of DFG funds occurs for the most part based not upon scientific expertise but rather according to representation in the DFG's statutory bodies, i.e. the distribution of power. It can be assumed, though not yet proved, that this result can be reproduced if the paradigmatic orientation (rather than the regional distribution of DFG representatives) is taken into consideration.

Their analytical tools were words, not mathematics. They persuaded with eloquence, not just formal logic. One can see why many of today's academics may fear such a return of economics to its roots. Academic establishments fight hard to resist such paradigm shifts, as Thomas Kuhn, the historian of science who coined the phrase in the 1960s, demonstrated. Such a shift will not be easy, despite the obvious failure of academic economics. But economists now face a clear choice: embrace new ideas or give back your public funding and your Nobel prizes, along with the bankers' bonuses you justified and inspired" (KALETSKY 2009: 156). This appraisal by Anatole KALETSKY, economist and former editor-at-large of the British newspaper *Times*, is probably shared by many heterodox economists – as well as by those with sufficient confidence that the global financial crisis signalled the end of the neoclassical DSGE doctrine (see, e.g., BOUCHAUD 2008; KIRMAN 2009). However, the resistance to this view among the vast majority of academic economists as well as the established institutional structures of the economics market should not be overlooked.

Even the "Keynesian revolution" of the 1950s and 1960s was, on closer inspection, not the paradigm shift[27] that KEYNES immodestly envisioned when drafting his General Theory.[28] At most, this initial push to swing the pendulum within the neoclassical real-exchange paradigm succeeded in emphasising short-term disequilibria and market imperfections more than the harmony postulate of "general equilibrium" allowed. As a result, the stabilisation point of view temporarily gained the upper hand over the allocation point of view without shaking the structurally formative function of the equilibrium ideal. However, there was room alongside this view for post-Keynesian, Marxist and institutionalist constructions of reality, which together constituted something approaching pluralism. History shows, though, that this pluralism without regulatory intervention in the economics market did not endure.

The events of the global financial crisis created cracks in major components of the dominant DSGE paradigm – in particular the rational expectations hypothesis and the efficient market hypothesis – that are much too grave for the paradigm to be able to survive in its present form.[29] Furthermore, the number of prominent critics who come from within the DSGE paradigm is too large to be able to continue with "business as usual" economic theories after overcoming the economic crisis. The pendulum has already swung back, and perhaps critical, alternative theoretical approaches will also become more popular again. However, the current "crisis of mainstream economics" – at least in Germany – is running up against a largely saturated market for academic economists, one in which the younger generation of mainstream scientists were only recently granted their professorships and steady incomes. Unless an entirely new form of regulation is created[30], it can hardly be expected that the impetus for a renewal will come from Germany.

[27] See, e.g. MINSKY (1975: 18f.); HUTTON (1986).
[28] As he wrote to George Bernard SHAW on New Year's Day in 1935: "…I believe myself to be writing a book on economic theory, which will largely revolutionise – not, I suppose, at once but in course of the next ten years – the way the world thinks about economic problems" (KEYNES 1935/1973: 492).
[29] For example, Joseph STIGLITZ writes (2009b: 294): "The models that have predominated within macro-economics, which assume representative agents with rational expectations, are particularly disturbing. What I find even more striking is that some economists still argue that this crisis has not shaken their belief in rational expectations."
[30] For example, one could envision some sort of a "code of scientific pluralism", which would call for all universities to have at least one professor for "heterodox economics" (or the equivalent), and a substantial line of special grants from the DFG for "heterodox or non-mainstream research".

References

AMANN, E.; Entscheidungen im Labor. Experimentelle Wirtschaftsforschung, in: Essener Unikate, Vol. 29, 2007, pp. 123 – 128

BLANCHARD, O.J.; The State of Macro; NBER working paper series No. 14259, Washington 2008 (published in: Annual Review of Economics, Vol. 1, No.1, 2009)

BLANCHARD, O., DELL'ARICCIA, G., MAURO, P.; Rethinking Macroeconomic Policy, IMF Staff Position Note, Washington 2009

BOUCHAUD,J.P.; Economics needs a scientific revolution; in: Real-World Economics Review Issue 48, 2008, pp. 48 – 49

BOYER, R.; The Regulation School: a Critical Introduction, New York 1990

CARLIN, W., SOSKICE, D.; Macroeconomics. Imperfections, Institutions and Policies, Oxford 2006

COHEN, A.J., HARCOURT, G.C.; Whatever Happened to the Cambridge Capital Theory Controversies, in: Journal of Economic Perspectives, Vol. 17, No. 1, 2003, pp. 199 – 214

CLOWER, R.W.; The state of economics: hopeless but not serious?; in: Colander, D.C., Coats, A.W. (Hrsg.); The spread of economic ideas, Cambridge 1989, pp. 23 – 29

DAVIDSON, P.; Reviving Keynes' revolution, in: Journal of Post Keynesian Economics, Vol. 6, No.4, 1984, pp. 561 – 575

DAVIDSON, P.; Post Keynesian Macroeconomic Theory: A Foundation for Successful Economic Policies in the Twenty-First Century, Aldershot 1994

DAVIDSON, P.; Is economics a science**?** Should economics be rigorous?; in: Real-World Economics Review, Issue No. 59, March 2012, pp. 58-66

FREY, B.S.; Publishing as Prostitution? Choosing between one's own ideas and academic failure; in: Public Choice, Vol. 116, 2003, pp. 205 – 223

FREY, B.S., HUMBERT, S., SCHNEIDER, F.; Was denken deutsche Ökonomen? Eine empirische Auswertung einer Internetbefragung unter den Mitgliedern des Vereins für Socialpolitik im Sommer 2006; in: Perspektiven der Wirtschaftspolitik, Vol. 8, Nr.4, 2007, pp. 359 – 377

FULLBROOK, E.; The crisis in economics. The post-autistic economics movement: the first 600 days, London 2003

GORDON, R.J.; What is New-Keynesian Economics?, in: Journal of Economic Literature, Vol. 28, 1990, pp. 1151 – 1171

HEINSOHN, G.; Privates Grundeigentum, patriarchalische Monogamie und geldwirtschaftliche Produktion – eine sozialtheoretische Rekonstruktion der Antike, Bremen 1983

HEISE, A.; Tauschwirtschaft und Geldökonomie, Frankfurt 1990

HEISE, A; Erkenntnisfortschritt, Paradigmenwechsel und die Monetäre Theorie der Produktionsökonomie, in: H.-J. STADERMANN, O. STEIGER (Hrsg.): Der Stand und die nächste Zukunft der Geldforschung, Berlin 1993, pp. 177 – 183

HODGSON, G.M.; Evolution and Institutions, Cheltenham 1999

HUTTON, W.; The Revolution that never was: An assessment of Keynesian economics, London 1986

Institute for New Economic Thinking (INET); About the Institute; New York o.J. (http://ineteconomics.org/about-the-institute)

KADE, G.; Politische Ökonomie – heute; in: Vogt, W.; Seminar: Politische Ökonomie. Zur Kritik der herrschenden Nationalökonomie, Frankfurt 1973, pp. 149 – 167

KALETSKY, A.; Goodbye, homo oeconomicus; in: Real-World Economics Review, Issue No. 50, 2009, pp. 151 – 156

KEYNES, J.M.; Letter to George Bernhard Shaw of 01.01.1935; in: Moggridge, D. (Hrsg.); Collected Writings of John Maynard Keynes, Vol. XIII, London 1973, pp. 492 – 493

KEYNES, J.M.; General Theory of Employment, Interest and Money, London 1936

KIRMAN, A.; Economic Theory and the Crisis; in: Real-World Economic Review, Issue 51, 2009, pp. 80 – 83

KOTZ, D.M., MCDONOUGH, T., REICH, M.; Social Structures of Accumulation. The Political Economy of Growth and Crisis, Cambridge 1994

KRUGMAN, P.; How Did Economists Get It So Wrong?; in: The New York Times v. 02.09.2009

KUHN, T.S.; The Structure of Scientific Revolutions, Chicago 1962

LAKATOS, I.; The Methodology of Scientific Research Programmes: Philosophical Papers, Vol. 1, Cambridge 1978

LATSIS, S.J.; Situational Determinism in Economics; in: British Journal for the Philosophy of Science, Vol. 23, 1972, pp. 207 - 245

LEE, F.S.; The Research Assessment Exercise, the state and the dominance of mainstream economics in British universities; in: Cambridge Journal of Economics, Vol. 31, 2007, pp. 309 – 325

LEE, F.S.; Heterodox Economics and its Critics, Department of Economics, University of Missouri 2009 (unveröffentlichtes Manuskript)

LEE, F.S.; Heterodox Economics and its Critics; in: Review of Political Economy, Vol. 24, No.2, 2012, pp. 337 - 351

LEE, F.S., HARLEY, S.; Peer Review, the Research Assessment Exercise and the Demise of Non-Mainstream Economics; in: Capital and Class, Nr. 66, 1998, pp. 23 – 51

LOCKETT, A., MCWILLIAMS, A.; The Balance of Trade between Disciplines: Do we effectively manage knowledge?; in: Journal of Management Inquiry, Vol. 14, No.2, 2005, pp. 139 – 150

MALABRE, A.L.; Lost Prophets: An Insider's History of Modern Economists, Cambridge (Mass) 1994

MANKIW, G.N., ROMER, D.; New Keynesian Economics, 2 Vol., Cambridge 1991

MINSKY, H.P.; John Maynard Keynes, New York 1975

MÜNCH, R.; Wissenschaft im Schatten von Kartell, Monopol und Oligarchie. Die latenten Effekte der Exzellenzinitiative; in: Leviathan, Jg. 34, H.4, 2006, pp. 466 – 486

MÜNCH, R.; Die akademische Elite, Frankfurt 2007

NUTZINGER, H.G.; Wirtschaftstheorie aus Sicht der Politischen Ökonomie; in: Vogt, W.; Seminar: Politische Ökonomie. Zur Kritik der herrschenden Nationalökonomie, Frankfurt 1973, pp. 205 – 234

OLSON, M.; The Logic of Collective Action, Cambridge (MA.) 1965

OLSON, M.; The Rise and Decline of Nations, New Haven 1982

PIETERS, R., BAUMGARTNER, H.; Who talks to Whom? Intra- and interdisciplinary communication of economic journals; in: Journal of Economic Literature, Vol. 40., No. 2, 2002, pp. 483 – 509

PLANCK, M.; Wissenschaftliche Autobiographie, Leipzig 1928

REIJNIERSE, H., VAN GELLEKOM, A., POTTERS, J.A.M.; Verifying gross substitubility, in: Economic Theory, Vol. 20, 2002, pp. 767 – 776

ROTHEIM, R. (Hrsg.); New Keynesian economics, post Keynesian alternatives, London 1998

ROTHSCHILD, K.W.; New Worlds – New Approaches. A Note on Future Research Strategies, in: Kyklos, Vol. 58, Issue 3, 2005

SCHNEIDER, J.; Kritische Neoklassik: Ergebnisse und Perspektiven, in: W. VOGT (Hrsg.): Politische Ökonomie heute, Regensburg 1988, pp. 183 – 221

SCHULTZ, T.; Outlaw Economists; in: Playboy, June 2012, pp. 104 - 108

SHACKLES, G.; Uncertainty in Economics, Cambridge 1955

SIMON, H.; The Science of the Artificial, Cambridge (MA.) 1968

SMITH, A.; An Inquiry into the Nature and Causes of the Wealth of Nations, Chicago 1977 (originally published: 1776)

SMITH, V.L.; Constructivist and Ecological Rationality in Economics, in: T. FRÄNGSMYR (Hrsg.): The Nobel Prizes 2002, Stockholm 2003, pp. 502 – 561

SOLOW, R.M.; Faith, hope and clarity; in: Colander, D.C., Coats, A.W. (Hrsg.); The spread of economic ideas, Cambridge 1989, pp. 37 – 41

STIGLITZ, J.; Information and Change in the Paradigm of Economics, in: T. FÄNGSMYR (Hrsg.): The Nobel Prizes 2001, Stockholm 2002, pp. 472ff

STIGLITZ, D.J.; Moving Beyond Market Fubdamentalism To A More Balanced Economy; in: Annals of Public and Cooperative Economics, Vol. 80, No.3, 2009a, pp. 345 – 360

STIGLITZ, J.E.; The Current Economic Crisis and Lessons for Economic Theory; in: Eastern Economic Journal, Vol. 35, 2009b, pp. 281 – 296

SWANN, G.M.P.; The Economics of Standardization. Final Report for Standards and Technical Regulations Directorate – Department of Trade and Industry, Manchester Business School, Manchester 2000

VOGT, W.; Zur Kritik der herrschenden Wirtschaftstheorie; in: ders.; Seminar: Politische Ökonomie. Zur Kritik der herrschenden Nationalökonomie, Frankfurt 1973, pp. 179 – 204

VOLTAIRE: Candide oder Die bester der Welten, Stuttgart 1971 (originally published: 1759)

VON DER VRING, T.; Hochschulreform in Bremen, Frankfurt 1975

WOODFORD, M.; Interest and Prices: Foundation of a Theory of Monetary Policy, Princeton 2003

Author contact: Arne.Heise@wiso.uni-hamburg.de

SUGGESTED CITATION:
Arne Heise, "'When the facts change, I change my mind…' Some developments in the economic scientific community and the situation in Germany", *real-world economics review*, issue no. 62, 15 December 2012, pp. 83-97, http://www.paecon.net/PAEReview/issue62/Heise62.pdf

real-world economics review, issue no. 62
subscribe for free

The fiscal cliff – lessons from the 1930s

Report to US Congress, 6 December 2012

Steve Keen [University of Western Sydney, Australia]

The "fiscal cliff" developed because both sides of the House concurred that reducing the growth of government debt was the most important economic policy objective, but they could not agree on a common program to do so. Instead, a program of indiscriminate spending cuts and tax concession abolitions was passed, as a "Sword of Damocles" that would drop on America's collective head if Congress could not reach a compromise by the end of 2012. So unless a deal is bartered by December 31st a set of tax increases and across-the-board cuts in government expenditure will reduce net government spending by about $500 billion, or roughly three per cent of GDP.

What will the consequences be? As Mark Twain once observed, "The art of prophecy is very difficult, especially about the future", but it's fair to say that both Democrats and Republicans now fear what this future might be. The fantasy that reducing the government deficit might actually stimulate the economy has clearly been abandoned, in the light of the tragic results of austerity programs in Europe. But both parties can see no other way to achieve their shared overarching objective of reducing government debt.

Pardon me for questioning bipartisanship in this fractious age, but it's quite possible that the one thing Democrats and Republicans can agree on—that reducing government debt is the number one economic objective—is a mistake. A close look at the empirical data from America's last great financial crisis—the Great Depression—implies that reducing government debt now may hurt the private sector far more than it helps it, and may also throw America back into recession.

My starting point is an empirically based approach to macroeconomics which concludes that aggregate demand in a monetary economy is the sum of income plus the change in debt. I won't go into the mathematics of this argument here; instead, I'll show how this perspective explains why both the Great Depression and our current economic crisis occurred. It also implies that the fiscal cliff could tip the USA back into recession, while doing precious little to reduce government debt as a percentage of GDP.

Firstly, let's look at the recession as most economists do, by considering just GDP. Figure 1 shows both nominal and inflation adjusted GDP[1]. Notice that nominal GDP continued to grow for about 6 months after the official start of the recession, while inflation adjusted (or "real") GDP flatlined for about six months before it started to fall. Notice also that while GDP certainly fell, it doesn't look like a lot of a drop—certainly not when compared to the Great Depression. So why was it described as "the biggest crisis since the Great Depression"?

[1] The marker "Begin" shows the start of the recession.

Figure 1: GDP in current dollars and adjusted for inflation (2005 dollars)

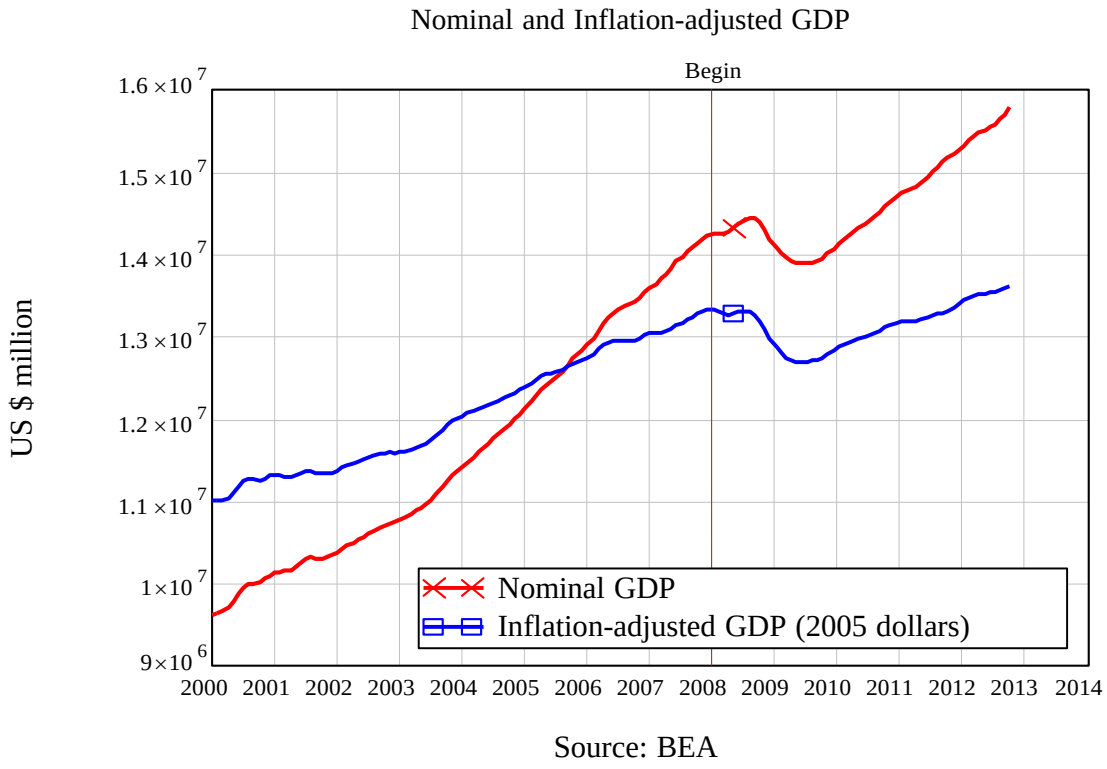
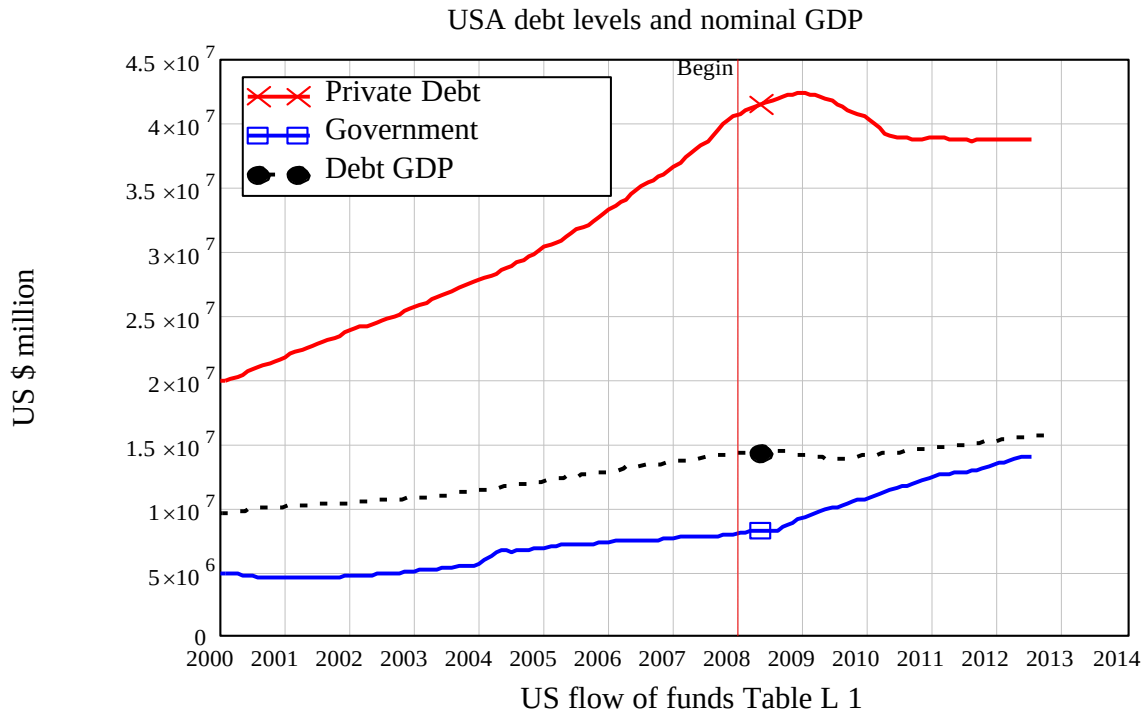


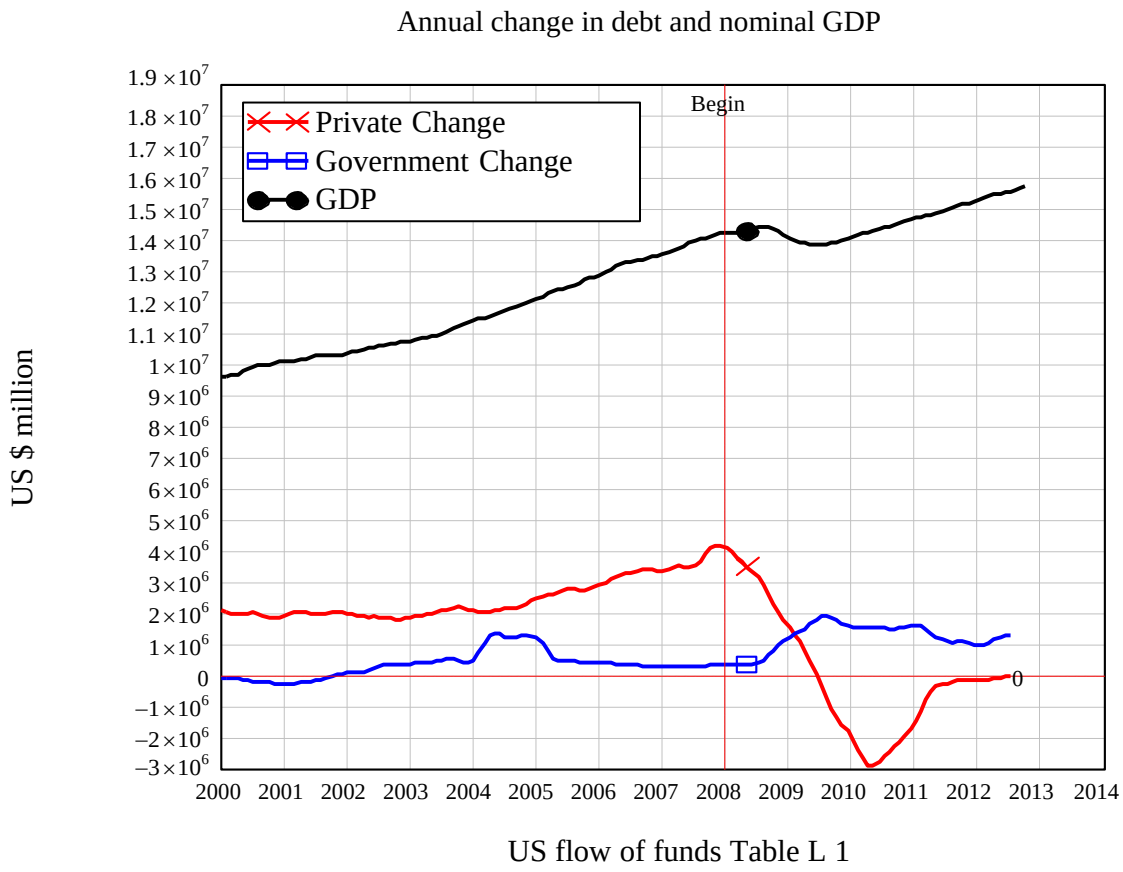
Figure 2: Aggregate US debt levels and GDP



Here's where debt comes in. We all know that debt played a big role in the crisis, so, let's get some perspective on it—both private and public debt. Which do you think is bigger—private sector debt, or public sector debt? With all the hullabaloo about how public debt is imposing a burden on our children, you'd be forgiven for nominating public debt as the bigger of the two. You'd be wrong: even after the growth of public debt and deleveraging by the private sector in the last five years, public sector debt is still less than 40 per cent of the level of private debt, as Figure 2 shows.

Notice also that private debt rose at an accelerating rate from 2000 until it peaked in 2009, and then fell sharply, after which it flatlined from 2010 on. In contrast, government debt flatlined across 2000-2004, rose slowly in 2004-2008, and only took off in mid 2008—at the same time as the decline in GDP began.

Figure 3: Annual change in debt and the level of GDP



Let's look at the same data from the point of view of GDP and the change in debt. Figure 3 shows GDP and the annual change in both private and government debt, and it highlights several important points.

- Firstly, the growth of private debt every year from 2000 to 2009 was higher than the highest growth of public debt. In 2008, private debt grew by over $4 trillion (when GDP was just over $14 trillion). Government debt rose by $2 trillion in 2009, which is a lot. But it was no more than the annual growth in private debt in every year from 2000 till 2009, and less than half the peak level of growth of private debt.

- Secondly, the recession began precisely when the rate of increase of private debt peaked and began to fall.
- Thirdly, the "fiscal crisis"—the sudden rapid increase in the government deficit—didn't start until six months after the economic crisis began, when nominal GDP also began to fall.

Already, these observations imply that the change in the behavior of private debt played a key role in the crisis, and that the increase in government spending was a reaction to the downturn in the real economy.

Figure 4 brings this data together in the context of my argument that the change in debt adds to aggregate demand. The black line in Figure 4 shows GDP alone; the red line shows GDP plus the change in private debt only; the blue line shows GDP plus the change in both private and government debt.

Now I think you can see both the timing and the severity of the crisis. The decline in private sector aggregate demand (the sum of GDP plus the change in private debt) was huge. It peaked at $18.4 trillion at the beginning of 2008 and then plunged to $11.1 trillion by early 2010—a fall of 38 per cent that caused unemployment to explode and asset markets to collapse (see Figure 5 and Figure 6).

Figure 4: GDP plus change in debt from 2000 until today

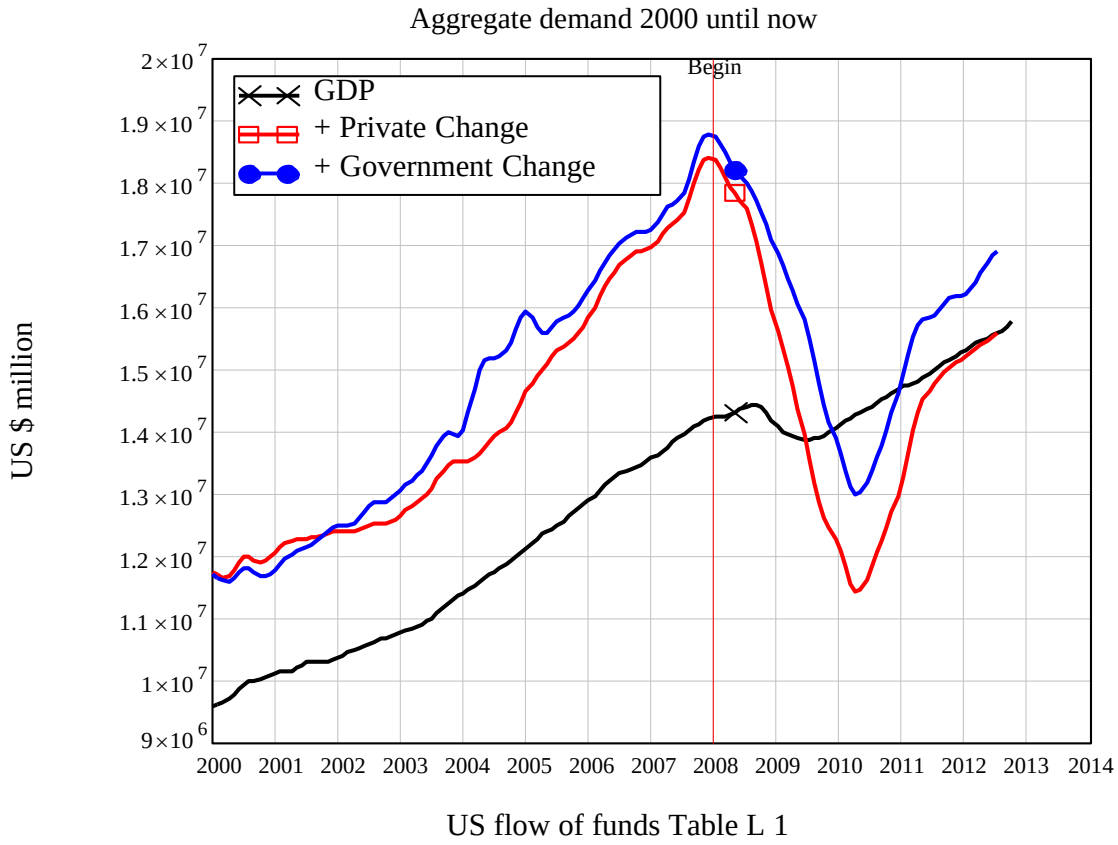


Figure 5: The causal link between change in debt and unemployment

The change in government sector debt cushioned the blow of this dramatic private sector collapse. Total aggregate demand in 2008 (the sum of GDP plus the change in both private and government debt) peaked at $18.8 trillion, and fell to $13 trillion—a 31 per cent fall in total demand. This is still a huge fall—greater than anything experienced since the Great Depression—but it is substantially less than the fall in private sector demand alone.

Since the depths of the crisis in 2010, the private sector has largely stopped deleveraging: private debt is neither rising nor falling, so that the change in private sector debt is having no overall impact on aggregate demand. But public debt, which is still rising, is adding over $1 trillion to spending in the economy at present. Without the public sector deficit right now, total cash flow in the economy would be roughly $15.5 trillion; because of the public sector deficit, total spending is closer to $17 trillion.

Change in debt and employment

The impact of the collapse in the growth of private debt was immense: it caused both the explosion in unemployment and the collapse of asset markets. Figure 5 shows the correlation between change in debt and unemployment: the rise in unemployment in 2008 coincided with the turnaround from growing to shrinking private debt. Then the strengthening of the recovery in 2010 coincided with a slowdown in the rate of decline of private debt. The correlation between the change in private debt and the level of unemployment is -0.94: rising private debt causes falling unemployment.

That's not to say that rising private debt is a good thing—far from it. A certain level of debt-financed growth is good, when that debt helps corporations invest in new products and technologies. But the dependence the US economy developed upon debt-financed growth far exceeded this good level.

What about the relationship between change in government debt and unemployment? That's the opposite of the private sector debt to unemployment relation: while rising private debt is correlated with falling unemployment, rising government debt is associated with rising unemployment: the correlation coefficient is a positive 0.81.

How can we make sense of this? Here it's obvious that government debt is responding to changes in the real economy: a rising level of unemployment means rising welfare payments and falling tax revenue. So rising unemployment causes rising government debt. The causal link runs from the real economy to government spending—at least when we're talking about spending that the government has little control over.

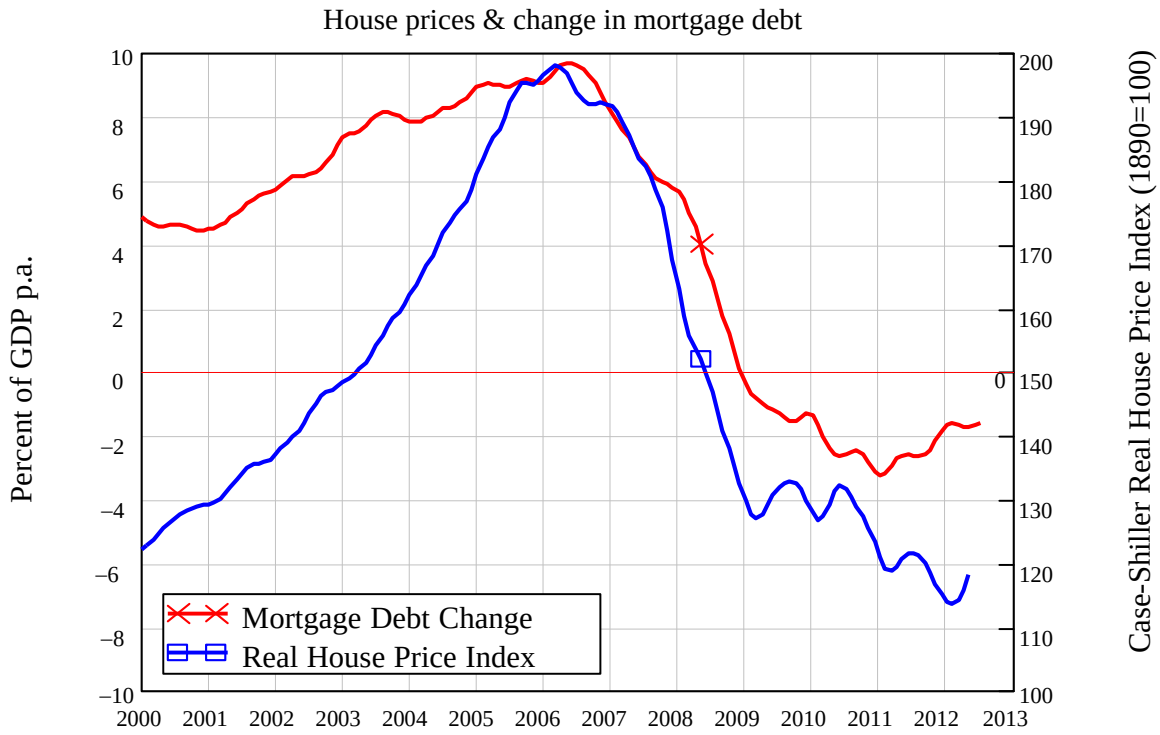
Since this rising debt adds cash flow to the economy, it also helps preserve some private sector employment: people receiving unemployment benefits go shopping at Wal-Mart and keep some of those private sector workers in employment. Without that debt-financed government spending, private sector unemployment could have risen a lot more than it actually did—a point I'll make later in comparing our crisis to the Great Depression.

Change in debt and asset markets

Asset markets display what engineers would call a "positive feedback loop" between asset prices and the change in debt: rising debt causes rising asset prices, and rising asset prices encourage more people to borrow to speculate. Such processes always break down—which is why real engineers take great care to eliminate or control positive feedback processes in systems like cars, rockets and even bridges. Unfortunately, "financial engineers" delight in amplifying these destructive positive feedback loops in the financial system, by supporting deregulation and inventing derivatives.

Figure 6 shows the impact of rising and then falling mortgage debt on house prices. The growth in house prices from 2000 until 2006 was driven by rising mortgage debt, the collapse in prices was triggered by the collapse in mortgage debt, and the recent recovery in house prices coincides with a slowdown in the rate of deleveraging by the household sector. The correlation coefficient here is 0.81.

Figure 6: Change in mortgage debt and house prices



Of course, the government can also make discretionary changes in its own spending. It can boost spending as with the original response to the crisis in 2008, or it can cut spending as will happen if the fiscal cliff actually comes to pass, and as has been happening in Europe with austerity programs. The important question now, as we approach the fiscal cliff, is what impact will this have on the economy?

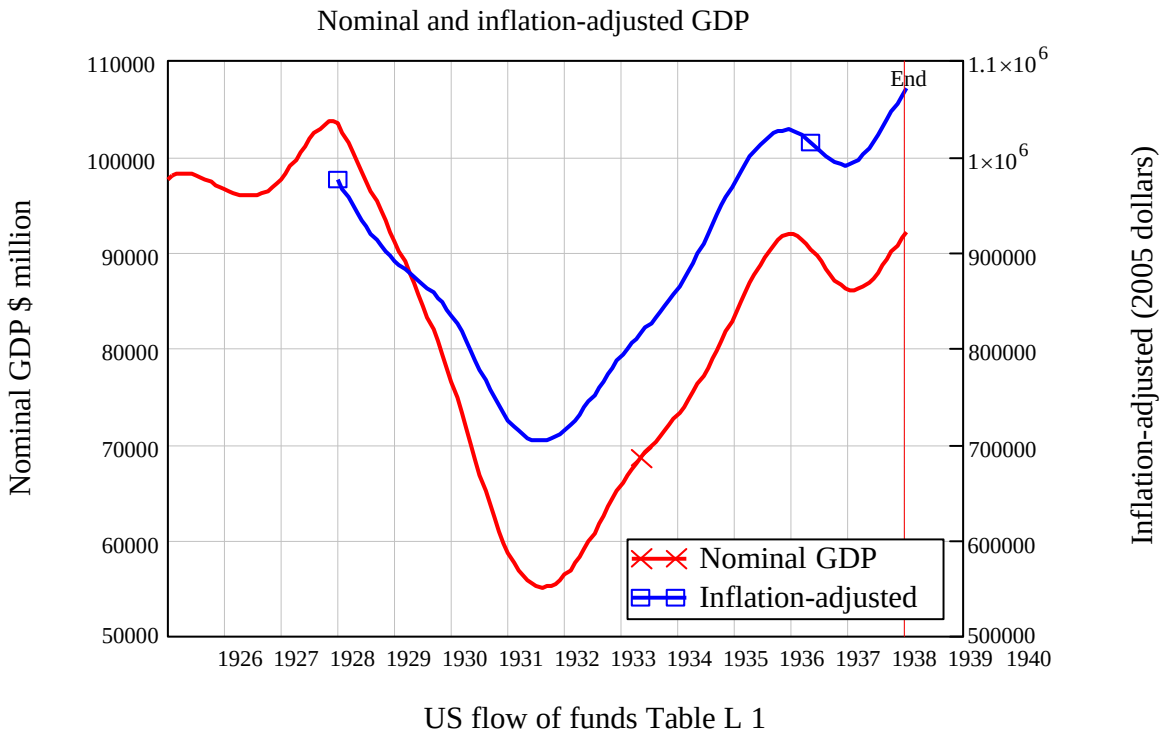
There is also the counter-factual issue of what would have happened to private sector aggregate demand if the government had not "stepped into the breach" with the massive increase in its deficit back in 2008. Clearly the private sector has stopped deleveraging now: would it have done so if the government had done nothing—either by keeping its deficit constant (as it was roughly doing until mid-2008), or by actively trying to run a surplus? We can get some inkling on both these issues by looking back at the Great Depression.

Aggregate demand during the Great Depression

The dynamics of private and public debt now and in the 1920s-1940s are qualitatively identical: a private debt bubble financed the "Roaring Twenties"; this gave way to private sector deleveraging in the 1930s; and public debt rose as the private sector delevered, thus reducing the impact of the private sector's deleveraging. However the quantitative differences are immense.

Firstly, the decline in real GDP back in the Great Depression was much larger than this time around (Figure 7). It fell 28 per cent from the peak in 1930 to the trough in 1932, versus the five per cent fall from 2008 till June 2009. So either our crisis was much milder than the Great Depression, or something happened this time round to reduce its impact.

Figure 7: Nominal and inflation-adjusted GDP during the Great Depression



The second comparison lets us decide the "smaller crisis" versus "something happened" issue: even though the fall in GDP was much worse then than now, the level of private was much lower in the 1920s (compare Figure 8 with Figure 2), and the fall in private sector aggregate demand was greater this time around. Compare Figure 9 with Figure 3: the more than $4 trillion increase in private debt in 2008 added 28 per cent to aggregate demand from GDP alone, while the $3 trillion reduction in private debt in 2010 deducted 21 per cent from it. The comparable figures were a ten per cent boost in 1927 and a 21 percent deduction in 1931.

Figure 8: Debt levels and Nominal GDP 1925-1939

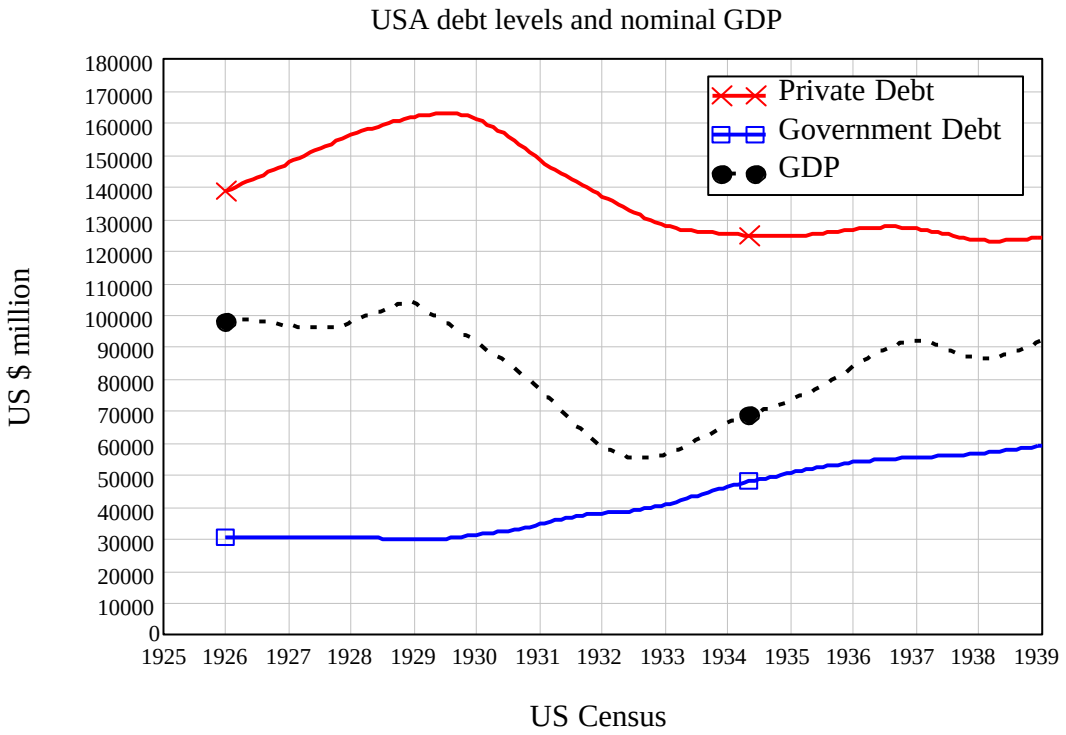
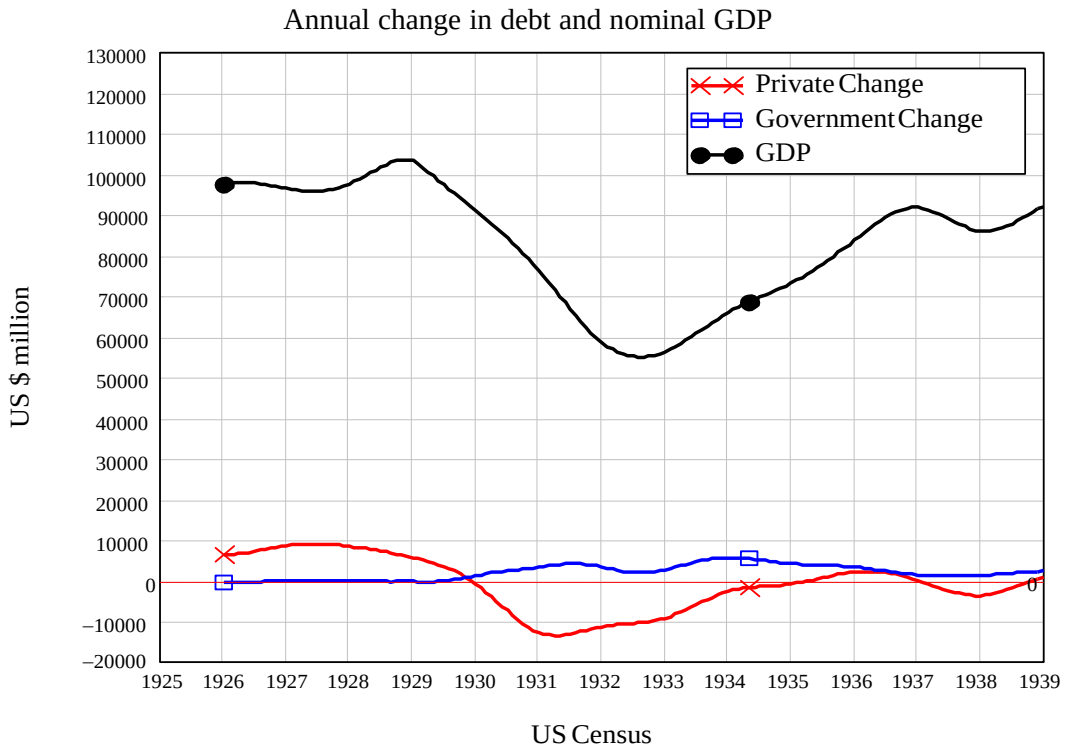


Figure 9: Nominal GDP and annual change in debt 1926-1939



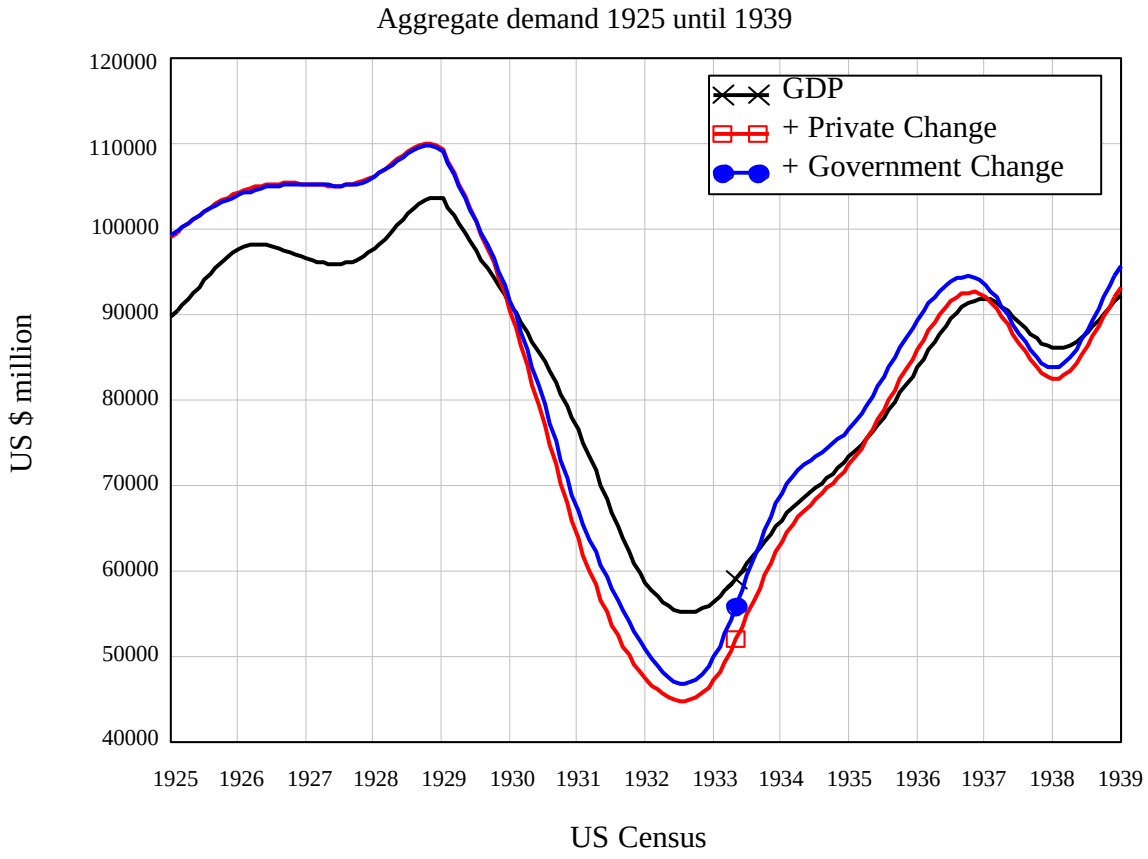
So aggregate demand fell from a greater height in our crisis, yet the impact on GDP was much less (compare Figure 10 with Figure 4). Something must have cushioned the blow. One candidate for that something else is the scale of government spending.

The increase in government spending in the Great Depression was slow in coming, and even the "New Deal", when it ultimately arrived, was relatively anemic compared to the stimulus in 2008-2010 (again, compare Figure 9 to Figure 3). Even though the "New Deal" is now a byword for government stimulus programs (and some magnificent public infrastructure was created during it), the monetary stimulus from government spending during the New Deal added nine per cent to private sector demand (the gap between the blue and red lines, divided by the red line). During our crisis, government spending added up to 15 per cent to private sector demand.

But it wasn't just the government spending itself that rescued the economy more rapidly today: it was the impact of that spending on the private sector's deleveraging. As Figure 9 shows, the private sector delevered for almost five years during the Great Depression—from 1930 until 1935. This time round private sector deleveraging lasted only two years—from mid-2009 till mid-2011 (check Figure 3). If that government spending hadn't risen as much as it did, then conceivably the private sector's deleveraging could have gone on for a lot longer—and this crisis could have been much worse than it was.

This brings us to the fiscal cliff—and its forerunner in 1937.

Figure 10: GDP plus change in debt from 1925 until 1939

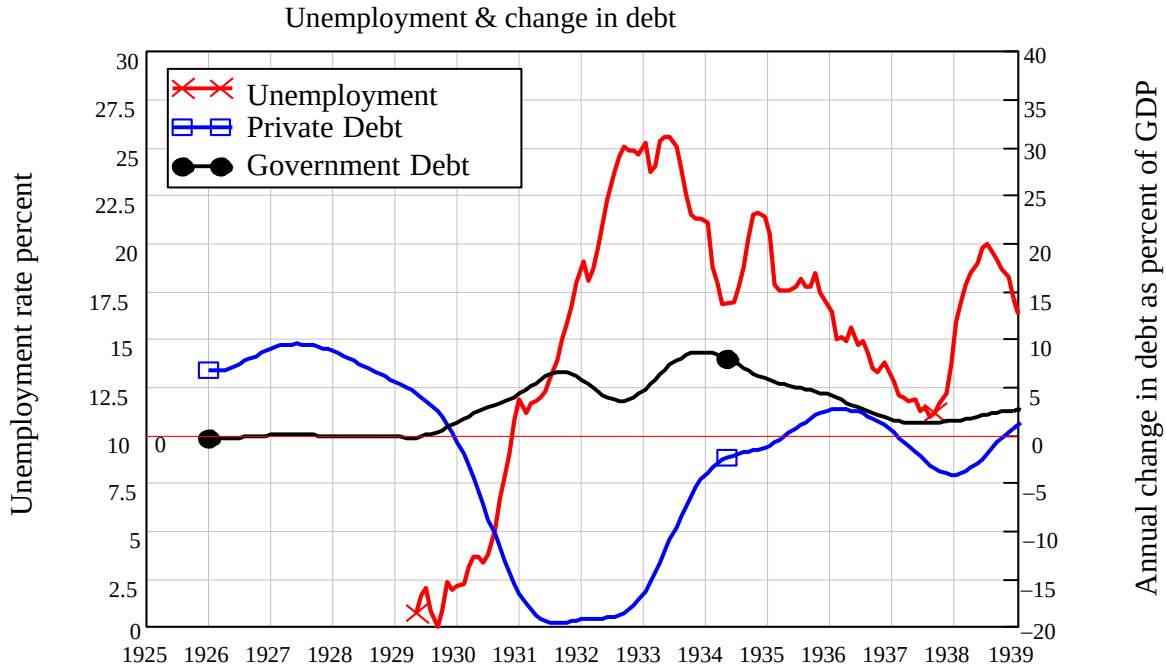


The fiscal cliff of 1937

As you can see from Figure 9 and Figure 11, the Roosevelt government "took its foot off the gas" from 1934 on as GDP started to recover. The government deficit peaked at $5.7 billion (yes, billion) in 1934 and fell to as little as $1.2 billion in 1937, in the belief that the worst was over and it was time to get the government's finances in order.

Only the worst wasn't over; it had merely been postponed because the private sector had stopped deleveraging in mid-1934—probably in response to the extra demand being pumped into the economy via the New Deal. But it started to delever again in 1937, and kept doing it for another two years— probably in response to the drop in demand from the public sector. Unemployment, which had fallen from 25 per cent in 1933 to just over 10 per cent in 1937, exploded back to 20 per cent in 1938.

Figure 11: Unemployment and change in debt 1929-1939



Escaping the Great Depression

Nominal GDP only began to recover strongly in 1940, when firstly private debt and then government debt began to rise far more rapidly—clearly as a consequence of the War in Europe (see Figure 12). Government debt finally exceeded GDP, and deficit-spending, and not austerity, led the USA out of the Great Depression. From 1936 until 1938 the government deficit virtually disappeared—and so too did the economic recovery. It only came back in earnest when the government threw fiscal caution to the wind, and geared up for the approaching conflict of WWII.

Figure 12: Aggregate US debt levels and GDP 1925-1945

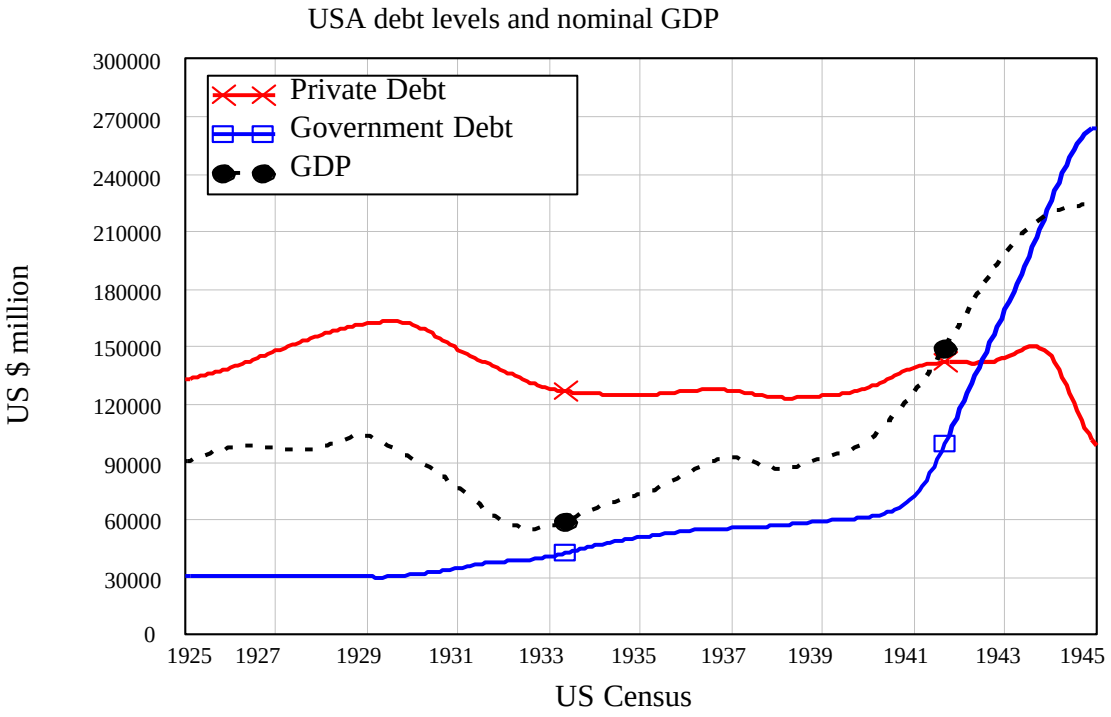


Figure 13: Annual change in debt and the level of GDP 1925-1945

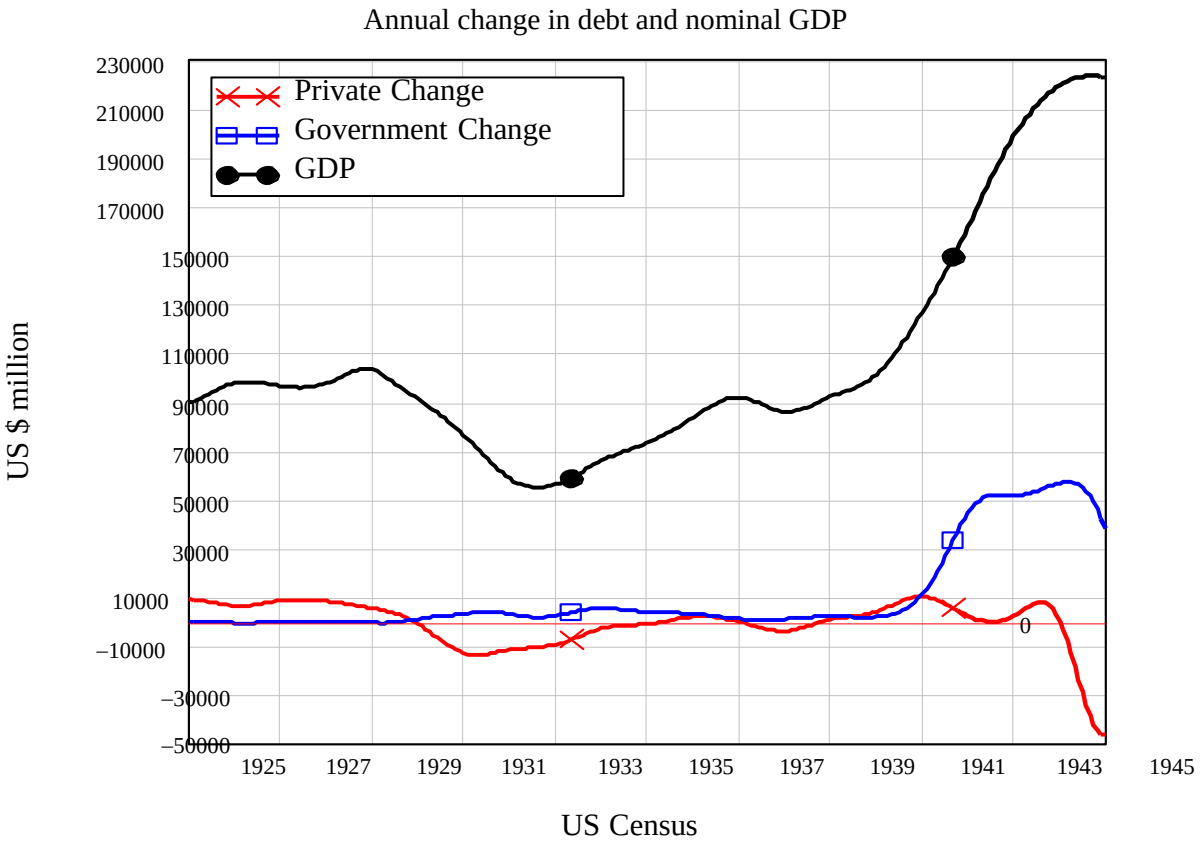
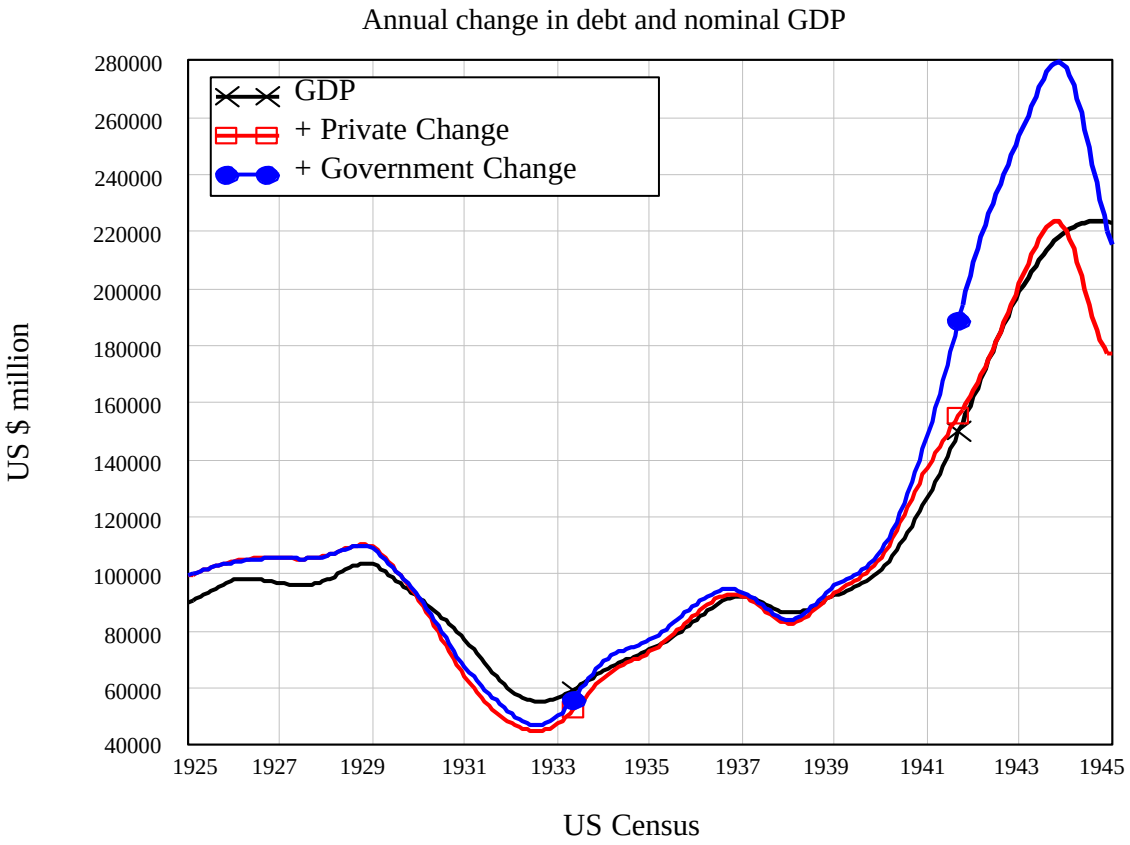


Figure 14: GDP plus the changes in debt 1925-1945



As the end of WWII approached, rising public debt was such a large contributor to aggregate demand that the private sector was able to reduce its debt dramatically—far more so than during the worst of the Great Depression—with only a small impact on GDP (see Figure 13). The public sector was able to easily reduce its debt levels in the booming economy of the early post-War years.[1]

Figure 14 puts the whole story together in terms of the contributors to aggregate demand between the Roaring Twenties and the end of WWII (and compare this to Figure 4, to see how early we are in our own process of deleveraging from a level of private sector debt that should never have been allowed to accumulate in the first place).

Firstly, private sector debt drove the Roaring Twenties—and yet even though that age is now a by-word for speculative excess, it had nothing on the period from 2000 until 2007.

Secondly, the initial government sector response to the crisis was anemic compared to today's enormous stimulus. It wasn't until 1933 that the government deficit more than counteracted private sector deleveraging. Thirdly, the economy slumped again when the government's premature attempt to rein in its own spending triggered a renewed bout of private sector deleveraging in 1937-39. Finally, only a "caution to the winds" level of government spending during WWII boosted aggregate demand and allowed the private sector to complete its deleveraging with a minimal impact on GDP.

[1] Unfortunately, over time the financial sector returned to the behavior that causes the Roaring Twenties bubble. Over the next 60 years, private sector debt rose from 45 per cent of GDP to 303 per cent in 2009. The comparable figure at the end of 1930 was 175 per cent of GDP

This debt-focused analysis of the economy, and the history of the Great Depression, implies that the fiscal cliff could trigger a renewed period of private sector deleveraging that would put the economy back into a recession driven by falling private sector aggregate demand. There are therefore very good reasons to avoid the fiscal cliff, and to alter the public discourse on debt so that it focuses on the dominant problem, which is the private debt bubble that caused this crisis in the first place.

Takeaway points

- Private debt and government debt are independent, but affect each other.
- Both boost demand in the economy when they rise, and reduce it when they fall.
- Private debt is more important than public debt because it is so much larger, and it drives the economy whereas government debt reacts to it.
- The crisis was caused by the growth of private debt collapsing.
- Government debt rose because the economy collapsed, and it reduced the severity of the crisis.
- A premature attempt to reduce government debt through "the fiscal cliff" could trigger a renewed bout of deleveraging by the private sector, which could push the economy back into a recession.
- For the foreseeable future, the main challenge of public policy will be not reducing government debt, but managing the impact of the much larger "Rock of Damocles" of private debt that hangs over the economy.

Author contact: S.Keen@uws.edu.au

SUGGESTED CITATION:
Steve Keen, "The fiscal cliff – lessons from the 1930s: Report to US Congress, 6 December 2012", *real-world economics review*, issue no. 62, 15 December 2012, pp. 98-111,
http://www.paecon.net/PAEReview/issue62/Keen62.pdf

You may post and read comments on this paper at http://rwer.wordpress.com/2012/12/14/rwer-issue-62/

real-world economics review, issue no. 62
subscribe for free

Breakdown of the capacity for collective agency:
The leitmotif of our times

Korkut Alp Ertürk[1] [Department of Economics, University of Utah, USA]

Abstract
The essay argues that a crisis of collective agency is at the root of the global economic crisis we face today. The secret of prosperity during the so-called *golden age*, was the ability of the state to uniformly impose welfare enhancing restrictions on the market that made it possible to invest in common pool resources. As this ability has waned during the neoliberal era so did the ability to keep in check the externalities created by forces of competition, generating long term collective costs that have become increasingly harder to address. This is reminiscent of classical capitalism's main weakness with respect to organizing collective action to correct for the negative externalities market competition creates. Marx's view of competition as a war like process that militates against mutually beneficial coordination (not to mention cooperation) among individual capitalists especially resonates today. Because *coordination failure* is endemic in the absence of effective collective agency, what is profitable at the micro level ends up being at variance with human welfare as well as the long term collective interest of capitalists. The result is that the two different ways for accounting for economic performance, one, based on profits and the other on human welfare, become increasingly divergent.

Section I

According to Marx what is unique about capitalism is its capacity for self-regulation, i.e., its ability to self-organize around the economic imperative as dictated by forces of competition. In anything that came before in history, organization of economic life had to rely heavily on collective action of one sort or another and that invariably meant some form of organized coercion. Collective action was geared by the powerful few and invariably in a despotic way. The rise of capitalism limited the scope for collective action at least within the economic sphere, and thus direct forms of coercion could be the exception rather than the rule.

For classical liberalism, rallying around individual freedom against despotism and the advocacy of *laissez-faire* basically came to the same thing. Since collective action was thought synonymous with despotic coercion and the market system could function without it, putting the two together, *laissez faire* had to be an essential part of the fight against *tyranny.* Unsurprisingly, the new age found its mantra in Adam Smith's *invisible hand* according to which the individual by acting solely on his self-interest not only helps himself but the society as well. That meant that he no longer had to be sacrificed in the name of the common good.

Marx of course would have disputed that the rise of capitalism brought about the end of coercion by organized political power as such, but would wholeheartedly agree that an important difference nonetheless had emerged. Back breaking hard labor was no longer coerced from the worker by the whip of the master but by the cold calculus of a dire

[1] I would like to acknowledge Jane D'Arista not only for her encouragement and support but also for the fact that many ideas discussed in this paper draws liberally from my past collaborative work with her.

circumstance he found himself in. The dire circumstance resulted from a lopsided distribution of *means of production and subsistence*, and the property relations that brought it about had to be maintained at all cost if the system were to remain viable. Once the monopoly of *haves* over economic resources was safeguarded, the dependence of *have-nots* on the labor market for survival went a long way in making *self-regulation* a fact of life.

In this view, capitalism did not eradicate coercive collective action but simply pushed it a step back into the background. As 'coercion-by-force-of-circumstance' replaced direct coercion in the realm of work, the threat of direct coercion had to be kept in store and used as needed in quelling any challenge the *have-nots* posed to their exclusion from the means of production. That however meant the *haves* faced a common cost that had to be discharged through some form of collective action. This for Marx was the very *raison d'etre* of the capitalist state. Organized coercive power was required not only to thwart challenges that defied private property from below, but also to discipline those on top so that none of their members could free ride on the collective expense. There also had to be a check on predatory and opportunistic practices on the part of the rich and powerful that undermined ideological legitimacy, for legitimacy greatly reduced the cost of enforcing private property.

Yet, the decentralized nature of capitalism, the very source of its historical claim for fame, made it an uphill struggle to carry out any effective collective action. Overcoming the inherent free rider problem among the *haves* often required that collective costs were palpable enough, posing a clear, immediate danger if they went unaddressed. But, otherwise, classical capitalism entailed little capacity to organize corrective collective action for the costs it externalized, and, arguably, owed its vibrancy to this very fact. In fact, its dynamism rested on its ability to wager its future on borrowed time. By the time collateral damage from production on human and environmental landscape reached calamitous levels, threatening its very viability, the system had to have produced resources at a much higher scale, making it potentially feasible to tackle these collective costs and negative externalities it had generated in its wake. While necessary this was not however sufficient for effective corrective collective action. The right constellation of political forces was the other prerequisite, and that often required the midwife of a deep crisis to emerge.

Consider education. That it was a privilege of the rich was fine as long as the general level of technology required the average worker to be anything but literate. However, once economic sophistication reached a certain level the potential productivity gains from workers with a basic level of education became palpable, turning the dismal condition of the working class into a badly mismanaged *common pool resource*. But, better management required putting in place a generalized system of public education and that involved a political challenge as it meant among other things the curtailment of child labor. There was invariably a political opposition to overcome before any reform especially when it involved the realm of work was enacted, whether it was the curtailment of child labor, reduction of the workday or collective bargaining rights. It is telling that it took deft political maneuvering on the part of FDR in the midst of a depression to pass the Wagner Act of 1935, and only after a major political compromise was made. Share croppers and other agricultural workers had to be ignored in the bill because Roosevelt was afraid the southern Democrats and their constituency the large landlords would otherwise derail it in the US Senate. Even the rise of central banking, again the outcome of an effort to address a mounting collective cost as periodic bank panics and failures dotted the landscape at the turn of the previous century, had its complex political history especially in the US despite its direct benefit to the propertied classes.

Section II

The broader implication of all this is that the ability of political power to serve the common interest of the classes it represents requires the state to rise above them to be able to impose uniform restrictions on market forces potentially beneficial to all. It was crucial that market restrictions were imposed uniformly. Because any capitalist who could skirt them could acquire a competitive advantage, the state had to be able to cajole or otherwise discipline wayward members of the *haves* out to benefit at others' expense. Ironically, the emergence of organized labor and universal suffrage has made this easier by increasing the urgency of attending to the collective class interest on the part of the *haves*. In the same vein, the Great Depression and later the Cold War became significant catalysts in the historical rise of the big state. Each in its own way enhanced the state's power to tower above the propertied classes and factional interests when the long term class interest it represented called for it. This was in a nutshell the dynamic that eventually produced the welfare state and the so-called "mixed economy."

The class truce that made it possible gave rise to a new dichotomy, demarcating two disparate spheres with different logics of their own. "Render unto Caesar the things which are Caesar's, and unto God the things that are God's," Jesus is supposed to have said. In a similar manner now the market had its realm and the State its. Akin to the power drive Caesar symbolized, the profit motive of the market was the force that moved the rivers and the mountains, while the State replaced organized Religion as the steward of public conscience and beneficence, taking on the responsibility of safeguarding human welfare. The dichotomy afforded a policy space to address the common good, supporting a new sense of civic engagement that seemed to transcend class interest. Collective action was no longer synonymous with despotism, but, on the contrary, an exercise in democracy. Workers, who acted as the true guardians of their respective nation-states in both world wars, could now fancy themselves as middle class citizens rather than the dispossessed *outsiders* they were before. Citizenship mattered and that was no mere false consciousness. The social wage accounted for a good part of the drastically improved living standard workers enjoyed, comprising a whole array of public services that became their birth right as citizens. More importantly, *voice* bred *loyalty* and *loyalty* supported civil engagement, and that in turn checked opportunistic self-interest, at least making it a political liability for the *haves* to act on it.

In more technical terms, the public investments and services the welfare state used to manage the nation's *common pool resources* were in the nature of *club goods.* The system presupposed a *polity* capable of exercising collective agency, setting out rules that not only restricted behavior that could harm the *commons* but also those that enabled coordination across members. Both voluntary compliance and apportioning the cost of investing in the *commons* called for a social compact, placing civic constraints on members' access to common resources while excluding outsiders for whom the compact did not apply. A clear demarcation between members and non-members was thus essential, necessitating tight national borders and a strong sense of citizenship which only a deepening democracy could inculcate. Because *club goods* worked - resulting in enhanced labor productivity, economic growth, ideological legitimacy, reduced enforcement costs, etc. - it also paid off handsomely to invest in them for the rich and powerful once the collective action problem was disposed of by the *activist* state. The tacit social accord of the era had the *haves* receive the lion's share of economic gains, but also saddled them with a disproportionate share of the taxes that

financed the *club* goods. In retrospect, this was indeed the golden age of capitalism – only the retrograde among the wealthy complained about high taxes or big government.

The golden age began to unravel when it no longer paid off to invest in public (club) goods and services. That was mainly the result of two broad causes. One, the increasing complexity of the international economy rendered the system of financial regulation put in place in the 1930s - another *club good* designed to regulate systemic risk - increasingly cumbersome. Piecemeal deregulation was the easy response in a world where capital's ability to evade national restrictions increased with its mobility across borders. The alternative called for a much more challenging internationally coordinated revamping of regulation at which the liberal political elite failed – perhaps, for not having tried hard enough. Once deregulation proved politically expedient after Reagan and Thatcher, it quickly snowballed culminating in a cycle of market liberalization and further deregulation that eventually gave rise to globalization as we now know it. But, once national borders became increasingly irrelevant for capital and porous for labor, *club goods* could no longer be an effective means of provisioning collective costs. In a world where it made economic sense to offshore blue collar jobs *en masse* taxes on profits soon became a net burden as the cost of public investments could no longer be recouped easily in profits. The era that managed to reconcile profits and public investment in human welfare was coming to an end. The economic basis of the *club* was no more.

The other problem that contributed to its eclipse, spurring on neoliberal globalization was the squeeze rising labor costs and bargaining power, the result of two decades of high employment, exerted on profits. Along with the diminished threat of unemployment and a strong safety net the market's ability to discipline workers waned. Labor's political weight also grew with its increased economic power. That combined with the rising aspirations of the lower classes pushed to transform the state into an agent of social welfare, generating escalating claims on wealth owners' purse and causing them to sour on the activist state. The oil price shock and rising cost inflation drew deeper the wedge between the two opposing class interests, making it increasingly harder for Keynesian aggregate demand management to bridge over them. When the Fed wavered in the face of rising price inflation to sacrifice higher employment for *sound money*, it lost the confidence of financial markets. That, in turn, rendered monetary *fine turning* all the more ineffective and detrimental to price stability. The ground was set for a political backlash from wealth owners who made the *activist* state their main scapegoat. The *policy ineffectiveness doctrine*, coined at the time by academic economists adept in reading the shifting political winds, captured the new mood and gave it a cloak of scientific respectability.

The political shift to the right worked in conquering price inflation and helped the Fed regain the confidence of financial markets. It broke the wage-price spiral by cutting organized labor to size, and that in turn provided a fix for the problem of inflationary weakness of the dollar. International policy coordination, the very challenge liberals failed at, ceased to be an issue once the US led Europe in abrogating the post WWII social compact that made it hard to discipline labor. The monetary tightening and fiscal stimulus under Reagan produced a strong dollar and ballooning trade deficits. Yet, unlike before, rising US trade deficits no longer undermined confidence. The political reconfiguration that broke the back of labor unions provided all the backing the dollar needed as the increased threat of unemployment proved a better anchor than gold. The crisis of confidence was over. Still, it took about a decade for the new neoliberal world order to come into its own. Eventually, advancing globalization and the triumphalism that ensued after the fall of the Berlin Wall clinched the trend that the political

shift to the right had set in motion the decade before. As the strong dollar and trade deficits returned in the mid 1990s it became abundantly clear that there was no going back.

As capitalism galloped past the activist state towards globalization in search of its vibrant past, the *common pool resource* problem began to emerge anew. The progressive substitution of private goods for public services now became the new trend, eclipsing *club goods*. As the *club* began to fragment, the 'winner take all' ethos of markets clashed with that of 'social solidarity' inherent in citizenship, contributing to the steady erosion in the ability to address collective costs and concerns through the normal political process. The basic infrastructure of democracy as embodied in the political machinery bequeathed from the welfare state was still intact, yet it was proving increasingly ineffective in protecting society from the deleterious effects of market expansion. No longer economically functional, democracy was going through a transformation from within driven by the political elite's reinvention of itself as the agent of market reform. Calling its abdication the 'end of ideology,' the political elite arrived at a new consensus, disavowing any effort to constrain or overrule market forces to attain social ends for it was now considered counterproductive. A market friendly approach to statecraft that respected the discipline markets imposed was assumed the more rewarding alternative that could make it easier, the liberal elite believed (hoped?), to promote social welfare.

Section III

As we now know all too well the tilt toward markets paid off only for those on the very top, neither trickling down much nor benefiting the public purse. But, just as the gap between *haves* and *have-nots* was widening to a level unprecedented since before the Great Depression, the state was at the same time losing its power to discipline wayward factional interests out to gain at others' expense. More importantly, that also meant that the rich and powerful were progressively losing their ability to exercise collective agency to safeguard their long term collective interests. An adverse dynamic was thereby set in motion that made the pursuit of short-sighted, narrow self-interest the dominant "wining" strategy, despite its long term harm on common interests.

Consider the financial crisis and ponder what interest that was served by the steady removal of regulatory constraints on leverage. Now, in retrospect, we can identify a few fateful decisions that had a decisive effect on the way to financial implosion - such as the prohibition on regulation of over-the-counter financial derivatives like credit default swaps in 2000, among others - and study their idiosyncratic circumstances, but the salient fact remains: each of these decisions/acts were a part of a long cumulative process that made it progressively easier for financial institutions to migrate into unregulated enclaves so that they could earn higher profits by taking on greater risk. Taking on higher levels of risk became very profitable in part because financial institutions did not have to bear its cost in full. The (private) risk they bore was only a part of the overall risk they took on, the difference being the systemic risk born by the society as a whole. The celebrated revolution in finance worked its magic by making an ever smaller base of short term liabilities support an ever larger volume of long term debt in the financial system as a whole. The inherent higher risk to society this entailed was ignored in the name of market efficiency. Since financial deregulation made the market the arbiter of who bore the risk, the argument ran, it was diversified better because it was priced efficiently. While it is true that risk was diversified much more broadly than ever thought

possible, it took a severe crisis to expose the fiction that market liberalization effectively privatized systemic risk.

It might however be misleading to attribute any causal significance to the arguments that gained currency in support of deregulation and market liberalization beyond their role in whitewashing what was happening. It rather appears that the process of deregulation was driven by the opportunities it afforded financial institutions to gain privately at the collective expense, which also incentivized the exertion of undue influence on the political process to speed up deregulation and further weaken public oversight. Note that this is not the usual argument of *moral hazard* where slackened market discipline causes private agents to stray from the economic imperative and their long term self-interest. Here, the lack of market discipline was not the problem. In fact, it was the opposite. What arguably made profit seeking banks stray from their enlightened self-interest by taking on excessive risk was the economic imperative market discipline imposed on them. The competitive forces their practices abided by served a broader economic function as well. Stagnant wages and skewed income distribution made borrowed funds from wealth owners through financial intermediation a convenient means of resisting falling living standards for working class households. Financial deregulation reduced the cost and eased the terms of borrowing for the deficit units, and lax enforcement of fiduciary oversight made the steady accumulation of debt possible. Thus, the market responded quite efficiently to the demand for cheap loans (and for better yielding safe securities on the part of investors), while competition made it possible to produce them even cheaper over time.

Nor is this an argument of *state capture* by a group of financial oligarchs who enriched themselves by managing to override market forces through political means. While bankers definitely succeeded in enriching themselves and corrupted the political process, these did not necessarily translate into greater power over, or freedom from, market competition. On the contrary, in the age of ascendant capitalism individual bankers, just like individual corporate leaders, have seen their power *vis a vis* markets diminish. The point has been aptly noted by the ex-Labor Secretary Robert Reich: the kind of political power corporate leaders wielded over market forces during the era of the welfare state contrasts sharply with their pliant subservience to them today. In the era of rising markets the real emergent force has notably been the *bottom line*, compelling each individual capitalist to stick closely to his own narrow, short-term self-interest lest any deviation from it caused his downfall. This has strong implications as it signifies a growing inability on the part of capitalists to act as a class in safeguarding their long-term collective interests. For enlightened self-interest is pushed out of reach when capitalists (and bankers) fail at collective agency, which in turn is the price they have to pay when everyone acts on his short-term, narrow self-interest. Yet, they are compelled to continue acting myopically as long as they cannot credibly expect others to behave otherwise.

The broader point is that when the potentially harmful effects of market forces on collective interests cannot be proscribed through some form of collective action competition ends up having a pernicious effect exactly because it is working. The dismantling of regulation exposes a *common pool resource* to over-extraction (as has been the case with excessive risk taking), where competitive advantage accrues to those who are in a position to extract from it more and faster. In more technical terms, deregulation gives rise to a dominant strategy that gives rise to a new socially sub-optimal Nash equilibrium that is characterized by a negative network externality. The mutual restraint that previously prevented this outcome is no longer attainable because whoever continues to self-restrain when others no longer do is

in an unviable position. This implies that the supply inducing effect of deregulation works through what is in fact a social subsidy in the form of freed access to a common resource to private producers, which is unlikely to be sustainable. When it is not, the social cost steadily escalates over time with the progressive degradation of the common resource, exerting a cumulative negative feedback that is liable to have a nonlinear effect on the normal functioning of the system past some critical threshold.

One can also alternatively think that the effect of deregulation is to dismantle a rule/sanction designed to prevent some negative 'network-externality-causing' *coordination failure*. Consider the following analogy: as better technology (diversification) makes cars much safer all speed limits are discarded (lifting of constraints on leverage), giving rise to a strong demand for faster cars (cheaper loans and higher debt) which become more profitable to produce. After a brief interval when both consumers and producers seem to be enjoying driving and producing faster cars, respectively, accidents escalate, locking in everyone in a high risk environment including the remaining cautious drivers whose caution might no longer pay off. In this process, the effect of competition is to speed up the traverse to the new sub-optimal Nash equilibrium created by the *coordination failure*, but until that point is reached the temporary improvement in performance can mistakenly be attributed to gains from market efficiency. Once the new equilibrium is reached however there is little escape from its deleterious effects (negative network externalities) unless (or until?) some form of collective action alters the rules and thus the dynamic of interaction.

Section IV

The important point is whether the foregoing argument can perhaps be generalized to the other salient cases of deregulation in the neoliberal era involving the relaxation of labor and environmental standards. For the ability globalization afforded capital to skirt nationally proscribed 'welfare-enhancing' restrictions had in a similar manner the effect of drawing a wedge between private and social cost. The broader significance of this divergence for environmental degradation, epitomized by the two dollar T-shirt at Wall-Mart, is usually better understood as it relates to pressing issues such as the effect carbon consumption has on global warming. What is perhaps not as well recognized is the common thread between financial risk, the environment and labor – for in each case freed up competition has had the effect of lowering the *supply price* by externalizing internal costs, i.e., by making over-extraction of some *commons* possible. Put differently, in all three cases there is some element of a *common pool resource* that is impossible to fully privatize through market reform, and thus deregulation runs the risk of exposing them to over-extraction. This was arguably Polanyi's main insight and the reason why he argued that these common resources which he called *fictitious commodities* required social protection from market expansion which threatened their long term viability.

Clearly, how long it takes for the adverse feedback from an impaired *fictitious commodity* to cause a tipping point, and how immediate a threat that poses, widely differ. For instance, an unstable regime of financial risk implodes relatively fast as we have experienced, and its effects are swift enough to convince even the most skeptical that they are real. In the case of labor, they might not even be noticeable for a considerably longer period. Notwithstanding their adverse effect on aggregate demand, the divestment in people on the lower rungs of the workforce and the erosion of labor standards in advanced countries might have little immediate economic downside for individual capitalists because of the large reserve army of

labor that has opened up with globalization. The chronic shortages of highly skilled labor that is now being felt in some sectors in advanced economies is a possible exception, not unrelated to the adverse effect increased market uncertainty has on any long term investment in specialized skills. The more consequential impact however appears to be political in the form of the mounting anger among the downwardly mobile population. It remains to be seen if and how much longer the political class will be able to continue channeling this anger into support for further dismantling of the *club* through more market reform, given that it only ratchets up the popular sense of frustration over time.

Of course, nothing brings to sharp relief the problem of collective agency in the face of an escalating adverse feedback effect from a degraded common resource as does the environmental crisis. How long it would take before a political consensus emerges acknowledging that the ongoing damage we inflict on the environment is not sustainable? When would "normal" life as we know it become impaired in a "palpable" way in the absence of a major course correction? Would the adverse feedback effects involve a slow enough process such that conceivably we could adapt our behavior myopically every step of the way until we have effectively locked ourselves in a course that will destroy life? That these questions remain open is itself a major statement in itself, and the crucial question is what explains the paucity of corrective collective action in the face of such alarming odds. Beyond the usual recriminations against the short-sighted politicians, often blamed is the difficulty of forging international agreements on how to apportion the costs of addressing global externalities and providing public goods among a multitude of wayward sovereign nation states. While that surely is a challenge, the problem at hand might have much deeper roots.

For the inability to organize corrective collective action is reminiscent of classical capitalism, that its main strength involving the ability to self-regulate is also its very weakness when it comes to collective action. One is also uncannily reminded of Marx and his analysis of capitalism – two of his central points, especially resonate. One is his view of competition as a war like process, so at variance with "perfect competition" later economists came up with, and how that militates against coordination (not to mention cooperation) among individual capitalists. The idea in Lenin's well-known grim re-rendition conjures capitalists competing among themselves to sell the rope that would be used to hang them. The second point is the very basis of Marx's main gripe with capitalism, as in his view it involves a sharp divergence between the two different ways for accounting for economic performance, one, based on profits and the other on human welfare. The failure of collective agency ties together the two points. Because *coordination failure* is a defining characteristic of capitalist competition, what is profitable for each capitalist ends up being at variance with human welfare as well as the long term collective interest of capitalists. Thus, the failure of collective agency prevents capitalists from changing their "destiny," explaining why Marx thought the "internal contradictions" of the system inexorably would snowball into a generalized, system-wide breakdown. The main idea is that collateral damage from what he called the "law of value" (*read* forces of competition) goes unaddressed until it begins to impair capitalist production (and the society) itself.

That resonates today. Arguably, the very breakdown of the capacity for collective agency in the face of escalating problems caused ultimately by unfettered market expansion and competition is fast becoming the leitmotif of our times. Whether it is the crisis of social protection, environmental or the financial crisis, in each case some mismanaged *common pool resource* is involved, inflicting long run collective costs that we cannot help but ignore because our institutional capacity to organize effective collective action is drastically

compromised. There was a time when the welfare state could successfully enforce mutually binding uniform restraints on market competition, effectively preventing negative network externalities from festering. Citizenship was the key building block of the requisite institutional capacity then. What will it be today? Are democracy and capitalism at logger-heads?

Author contact: korkut@economics.utah.edu

SUGGESTED CITATION:
Korkut Alp Ertürk, "Breakdown of the capacity for collective agency: the leitmotif of our times", *real-world economics review*, issue no. 62, 15 December 2012, pp. 112-120, http://www.paecon.net/PAEReview/issue62/Korkut62.pdf

real-world economics review, issue no. 62
subscribe for free

Surviving progress: Managing the collective risks of civilization

Mark Jablonowski [University of Hartford, U.S.A.]

Abstract
As is becoming ever more apparent, progress carries with it both promise and pitfalls. Though it is quite natural for humans to take an optimistic view of life, this optimism must at the same time be tempered with realism. We cannot therefore let a focus on average, or expected, outcomes cause us to ignore possible high-stakes (existential) risks associated with what is becoming an increasingly complex world. In this article, we argue that a more complete view is necessary for the proper assessment and management of human-induced risk. This includes not only the technical aspects of high-stakes risk management, but also the social, political and economic framework within which it is carried out. Unfortunately, attention to such crucial details is not often the case.

Keywords: Survival; human-induced risk; precautionary principle; alternative socio-economic systems.

Introduction

Awareness of the potential dangers associated with technological/ material advancement ("progress") is growing. We have become especially concerned about the preservation of our ecological support systems in the face of increased industrial production and resource usage. At the same time, many continue to downplay these concerns by emphasizing the virtues of progress based on observed *average* outcomes. As a result the possibility of negative extremes is ignored. The severe nature of possible negative outcomes calls for a more precautionary approach to managing the high-stakes risks that may accompany technological change, based on the need to preemptively deal with complex threats. Yet, precaution is often portrayed as an *impediment* to progress to the extent that it interferes, or is perceived to interfere, with higher achievement levels – *on average*.

To put societal risk management on a sound footing we need to assess the extent and nature of increasing exposures to catastrophic risks associated with progress and take proper action. *The ability to really do something about these risks, however, depends on the development of proper institutional structures – social, political and economic*. Depending solely on optimistic estimates merely reinforces acceptance of the *status quo*. Behind this *status quo* lie powerful institutional influences, including the advancement of the increasingly concentrated (and self-serving) superstructure of capitalism.

Many aspects of our current economic and political structures, world-wide, are at odds with a more precautionary approach to high-stakes risk simply because it threatens the heady optimism that fuels further material growth. Global capitalism today, and the power structure that underlies it, deemphasizes precisely those collective interests which must be addressed if precautionary risk management is to achieve its goals. It builds a false optimism by intentionally concentrating public attention on myopic indicators of progress. In the mean time, the potential for disaster builds.
Prudence, however, is not the enemy of technological change. In fact, precaution does not require that we forego the gains of progress. Rather, it suggests that that we must advance

safely. That is, genuine progress proceeds by paying careful attention to the high-stakes risk potentials involved. It is only with the proper recognition of the threats that face us, along with the construction of suitable frameworks for doing so, that we can help assure our long run survival and that of the ecological system that we share with other living beings.

As the threats of untoward outcomes associated with material progress capture the collective interest, public concern increases. Increased perception of threats – ecological, financial, social and political – leads to an altering of our collective consciousness that suggests that reliance on assurances of positive progress "on average" may hold some very unpleasant surprises. This societal awakening to a more dangerous world can itself have serious repercussions in terms of social uneasiness about such conditions and what to do about them. Such unrest is liable to create problems of its own. The task at hand is to forestall the need for sudden reaction, a reaction that may itself be too little or come too late. To do so requires that an informed public resist powerful institutional influences and establish the proper course of action in anticipation of future risk issues.

The distribution of the "good" and "bad" of progress

Technological change is by its very nature a complex, probabilistic phenomenon. A realistic appraisal of the positive and negative potentials of progress is represented by a *probability distribution* across possible outcomes. Only a distribution of probabilities, or likelihoods, over all possible outcomes can give us a realistic picture of the risks we face. On the other hand, discussions of progress often assume we can reduce the results of scientific and technological change to some single indicator, perhaps itself an amalgam of suitable measures. Often, such indicators are biased toward material outcomes such as dollar value of goods and service produced by the society over the course of some time period. The most cited of these is the *gross domestic product*, or GDP. A nation's GDP has become an almost universal indicator of progress, both temporally and measured against other nations.

Figure 1 shows the trend in U.S. GDP since the Great Depression. It is on this impressive track record and similar results in other world economies that many of us base considerable optimism about the future. Yet, at the same time we cannot ignore the potential for negative social effects of increased inequalities in the distribution of material wealth, the threat of destruction from biological and nuclear weapons, increased instability of a complex financial system and the increase in serious environmental threats represented by the shear volume of industrial production.

More recently, the GDP has come under criticism for focusing solely on the dollar value of final output of goods and services. As a result, indicators that include a wider array of outcomes, including human and environmental health have been proposed.[1] Most of these, however, continue to rely on averages and related point estimates and do not consider distributions over all possible outcomes. This continued reliance on fixed estimates is an indicator of how strongly we psychologically desire determinism in our perceptions of where our society is heading. While estimates than incorporate a wider variety of dimensions of well-being may impart some needed degree of conservatism to the results, probabilistic outcomes continue to be ignored.

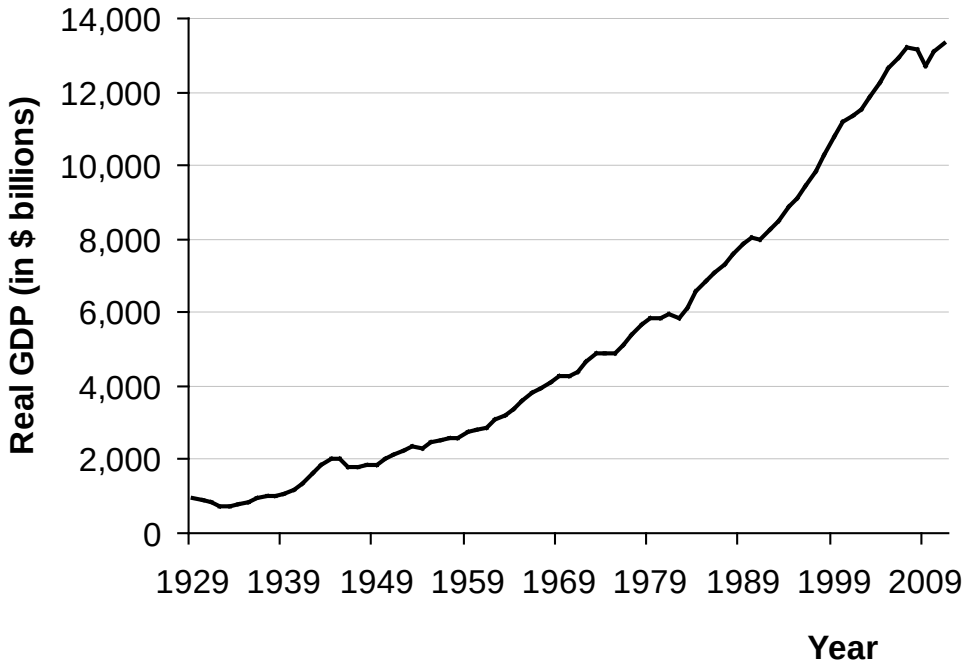


Figure 1. Growth in U.S. GDP, 1929-2011 (Source: U.S. Bureau of Economic Analysis)

A wider appreciation of the distribution of outcomes we face, both positive and negative, that incorporates all appropriate dimensions of progress is the first step toward achieving a more realistic appreciation of our world. Figure 2 shows three possible distributions of outcomes assessed over some segment of historical time (usually represented as one year). Also shown in the diagram is a lower safety level below which well-being cannot fall if we are to avoid large-scale detriment (including possible extinction). The lower safety level, which may itself be imperfectly known to us, bounds what we might call the "danger zone". This retrograde may occur as a result of some untoward probabilistic event, such as a global epidemic, nuclear accident or war. Survival of our civilization depends on our being able to achieve some minimal (subsistence) level of progress. While survival is not the only goal of human-kind, it is obvious that without some assurance of continuity further goals cannot be obtained.

Of course, we can never achieve a genuinely zero level of risk. Destruction by age-old natural perils, such as a catastrophic asteroid strike, is always a possibility. Some positive acceptance level of risk must be set, in terms of likelihood or relative annual probability of occurrence. A reasonable representation is the *natural background level* of risk. This level could be represented concretely by observing the typical period of species survival on earth. We might note for example that vertebrate species have survived on this earth for some million years, suggesting an annual probability threshold level based on the inverse of this epoch, or roughly "one in a million".[2]

Distribution (a) shows the outcomes faced by an emerging civilization or society. On average it can expect a positive standard of living while still struggling for evolutionary survival (as indicated by a negative risk level above that considered "natural"). Distribution (b) represents a civilization that has attained some higher level of achievement. At the same time it has

managed to tame the high-stakes risks it faces, or at least reduced them to (or below) the natural background level. In this sense, this civilization blends in with those living things that have achieved some degree of long run success in preserving their existence (either via evolutionary adaptation or conscious control). This distribution provides an operational definition of sustainability in terms of reducing risk to natural levels while still providing at least some modest level of progress. Last but not least, distribution (c) shows a relatively advanced level of progress (at least compared to the other two distributions), indicated by the concentration of probability at higher achievement levels. It is nonetheless haunted by the potential for disaster (that is, a likelihood of catastrophe above the natural level).

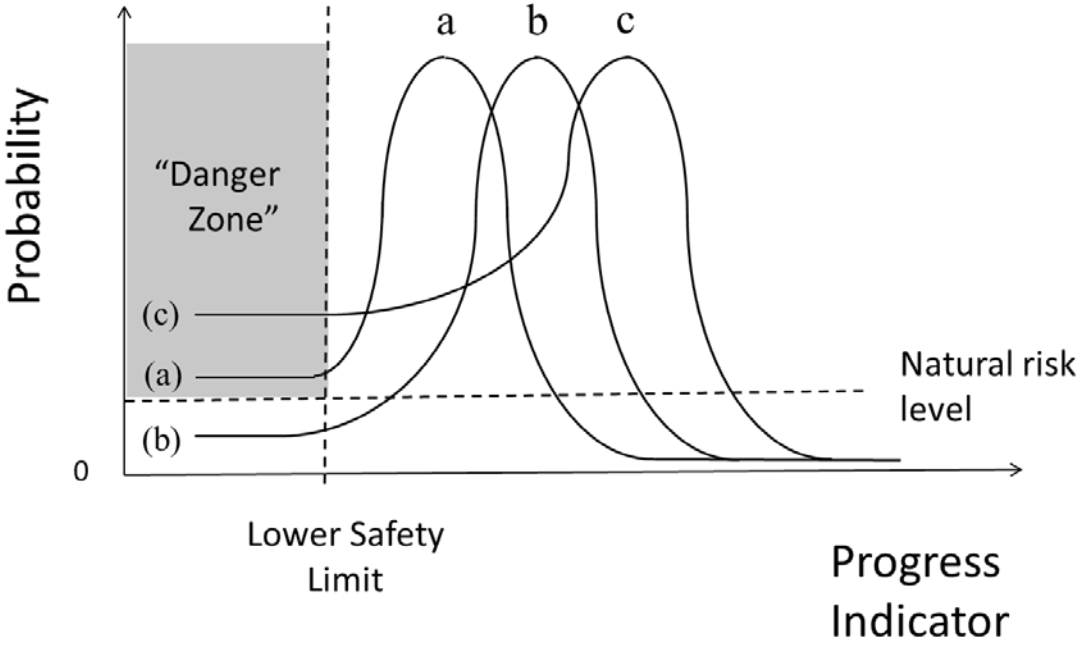


Figure 2. Probability distributions of the outcomes of human progress

The importance of a precautionary stance

Statistical risk assessment deals with average outcomes that simplify the comparison of probabilistic costs and benefits. The problem is that statistical estimates *over*-simplify the analysis when costs can be terminal – i.e., *catastrophic*. So while such cost/ benefit assessment may be perfectly sound in the statistical domain (i.e., that in which the "law of averages" functions), it makes no sense when faced with the fundamental problem of catastrophe (…*in the long run, there may be no long run).* In this situation, we must consider *precautionary avoidance*.[3] When large-scale risks threaten the existence of the system we should avoid them or at least reduce them to natural background levels. Blinded by the promise of increasing gains "on average" we fail to see the increasing potential for disaster. This realization, if we rely on statistical analysis alone, may very well come too late.

Precaution is particularly relevant today because of the mounting evidence suggesting that our society faces something like distribution (c) in Figure 2. That is, the likelihood of human-

induced catastrophe is rising far above natural levels. The same scientific and technical discoveries that promised a rise in the average standard of living have brought with them the prospects for serious adverse consequences. These include the potential for sudden large-scale catastrophes such as those associated with nuclear technologies for energy production as well as intentional releases of radiation under conditions of nuclear warfare.[4] More insidious is the slow build-up of catastrophic threats. Among these are increases in environmental chemical pollutants associated with expanding industrial output. Sometimes referred to as "creeping catastrophes", they may be unstoppable once serious enough to be recognized.[5] Fast or slow, precaution enters when we cannot reasonably exclude the possibility of disaster.

If dependence on averages is excluded, by logical principle, have we any other option? With respect to the high-stakes threats to our existence the only other rational choice besides precaution is *fatalism* – we can't do anything about it, so why try? Though the fatalistic attitude makes perfect sense when we are faced with irreducible natural risks it amounts to mere acquiescence, or giving-up, in the face of human-induced risks. As a result, it is a position that is easily taken advantage of by those who would incur such risks for the purpose of increasing individual, short-term gain. Fatalism is, therefore, a conclusion we must not jump to without properly exploring the alternatives.

Socio-Economic structures for survival

While fatalism with respect to high stakes risk is an extreme position, many of us believe, or are led to believe, that there is no alternative to the acceptance of high-stakes risk. We rely on assessments based on average outcomes and statistical cost/ benefit comparisons of technological advancements, calculated by various "experts", thereby promoting a false sense of optimism. What will be, will be – but it will all turn out for the best. By not recognizing, or not being allowed to recognize, the entire distribution of potential results (including the very bad ones) we become indifferent toward large scale risks by default. Those who focus exclusively on statistical aspects of risk may find themselves supporting a *status quo* which could spell disaster.

To avoid misplaced emphasis on average outcomes we need socio-economic systems that recognize the importance of absolutes. With absolutes however come perceived restrictions on individual initiative. Instead, we cling to the alleged freedom of *tradeoffs* in the form of market-based, cost/ benefit comparisons. This faith in market outcomes, however, only helps hide the risks at the root of the problem of unfettered progress. Absolutes, including safe ecosystem function, cannot be traded for material gain in any real sense. Attempts to place a monetary value on human life and environmental quality only show just how insensitive we have become toward the preservation of these absolutes.[6]

The concern for increased private profit over social wellbeing represented by the suppression of consideration of extreme outcomes has fueled the growth of big business, global finance and the government structures that support them. In the process, it creates conditions for our ultimate destruction.[7] The *paradox of progress* that results is that we achieve a material utopia only under the threat of annihilation. Survival, both of ourselves and the ecological system we are a part of, requires that self interest must at some point give way to public awareness, and a framework under which environmental absolutes are recognized and maintained.

The concentration of economic and social power in private hands has also been linked to a variety of social ills. Among these is the intentional mal-distribution of incomes and opportunities among the population. As a result, various socialist alternatives to the system of capitalism have been proposed with an emphasis on redressing worker exploitation (in the sense developed by Marx). However, programs of economic and political socialization that aim to "spread the wealth" do not *automatically* guarantee risk issues will be addressed. These programs often focus on increasing the *overall* level of material gain at an unabated pace. The socialism of the Soviet Union and China, for example, faired as poorly at natural preservation as did the capitalist systems of the West. Of course, to the extent human beings are subject to exploitation via strong class divisions, the perils of progress are bound to be unequally distributed. While not ignoring social issues, our socio-economic framework must explicitly include *both* human and natural autonomy.[8]

Concern for the wider risks of human and ecological existence requires recognition of an extended community, or *e-community*, of life that respects the absolute conditions for the preservation of our living environment. The idea is captured in the comprehensive bioethic based on natural balance associated with environmentalists Aldo Leopold and Arne Naess. Leopold was a pioneer of natural conservation. The basis of his environmental ethic was simple and direct: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."[9] The concept of natural balance also figures prominently in the thought of the Norwegian ecologist and philosopher Arne Naess. He captures the notion of an ethic of natural balance in his vision of *ecosophy*: "… a philosophy of ecological harmony or equilibrium."[10]

It is on these foundations that the movement for a *deep ecology* which demands proper respect for the entire eco-sphere is based. We may contrast this with the *shallow* approach which tends toward political expediency and the preservation of an anthropocentric *status quo*. The natural balance inherent in the extended view is based on a metaphor for system completeness in which the conditions for survival and growth are to be found in the search for interconnectedness in the world. It cannot be made to depend exclusively on science, biological or otherwise, to "prove" what is morally correct. For that, as Naess suggests, we need search no further than the system that sustains us and the world around us.[11] The influences of deep ecology on political economy suggest that rational alternatives to the capitalist *status quo* must rely as much (or more) on the thought of Leopold and Naess as that of Marx and Engels.

The precautionary approach to high-stakes risks holds that system integrity is preserved by minimal interference with natural performance when the full potential outcome(s) of any such interference is (are) unknown. The ecosophy of extended community is inherently precautionary in the sense suggested by Gregory Cooper: "If we are unsure about the cognitive lives of other organisms, about the extent to which there is a teleology beyond intentionality, about the existence of a natural balance in ecosystems, then we should conduct ourselves as if the possibilities are true until we have established otherwise".[12] In terms of natural risk levels, it suggests that genuine progress is measured by how far we get beyond subsistence, *safely*.

Planning for balance

The market systems on which development in the modern capitalist world is based cannot deal with absolutes – only tradeoffs. To assure a safer future, markets must be subordinated to a coordinated system of planning in survival critical areas of our existence. Only through deliberate planning on the *public scale* can we anticipate and deal with existential risks in a properly precautionary fashion. Planning can in this way be viewed as a process in harmony with nature: *Organism* implies *organization*.[13]

The precautionary approach suggests that system integrity is preserved by minimal interference with natural performance when the full potential outcome(s) of any such interference is (are) unknown. In turn, safe progress is about preserving balance, in this wider sense. Risk management that shows the proper respect for complex natural system function is in line with the ecological philosophies of environmentalists like Leopold and Naess. Absolute constraints thereby bound assessments in terms of tradeoffs, or cost-benefit. This does not mean we abandon cost-benefit. It only means that it must be subordinated to absolutes. When necessary, average gains must be sacrificed for safety (that is, distribution (b) in Figure 2 is *absolutely* preferred to distribution (c)).

Effective planning against risk must therefore go beyond mere *regulation* of markets. Regulation assumes that markets functioning under private ownership of critical infrastructure remain primary in creating and distributing the fruits of progress, as well as in dealing with their negative impacts. In the case of risk it attempts to discipline these markets after the fact, relying mostly on statistical observations of harm and the implementation of financial incentives for its redress. Taking action once the potential for large scale risks has already become entrenched leads to risk dilemmas of the "doomed if we do, doomed if we don't" variety. To avoid dilemmas of this sort we need to act collectively by assessing safe alternatives early on in a process of planning for safe progress.

While planning incorporates the satisfaction of human needs, it recognizes that we must do so while protecting environmental conditions for survival. Using a multi-criteria approach, planning can incorporate proper constraints on human activities that may result in long-term harm.[14] Direct public participation also becomes essential for the proper direction of future investments for safe development. Decisions based on the profit motive alone are bound to distort allocations as they are invariably based on average returns. While risk may be considered in such investments, it is only the chance of failing to achieve sufficient *monetary* returns that is usually considered.

Properly articulated, planning will require increased social stewardship and direct control of vital natural resources, their processing and distribution. This calls for a reversal of trends toward privatization and the (re)surgence of *public* enterprise, at least in survival critical industries. It is hard to envision, for example, effective coordination for cleaner energy on the scale necessary to promote long-term survival based on private interests alone. It is our duty as members of the extended community to tend these resources responsibly. We must come to the realization that we have abandoned too much to private economic control in the name of short-term gains ("efficiency"). We may eventually pay a greater price than we can now even imagine.

Of course, some degree of decentralization is necessary for effective articulation of the requirements of the extended community. Commitment must be able to work its way from the

"bottom up", not just the "top down". There exist many approaches to decentralized planning for achieving public purpose which have the ability to genuinely improve our standard of living. These include various versions of *participatory economics* in which human beings at all levels of society participate democratically in choices about both resource allocation and preservation.[15]

Markets are valued for providing *consumer sovereignty*, or "freedom of choice". Very often, however, the process is subverted in the name of private gain, forcing us to make the *wrong* choices with respect to long term risk. Under these conditions, markets cannot be expected to undo the damage that they themselves have contributed to.[16] Continued reliance on fossil fuel energy sources, preference for private over public forms of transportation, low recyclability of product packaging, disregard for the carcinogenic properties and other health risks of consumer products; all of these increase the potential for bad outcomes on a large scale. Coordinated public planning, applied as necessary, can help us overcome the shortsighted bias of *both* producers and consumers when it comes to preserving our existence and that of the natural world around us.

On guidance "from above"

Any suggestion for the need for comprehensive planning with regard to socio-economic objectives is bound to raise age-old suspicions of authority, or control "from above". The threat of loss of individuality remains perhaps the biggest hang-up in a popular acceptance of any genuine vision of coordinated community. It is unlikely, however, that the promotion of the necessary sense of purpose can proceed without the exercise of at least some degree of central authority for its guidance. Human autonomy (non-alienation) is perhaps itself best conceived as a concomitant of natural autonomy. Autonomy in turn does not mean complete independence, but rather a respect for the value of individual lives.[17] Humans need to recognize the autonomy of all living things, as well as the natural system they represent to appreciate and achieve our own.

Of course, the idea of a benevolent potentate has lost much of its luster in modern times. Many still cling to some vestiges of it in religious observance, though most of these remain symbolic. Gone is the genuine faith in a spiritual body that can help guide us through troubled times. It is precisely this faith that is needed to guide us through to a better end. Unfortunately, most of us cannot envision any form of authority beyond the human kind, with all its limitations and frailties. As a result we flounder under the distrust of any central authority that holds itself out as acting through a human polity for the public good. At the same time, we readily succumb to the influence of those whose private fortunes give them the power to control our lives via economic means. As long as there is at least something in it for us, individually, then we are willing to play along (i.e., acquiesce). It turns out that the guidance we seek is not to be found in human form but rather in nature itself. We need to respond to the *authority of nature* as reflected in, among other things, the absolute limits it imposes on species survival.

Nature's guiding role for moral action need not imply that nature is itself moral, or presents a model for such actions wholly independent of human reason. Instead, in the words of ecologist Edwin Partridge, nature presents us with a "moral resource".[18] Through its workings ("laws") we identify guidelines for action. A Global Constitution and associated Bill of (Natural) Rights would include the duties imposed by maintaining a balance of nature in addition to the

human-based rights of free speech, freedom of assembly and so on. The duty of human leaders is to properly interpret and apply these natural edicts.

To be sure, the idea of centralized authority has been abused by a variety of false prophets who promoted it with only *self*-interest in mind. On the other hand, an enlightened individualism cannot be depended on to achieve truly global goals where this wider outlook includes diverse geographic societies, life forms and their future generations as well. Practically, at least some degree of centrality of overall purpose may depend on the establishment of a strong group (the *e-vanguard*) that can instill and promote this wider sense of purpose within the community.

Ultimately, we seek to transcend the coercive mechanism of the state altogether. To do so requires that we integrate the commitment to extended community in our individual lives and our institutions. In the mean time a properly constituted *eco-state* remains simply an expedient. It is a necessary transition mechanism that can help shape and guide our consciousness toward wider natural goals, while helping build the appropriate institutions. The transition eventually leads to a *state of nature*, perceived now as a natural *condition* of being and not as a coercive mechanism.

Conclusions

Optimism is a very positive trait of human beings. It can help us maintain our vigor and resolve in the face of hardship. It provides the impetus for great scientific and technical discoveries, and gives us hope for the future. Failure to be realistic in the process of assessing the way forward can hold severe drawbacks of its own. Our existence is one that is to a great extent ruled by randomness. However, we often downplay the effects of chance by focusing on expected, or "average", outcomes when faced with a spectrum of probabilistic outcomes of human-induced change. This can obscure serious threats to our ecological existence. A progressive society must recognize the potential for existential catastrophe along the way and work towards managing such untoward, yet crucial, outcomes. If it is optimism with which we are to face the world, let it be driven by reality – not fantasy.

Given the existence of high-stakes risks associated with progress we need to take a precautionary approach that considers not just the most likely outcomes but also the negative *extremes*. Achieving effective precautionary risk management is not simply a matter of awareness. We need to establish a system of social governance suited to its challenges, including the recognition of the absolutes entailed in maintaining environmental integrity. Any such system of social institutions will include the ability to plan ahead while recognizing itself as part of the wider natural world. This means keeping the preservation of environmental integrity in the forefront. Systematic risk management is about maintaining this balance, not reacting to bad outcomes after they occur. When faced with catastrophic loss potentials *we don't get a second chance to get things right*.

Our duty to society and the world around us is to properly recognize the challenge that we face with respect to high-stakes (existential) risks and take appropriate actions *as a society*. We know that real-world complexities shroud this determination in uncertainty. This means that the any signals we receive will be only very weak ones. The greater challenge we face is acting on them before it becomes too late.

Notes

1. See for example J. Talbot, C. Cobb and N. Slattery, *The Genuine Progress Indicator: A Tool for Sustainable Development* (Oakland, CA: Redefining Progress, 2006). In actuality, the difference between GDP and extended measures is likely to be one of the *rate* of change, not its directionality. It is hard to make a case that human progress has, on average, been retrograde through time.

2. Reasonable bounds of species survival are set here based on observations of E. O. Wilson in *The Diversity of Life* (Cambridge, MA: Belknap Press, 1992).

3. For more on the theory and application of precaution see M. Jablonowski, *Precautionary Risk Management: Dealing with Catastrophic Loss Potentials in Business, the Community and Society* (Basingstoke, UK: Palgrave Macmillan, 2006)

4. See Nick Bostrom and Milan M. Cirkovic, *Global Catastrophic Risks* (London: Oxford University Press, 2008).

5. Issues of latency and delayed manifestation are usually associated with risks to human health arising from human-induced chemical disruption of the environment. See McCally, Michael, ed., *Life Support: The Environment and Human Health* (Cambridge, MA: MIT Press, 2002).

6. See Ackerman, Frank and Lisa Heinzerling, *Priceless: On Knowing the Price of Everything and the Value of Nothing* (New York: The New Press, 2004).

7. The link between unbridled capitalist development and ecological destruction is developed in J. Kovel, *The Enemy of Nature: The End of Capitalism or the End of the Earth?* (London: Zed Books, 2002).

8. So-called *ecosocialism* is based on attempts to find deeper connections between socialism and environmentalism. Typical among these is Derek Wall's *The Rise of the Green Left: A Global Introduction to Ecosocialism* (London: Pluto Press, 2010). While presenting a cogent argument that modern capitalism is *inherently* destructive toward nature, Wall does not sufficiently demonstrate why socialism (traditionally viewed as a purely humanistic program) is not. In a similar vein, portrayals of Marx as a proto-environmentalist have met with considerable skepticism from the eco-centric Left. See, for example, Hwa Yol Jung, "Marxism and Deep Ecology in Postmodernity: From Homo Oeconomicus to Homo Ecologicus", *Thesis Eleven* 28 (February 1991), pp. 86-99.

9. A. Leopold, *A Sand County Almanac* (New York: Oxford University Press), pp. 224-5. Leopold's bioethic of community - what he called the "land ethic" - has been further developed in the contemporary writings of J. Baird Callicott, including *In Defense of the Land Ethic (*Albany: State University of New York Press, 1989).

10. Arne Naess, "The Shallow and the Deep, Long-Range Ecology Movement: A Summary", *Inquiry* (Oslo) 16/1 (1973), pp. 95-100.

11. Arne Naess, "From Ecology to Ecosophy, From Science to Wisdom". *World Futures* 27 (1989), pp. 185-190.

12. Gregory Cooper, "Teleology and Environmental Ethics", *American Philosophical Quarterly* 35/2 (April, 1988), pp.195-207.

13. The idea of social and economic planning in concert with natural balance is developed in M. Jablonowski, *Planning for Balance: Making the Choice for a Safer Future* (SwiftRiver Press, 2010). See also Melville C. Branch, *Planning: Universal Process* (New York: Praeger 1990).

14. Aspects of multi-criteria planning applied to achievement of a safer future are discussed in P. Bartelmus, "Limits to Development – Environmental Constraints of Human Satisfaction", *Journal of Environmental Management*, 9 (1979), pp. 255-269.

15. See, for example, Michael Albert's *Parecon: Life After Capitalism* (London: Verso, 2003).

16. See J. O'Neill, "Markets and the Environment: The Solution Is the Problem", *Economic and Political Weekly* 36 (May 26, 2001), pp. 1865-1873.

17. See Thomas Heyd, *Recognizing the Autonomy of Nature*, (Columbia University Press, 2005).

18. Ernest Partridge, "Nature as a Moral Resource", *Environmental Ethics*, 6 (Summer, 1984), pp. 101-130.

Author contact: jablonows@hartford.edu

SUGGESTED CITATION:
Mark Jablonowski, "Surviving progress: Managing the collective risks of civilization", *real-world economics review*, issue no. 62, 15 December 2012, pp. 121-131, http://www.paecon.net/PAEReview/issue62/Jablonowski62

Financial Capitalism – at Odds With Democracy:

The trap of an "impossible" profit rate[1]

Wolfram Elsner [University of Bremen, Germany]

Abstract:
This paper discusses the financial crisis and the phenomena triggered by it in the light of the Marxian profit rate (PR). The PR is considered as a heuristic for typical politico-socio-economic constellations and subsequent processes, and the "neoliberal" system transformation as a unique redistribution project that has pushed, at first, the PR but also led to real-economic slack and drainage. This promoted "financialization" and the self-reinforcement of fictitious capital, the speculation sector. While conventional industrial capital and fictitious capital interact in specific ways, their mechanisms are different. They are comparable, however, as that they compete for the same industrial surplus and real resources. Thus, a unified common PR is conceptualized and quantified. While the "bubble" has become a dominant mechanism of redistribution, an average PR at historically usual levels of 5-10% has become impossible with the explosion of fictitious capital. Thus the reinforcement of redistribution as well as the flight into resource and land grabbing to save the implosion of the PR in case of the implosion of the bubble. The dimension of necessary redistribution for a required benchmark PR to "satisfy the financial markets" indicates that state budgets and whole GPDs have become too small. Thus, the resources of earth are to be drained. The magnitude of redistribution also appears incompatible with even democracy. The EU, in particular, seems to be on a way from post-democracy to pre-dictatorship.

An introductory remark: The profit rate – Marxist, "Marxologist", or "Marxian"?

Applying the logic and dynamics of Marx's profit rate (PR), which is not a crisis theory *per se*, to the financial and, above that, systemic crisis of "financialized" capitalism raises the question of the theoretical frame and motivation of doing so. I have never declared myself a Marxist; have never worked pertinent to the questions of modern international Marxist research. Nor have I ever been a "Marxologist" with an interest in the most sophisticated mathematical problems of, e.g., differential equation systems to solve cutting-edge puzzles of values vs. prices and their relative formal dynamics. I have, rather, a much less ambitious "*Marxian*" motivation, pragmatically and piecewise discovered in approaching the cumulative and multiple crises of a degenerated capitalism 2008ff. Even the financial system has not been my research field proper before; I am, rather, in heterodox evolutionary-institutional(ist) complexity microeconomics.

But as a heterodox economist, I was asked to give interviews on the crisis for several radio stations and to provide a regular slot on a local radio station, and was invited to give talks on

[1] This paper given at the international COST Conference "Democracy and Financial Capital" University of Kassel, October 11 - 13, 2012, is work in progress. I have not made intensive reference yet to recent empirical profit rate calculations nor addressed the different possible ways to calculate it. I also have not developed in this version a formal appendix on the algebraic conditions of profit rate increasing or decreasing, according to the stylized constellations addressed in this paper. Finally, I have not yet intensely discussed the differences and similarities between conventional industrial capital and fictitious capital. It should become clear, though, that and how fictitious capital emerges into an overwhelming dominance out of conventional capital, under neoliberal conditions. And while conventional and fictitious capitals do interact in specific ways, they are similar in the sense that they compete for the same surplus value. Therefore, while it would make sense to draft a separate profit rate for each, it also appears fully reasonable to establish a common, general, average profit rate and demonstrate its increasing impossibility, with the further implications discussed in this paper.

the subject to different audiences and in different circumstances. Among those was a public speech at a local "Occupy" demonstration. Subsequently, I was asked to provide something readable, and the texts I wrote were distributed on the net, printed and reprinted as brochures by an alternative publisher – but all in German so far (see, e.g., Elsner 2012a,b, 2013a). More invited talks and contributions followed, among them a talk at a national conference of the German ex-post-autistic and now real-world economic work groups and a "Marxian" introduction to a re-edition (2013) of a 6-vols. classic German Marx works edition (Elsner 2013b).

Based on these, I came to trace the Marxian PR, and it increasingly seemed to me that it may help considerably to *put into context and explain* many of the new, stunning, and often disparate phenomena such as the financial crisis and continuing real-economic slack, reinforced redistribution by governments' policies, tightened austerity policies and subsequent double dips, the degeneration of the whole late-capitalist economy to a cemented global creditor-debtor system, the unleashed global resource speculation and land-grabbing, social decay, political legitimation crises, and the moral demise of the "elites". All those phenomena may, in the frame of a PR, be put in context and explained objectively, while so far they have been mostly comprehended, in mainstream thinking, only by more or less moral categories such as personal greed, fraud, and predation (which doubtlessly are at work as well). Among the surprising insights based on the PRis a clearer understanding of the systemic interrelations between the continuing real-sector slack, double and triple dips, the financial sector's redistributive bubble dynamics, and the ever more crazy runs for global resource speculation and land-grabbing.

Main thesis

Against this background, I will try to put forward, and illustrate with some rudimentary quantities, the thesis that, when using the logic and dynamics of Marx's PR, it will turn out that a historically *usual PR* in the context of the explosion of *fictitious capital* (to use another term of Marx) – i.e., nominal, fluid, money-like, interest-begging capital that is not intended to go the productive way – has become after four decades of "neoliberal" transformation and redistribution, *infeasible*.. On the contrary, the *average PR* not only will *tend to decrease*, as it has always done in the long-run, as Marx has elaborated, but decrease *to such low levels* that none of the most powerful corporate financial entities would want to accept that level – particularly in the the context of the fierce rivalry among the big individual capitals that has emerged. This will have some *severe implications* for capitalists' behaviors, including an ever more *comprehensive and reinforced redistribution race*. The latter will not only have to include but also *exceed* the *public budgets* and the whole *national GDPs*; it has to proceed rather to the *plundering* of all other *potential values of the earth* – and eventually will have to *undermine democracy*, even the reduced democracy variant of the representative, parliamentary, and oligopolistic inter-party system, as we have known it.

1. The Marxian PR: A heuristic of economic constellations

The PR, and its "tendency to fall", is not a crisis theory *per se*. Marx'crisis theory is, rather, about *over-accumulation* and relative *under-consumption*, as is well known. Specific values of the PR do not trigger specific moods, expectations, or actions of capitalists. Those values are highly *contingent* and need to be *put in context*. However, if embedded in certain *micro- and*

macro-constellations (to be specified in each case), the PR may reflect typical expectations and behavior (driven by rivalry among the individual PRs), and macro results. It thus may help with illustrating and analyzing the systemic crisis of financial capitalism, *reinforced redistribution races*, *exploding speculation* on anything of potential future real value, and related increasing *social costs* imposed on real-economic, ecological, social, and political subsystems.

As is well known, the PR as a reflection of capitalists' sentiments, expectations, and actions is:

$$\pi = \frac{m}{c+v} = \frac{\frac{m}{v}}{\frac{c}{v}+1} .$$

We will explain its logic and possible dynamics in typical contexts in the following (for more detail on the logic, constellations, and dynamics of the PR, see, e.g., Heinrich 2012). The formal logic and dynamics of the PR in its typical constellations would need to be elaborated in more detail than will be the case here, in order to become quantifiable and even applicable to empirical research. This, however, is not intended in this paper. Also, in the following, we always consider just an *average* PR and will not systematically distinguish between the value and price dynamics.

2. Typical constellations of the PR, its conditions and implications: Some rough stylizations

The classical constellations of capital growth and cyclical crises

The obvious, *"wicked" property* of this PR is its *tendency to fall* in the *typical growth process* of surplus *m*, cumulatively inserted into capital production *c*. Given a typical (i.e., not at the same time labor and capital saving) technical change, constant capital *c* will usually grow considerably, while variable capital *v* (capital spent on labor) will be (relatively) saved, not least by producing commodities at lower costs and prices, in this way lowering the reproduction costs of laborers.

The well-known *"normal" constellation* of capitalist surplus growth and constant-capital growth, with reducing variable capital, thus, is a tendency of the rate to fall, together with an increasing "exploitation rate" (*m*/*v*) and an even more increasing composition of the total capital (*c*/*v*). As a rough illustration ($\uparrow, \downarrow, \sim$: increases, decreases, roughly equals):

$$\pi = \left[\frac{\left(\frac{m\uparrow}{v\downarrow}\right)\uparrow}{\left(\frac{c\uparrow\uparrow}{v\downarrow}\right)\uparrow\uparrow+1} \right]\downarrow .$$

The *classical "rectification"* of the eventually resulting "over-accumulation" of *c* and related relative under-consumption through decreasing *v* (which, in turn, will restrict the growth of output and thus *m*) – to be determined, as said, within a more explicit crisis theory – will be mirrored in related inappropriate macrostructures (including distribution) and will trigger a *cyclical crisis*. The following stylized configuration displays a decreasing commodity

production and increasing labor unemployment, but, in terms of the values of the PR, a *c* devaluation as the dominant crisis mechanism:

$$\pi = \left[\frac{\left(\frac{m\downarrow}{v\downarrow\downarrow}\right)\uparrow}{\left(\frac{c\downarrow\downarrow\downarrow\downarrow}{v\downarrow\downarrow}\right)\downarrow\downarrow + 1} \right] \uparrow .$$

The specific digital-revolution constellation: Capital-saving technical change

Also in specific constellations, in which technological change is of a both labor- and capital-saving kind – as it was the case, in more recent decades, with digital microelectronic technologies –, capitalists may have the chance to reverse, or at least to stop or diminish, the tendency of the PR to fall. Constant capital then would no longer quickly accumulate but, in an extreme case, even be saved. A crude stylization:

$$\pi = \left[\frac{\left(\frac{m\uparrow}{v\downarrow}\right)\uparrow}{\left(\frac{c\downarrow}{v\downarrow}\right)\sim + 1} \right] \uparrow .$$

This, however, will not provide, in the long run, a way out of the structural tendency of the PR to fall, as it is not the usual case of the overall accumulation process, even if technical change alone would have these properties. It would not prevent capitalists, in their competitive race for the PR, to further transform *m* into *c* and in this way to accumulate *c*. "Cheaper" production might even accelerate overproduction and subsequently the over-accumulation of capital. Such form of technical change will not only be specific and transitory and, thus, will not save the PR in the longer-run. Beyond that, it will not stop the accumulation race among the individual capitals.

The Keynesian welfare-state constellation

Stabilizing and capacity enhancing state intervention in the era of the Keynesian welfare state typically triggered a rapid accumulation (initially), and with this, unavoidably, also a large growth of constant capital. However, above that, with a minimum government commitment for the public good "economic growth and stabilization", it generated some minimum certainty and ability of laborers to plan their future; and with this, it also increased the capability for and willingness to engage in action by workers. Thus relatively increasing variable capital and reducing the value of the "exploitation rate" – as is also well-known.

The PR thus will fall because of an accelerated accumulation of constant capital, but also some re-redistribution between labor income *v* and capitalists' surplus *m* in favor of the variable capital. A stylization:

$$\pi = \left[\frac{\left(\frac{m\uparrow\uparrow}{v\uparrow\uparrow\uparrow}\right)\downarrow}{\left(\frac{c\uparrow\uparrow\uparrow\uparrow}{v\uparrow\uparrow\uparrow}\right)\uparrow + 1} \right] \downarrow .$$

In the end, the historically short and highly contingent Keynesian welfare-state constellation ran into a continuing distribution conflict and the (alleged) capitalist trauma of "*stagflation*". The latter, however, was at least as much due to the increasingly "oligopolized" market structures, with its then newly emerged profit targeting and mark-up pricing mechanisms, as it was to the capabilities of laborers to re-redistribute.

In the end, a change of the welfare-state and policy-intervention accumulation paradigm, both theoretically and practically, was increasingly required by the most dominant capitalist entities. These had experienced a considerable growth and power push, with narrow oligopolistic structures in the main sectors established. Here the "neoliberal" counter-revolution, which should turn out to be neither new ("neo") nor in any sense "liberal", had long been prepared ideologically and politically.

3. The "neoliberal" transformation of capitalism: Redistribution as the bottom line

The elements of the new paradigm, of the new secular policy and state-bureaucratic intervention project and of the new theoretical models and ideologies of "markets", "competition", and "money" have been critically analyzed for a long time and are well-known. Therefore, weprovide only a reminder of some of the interconnected elements of the decades-long planned "neoliberal" project:

First, there was the secular state-bureaucratic project of the *"de-regulation" of the markets*, according to the new theoretical-ideological paradigm of the ideal "market", in fact a thought-experimental chimaera of an "optimal" and self-stabilizing mechanism, stridently misconceiving and *misrepresenting real-world markets*. This fundamental misconception triggered the largest acceleration of the *self-degeneration of the markets*, which is always inherent in markets anyway, accelerating concentration and centralization, powerization, and structures of narrow oligopolies in virtually all relevant industries.

Second, there was the long-run state-bureaucratic project of *"globalization"*, allegedly the promotion of "international competition", in fact the mutual opening of home markets for the strongest and most over-accumulated foreign rivals to provide them new action space. Above mutual intrusion, it was meant to create an *exclusive layer of capital action*, capturing control over labor worldwide, thus *lowering labor capital value v* on a global scale, for *higher PRs* of the dominant capitals. The project was carefully designed to exclude the rest of society, including the states themselves, from any similarly effective organization or action at the international level, thus preventing any future re-embedding of capital interests into society – another actualization of that ideal brain construct of a (now global) "*market*".

Third, *privatization*: The *PR was further fed* through cheap sales of public wealth and utilities, established over the past centuries and decades, usually with state-guaranteed profitable production areas, thus further strengthening *protected narrow oligopolies* ("markets" again), including spatial monopolies, such as in telecom, postal services, energy supply, etc. The "neoliberal" governments of all color combinations admitted to government thus shoveled large amounts of cheap Δc into the largest capitals and PRs, which then, in turn, could be used to generate high amounts of safe Δm through utilizing the protected quasi-monopolistic positions in usually already well-cultivated fields.

As another example, the mechanism may be stylized as follows:

$$\pi = \left[\frac{\left(\frac{m \uparrow\uparrow\uparrow}{v \downarrow} \right) \uparrow\uparrow\uparrow}{\left(\frac{c \uparrow\uparrow}{v \downarrow} \right) \uparrow\uparrow + 1} \right] \uparrow .$$

Fourth, *labor* market (de-) *regulation*, and promoting labor- and capital-saving technological change: The *value of variable capital v* was considerably *further reduced* this way.

Fifth, the *political* paradigm change towards *austerity*: The restrictive, austerity ("anti-inflation") oriented *monetary policy* was made center-stage, established as the most powerful policy area and tool-set ever. In this way, the main policy was *set aside from "politics"* and, in fact, *beyond democracy* – assigned to the new mega-power of the *central banks*, set above democracy, in order to guarantee, support, and *feed the private-banks* balances. Allegedly, the banks then would provide, in a rational portfolio calculation under perfectly flexible prices, optimal loans to the real economy.

Finally, an endless number of measures in the fields of *taxes*, budget *expenses*, education, *social insurance* (health, unemployment, pensions, …), media, etc. were developed, by the "neoliberal" (think) "tanks" within and across the tops of the big capitals and their governments, to further *redistribute income, wealth, public property, power, and prestige from bottom to top*, utilizing, among others, the *century myths* of "effective markets", "private entrepreneurship", the "inferiority" of any collectivity, publicity, community, and commonality, of public "*budget consolidation*", etc. Margret Thatcher had internalized the message most crudely and brutally: "There is no such thing as society."

4. Consequences I: The self-perversion of the markets, real-economic slack, financialization, and the explosion of "fictitious" capital

The consequences are equally well-known. *Real "neoliberally" deformed global markets today* display overall intensified *volatility*, *radical uncertainty*, *over-complexity*, and *turbulence*. They show decreased real investment, consumption, and GDP growth, and more and deeper financial crises have occurred at the macro level, such as the stock market crisis 1987, the Japanese crisis 1986 ff., the Asian crisis 1997-99, the Russian crisis 1998, the Dotcom crisis 1999/2000, the Argentinian crisis 1999-2002, and the Big Crisis 2007ff.

The *"markets"* have been *unleashed and degenerated into a dominating power system*. As an example, consider what the global "market" in fact has turned out to be today: The 40 largest financial conglomerates control, in a multi-layered system of control, the 43,000 largest international corporations, according to a recent study, which is the largest international network study ever (see *The network of global corporate control*, Vitali et al. 2011). It is a closed shop of mutual control, uncontrollable itself from outside. In fact, these are only several hundred institutional top-rank persons, who largely know each other, plus some hundred mega-rich private individuals as their owners and creditors. "Markets"! Any conspiracy theory of the left turns out to be a harmless bedtime story compared to "neoliberal" reality …

Real-economic slack has been made structural, permanent, through a socially, politically, and morally absurd, and economically extremely *counterproductive distribution* of wealth and income, with increasingly structural relative *under-consumption* and subsequent *underinvestment*. And the less the real economy provided opportunities of real investment,

the more even conventional *manufacturing corporations moved into financial speculation* instead. An accelerated *drainage of the real economy* took place. Rather than getting a PR of, say, 3-5% through production efforts, as was the case in good old producion capitalism, they increasingly sought a PR of 25% or more as was promised forever in the financial bubble industry – and realized for most of that time through speculation.

As said, in face of the *negligence of the real economy* and shrinking opportunities of real investment, while, at the same time, the corporations had been made rich through the "neoliberal" state-bureaucratic redistribution project, the *increasing financial surplus of the big corporations in the conventional industries* went to the speculation centers (vulgo "financial markets"), and the manufacturing corporations became financial speculators rather than real-value producers. As an *example*, the German foreign trade surplus 2000-2009 was about 1 Tn. (Trillion) €, whereof 700 Bn. (Billion) € were immediately returned into US financial speculation. That is why the German banks have turned out to be amongst the most "over-speculated".

In all, the rich were made richer; the top 0.1% super-rich were made mega-rich and giga-rich. UN *World Development Reports* have demonstrated that since 1800 the most uneven distributions have been created under the "neoliberal" political-economic and state-bureaucratically planned century project in all respects (personal, functional, social, inter-regional, international, …).

Financialization and the dominance of financial "investment" under an establishing PR standard of 25% and more necessarily generated the cumulative growth of a *Ponzi* system with "Collateralized Debt Obligations" (CDOs), a system of speculations and wagers that yielded much *higher PRs* than any productive economic activity ever could – as long as the growth rates of the financial bubble, of lending and borrowing for more speculation still went up … It generated undreamt of high PRs in the largest entities of the speculation industry through the sales of *large-scale, multi-level, structured, derivative nominal claims*, systematically *including "subprime" and other "toxic" content* (in all: *fraud*). But as soon as the growth rates in such pyramid sales systems decrease, the crisis, of course, will be inevitable.

While hundreds of millions of *usual households* worldwide were forced into a system of increasing indebtedness through the "neoliberal" *pressures on wages*, and at the same time lured into speculative borrowing by promises of endless *asset (housing) price inflation*, conventional corporations started borrowing in order to speculate and satisfy the increasing income and wealth demands of their shareholders, creditors, and top personnel. It triggered the *drainage* of conventional industries and the *real economy* at large in favor of the enrichment of institutional creditors and the personal enrichment of individual creditors and owners: Manager salaries, interest rates, bonuses, dividends, and real disinvestment exploded, and money surplus was redirected into financial speculation. The drainage from the real economy reached historical highs.

But the real economy has come to be no longer sufficient to further feed the PRs of the biggest speculative entities, as we will try to show below. Thus, the *whole earth*, with its real value stocks of resources, such as water, land, etc., and some time perhaps even fresh air and the resources of other planets, *needs to be drained*. The task of the big entities of the speculation industry was always to "*innovate financial products*" to find new speculators ("investors"), as both borrowers and creditors.

And when an asset inflationary bubble implodes, the interest rates still need to be paid. The debtor then will be in even greater need for new credits. A global *creditor-debtor economy* thus emerged from what was once some kind of real producing economy.

While interest rates deflate because of the increasing supply of speculative nominal credit, and deflate the real economy, asset prices inflate. *Inflation* of the speculative areas and *deflation* of commodity prices illustrate a split economy, dominated and deformed by the "*rentier*" sector (for more detail on this, see, e.g., Hudson, Bezemer 2012).

In sum, the unleashing of the power of the money sector was designed to trigger, through a number of complex interconnected channels, a historically unmet redistribution from bottom to top, in any respect (small vs. large capitals; personal distribution; distribution among social groups and classes; poorer vs. richer regions and countries; etc.) and in this way an *explosion of fictitious money*: Making money shifted from industrial surplus production,

$$M - C - M'$$

(money – commodities – more money), to speculative surplus production,

$$M - M'$$

(money – more money); where *M* has to be considered now part of *c*, and [*M'-M*] part of *m*.

We will provide some few data *illustrations* that may help indicating the processes mentioned and their quantitative sizes.

First, some of the following figures illustrate the amount of *redistribution* that took place in the run-up to the crisis 2008ff. and – after a dip – during its further course, particularly after the governments and central banks had flooded and saved the private banks. As indicated below, redistribution is organized, first, by making variable capital (labor) cheaper through labor-saving *technical change* and the inclusion of *productivity gains* in the profit, and the related *exclusion of wages* from such productivity gains (data for Germany; technical explanations partly in German). This (among others) then is reflected by the courses of income from capital vs. wages. Another causal chain is *unemployment*. We will illustrate the *paradigm break* and its redistribution effects (particularly mirrored in the *wage share* of GDP) that "neoliberalism" has caused from the early 1980s on.

Figure 1: Redistribution Ia: Wage-productivity relation [(Real wage per hour (blue line) vs. productivity (per hour) (floating 12-months averages) in German manufacturing industries, 2005-2012 (with a productivity dip in 2009/10 caused by the German government program of extended Short-Time Work Benefits)]**.**

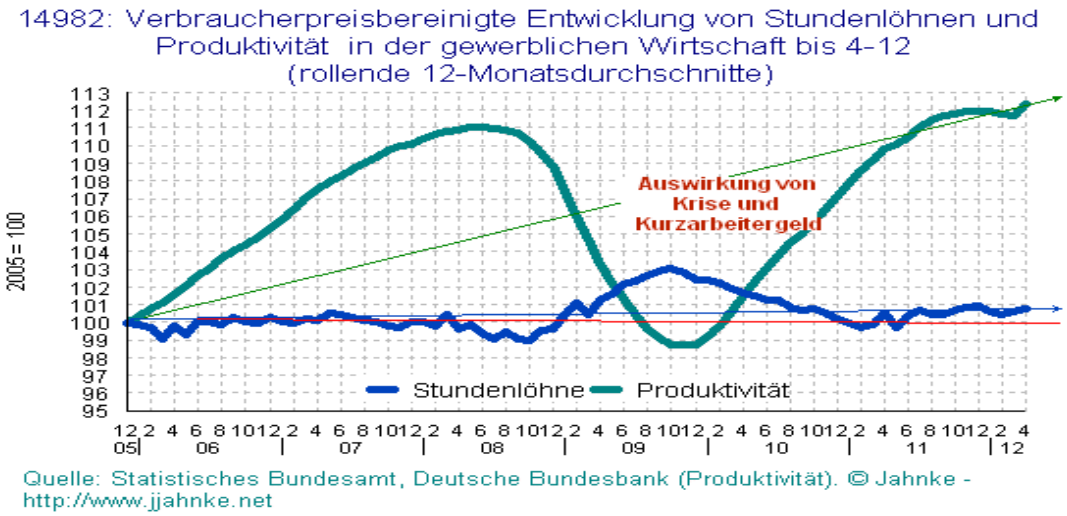


Figure 2: Redistribution Ib: Wage-productivity relation (gross wages: red line) **vs. productivity per hour in German industries, 2000-2010** (with a productivity dip in 2009/10 caused by the German government program of extended Short-Time Work Benefits), with regressions indicated for 2004-2010**.**

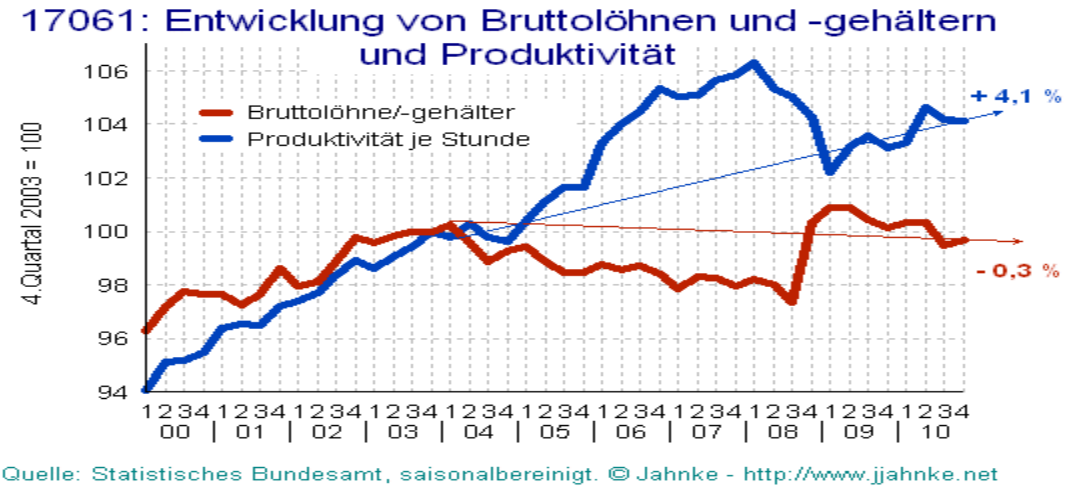


Figure 3: Redistribution IIa: Capital income vs. real gross wage income (wage sum; indexes, 1992=100; Germany, 1992-2010)**.**

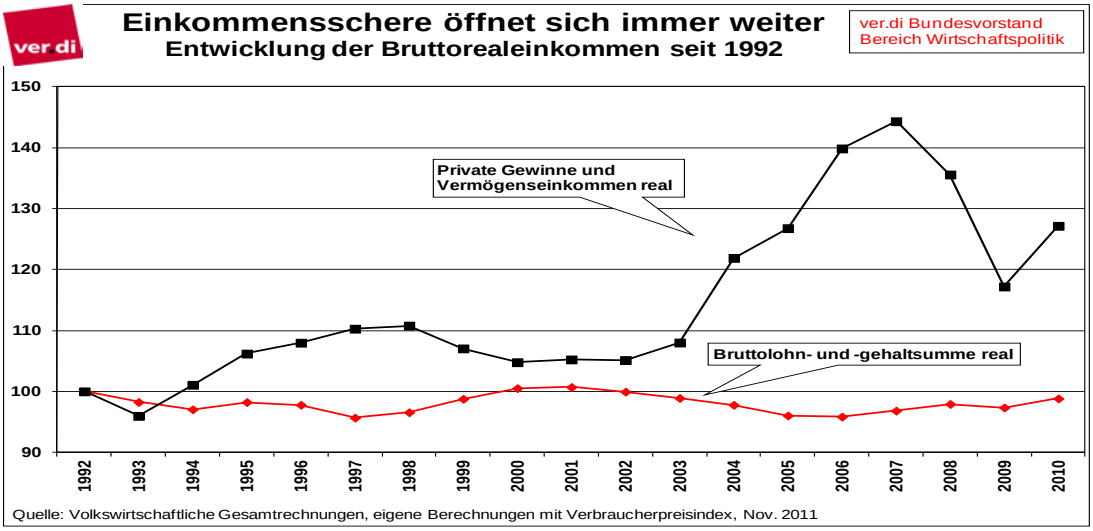


Figure 4: Redistribution IIb: Capital income vs. net wage income per employee (indexes, 2000=100; Germany, 2000-2012)**.**

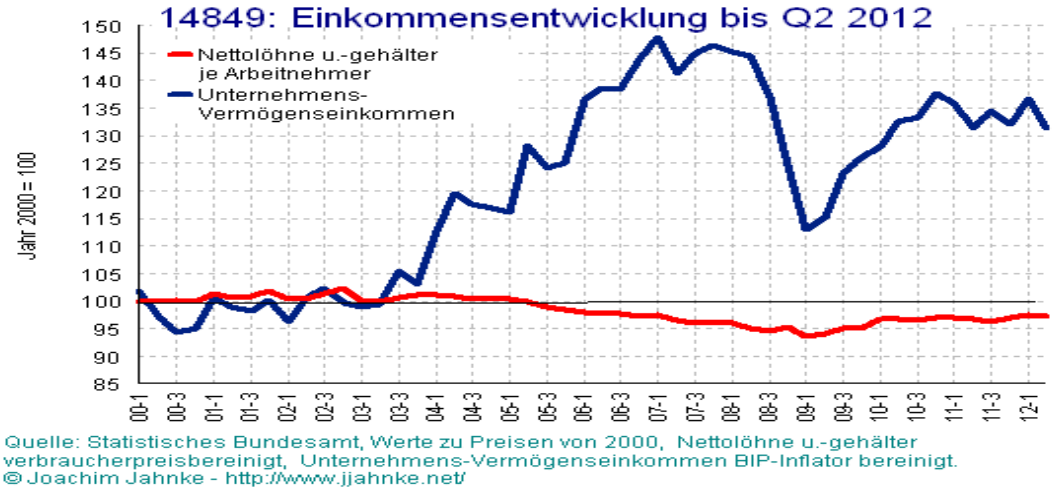


Figure 5: Redistribution IIIa: Productivity per employee (blue line) **and wage share per output unit** (manufacturing industries; indexes, 2002=100; Germany, 'pre-crisis', 2002-2007)**.**

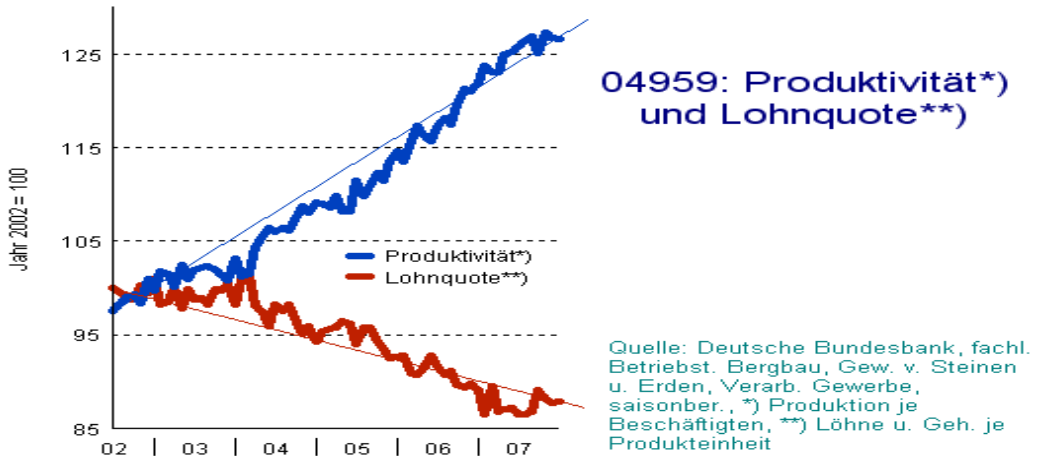


Figure 6: Redistribution IIIb: Unemployment rate and wage ratio of GDP – The "neoliberal" paradigm change in the early 1980s (Germany, 'pre-crisis', 1960-2006)**.**

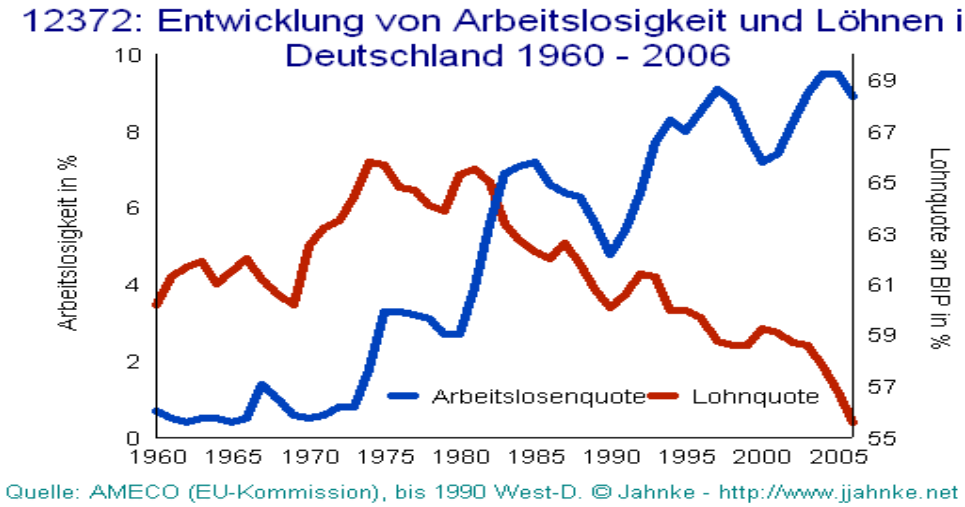
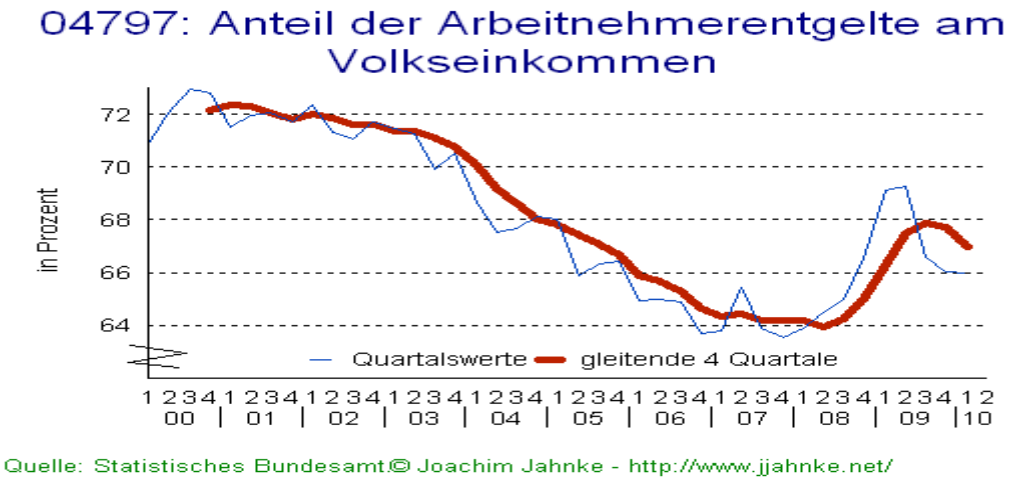


Figure 7: Redistribution IIIc: Wage Ratio of GDP, Germany, 2000-2010.



The example of the *German wage ratio* may provide an idea of the size of nominal money redistributed: The ratio shrunk by 10 percentage-points of GDP in 25 years (see Fig. 6), i.e., on average by *5 percentage-points of GDP p.a.*, which would be around 75 Bn. p.a. on average, or roughly *2 Tn. €* in sum.

Figure 8: Top-management salaries 2001-2011, Germany, DAX-30 companies, index, 2001=100.

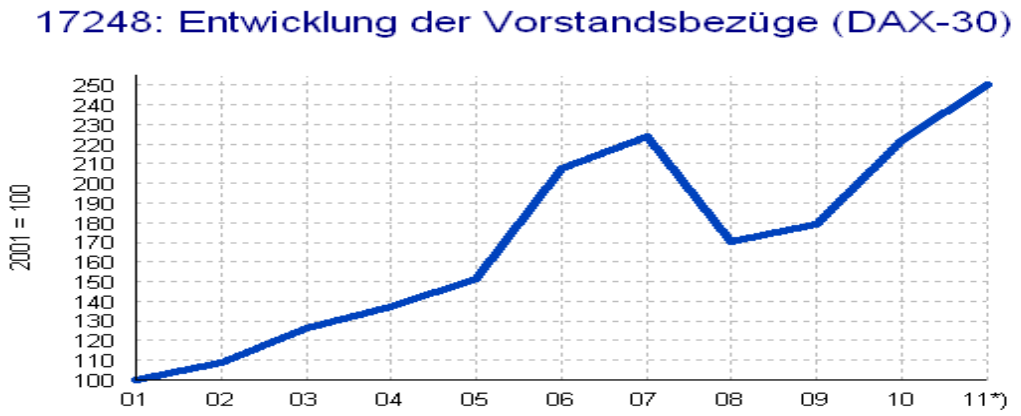


Figure 9: Wealth-distribution effects I: Wealth distribution, Germany 2010, % of all private wealth after quintiles.

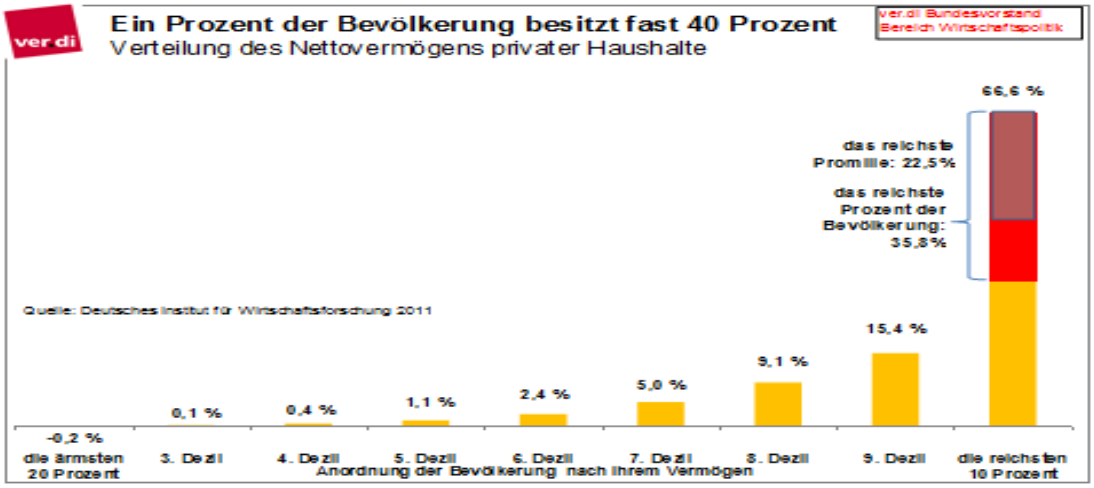
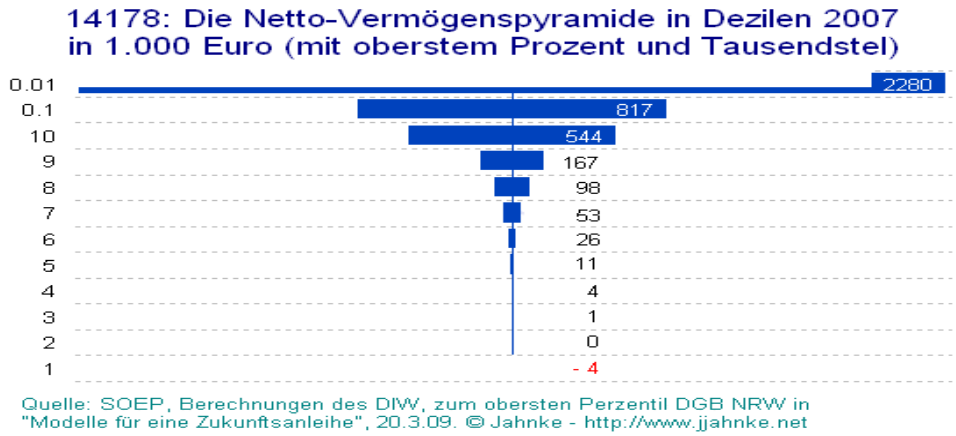


Figure 10: Wealth-distribution effects II: Wealth distribution, Germany 2007, quintiles, top 1%, and top 0.1%, with average net wealth in each category.



In sum, the figures may give an indication of the fact that the income redistributed in 25 years fed the *expansion of fictitious (nominal) fluid money-like capital*, which seeks an interest yield and in this way a maximum PR. Such large-scale redistribution may increase the PR again, in the classical way, i.e., by *initially shrinking v* (its share in total capital, resp.) and in this way perhaps initially expanding surplus production (while ignoring constant-capital growth, for the time being):

$$\pi = \left[\frac{\left(\frac{m \uparrow\uparrow}{v \downarrow\downarrow\downarrow}\right) \uparrow\uparrow}{\left(\frac{c \uparrow}{v \downarrow\downarrow\downarrow}\right) \uparrow + 1} \right] \uparrow .$$

But with continuing and accelerating redistribution and transformation of money-wealth into fictitious capital for financial speculation, and in face of real-economic slack, this will change again fundamentally very soon … (see next section below).

First, further *illustrations* are on the *cumulative real-economic slack* that the *redistribution from the real-economic to the speculation sector*, the subsequent dominance of finance capital, and the ultimate *"autonomization"*, *self-actualization, and reinforcement of mechanisms of redistribution into fictitious capital* will entail. *Figure 13* below also shows that "neoliberal" economics with its misconception of the "market economy" cannot properly forecast any real economic slack or crisis.

Figure 11: Real-Economic Slack I: GDP growth p.a., Eurozone, floating 5-year averages.

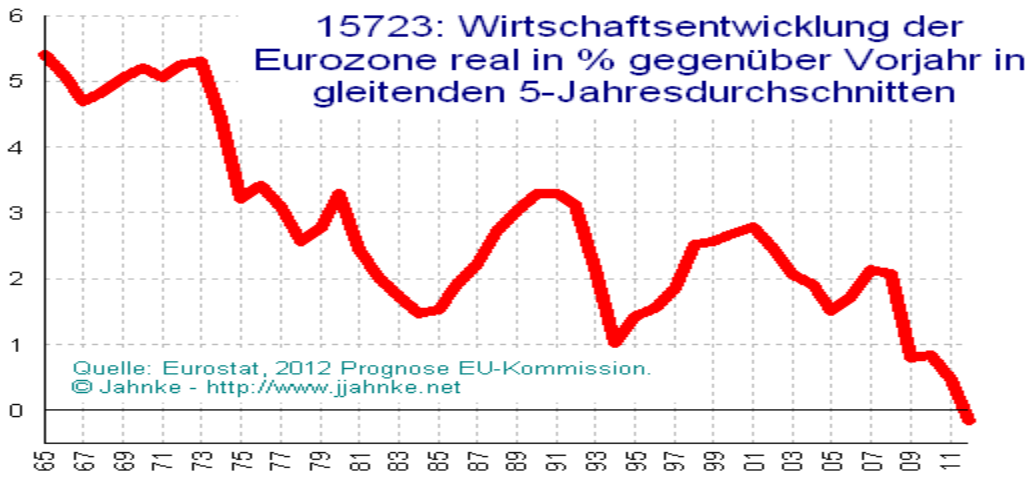


Figure 12: Real-Economic Slack II: Net investment rate (after depreciation) of national income, Germany, 2000-2012.

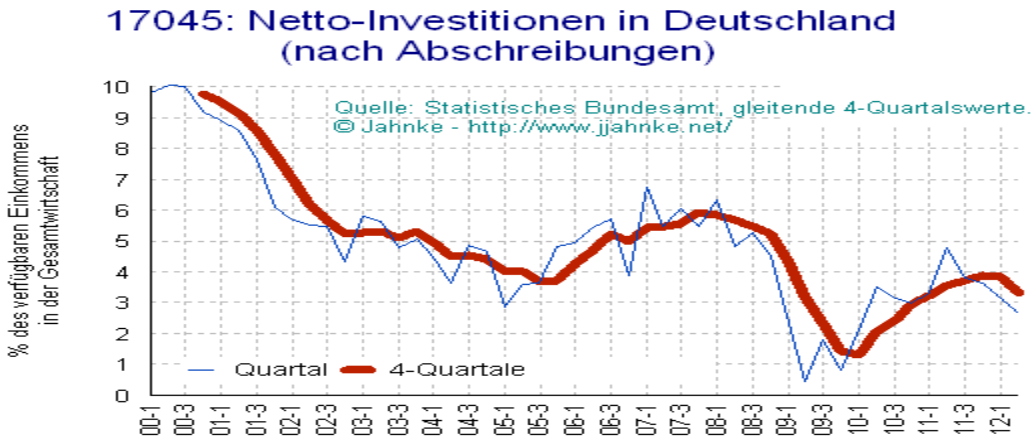
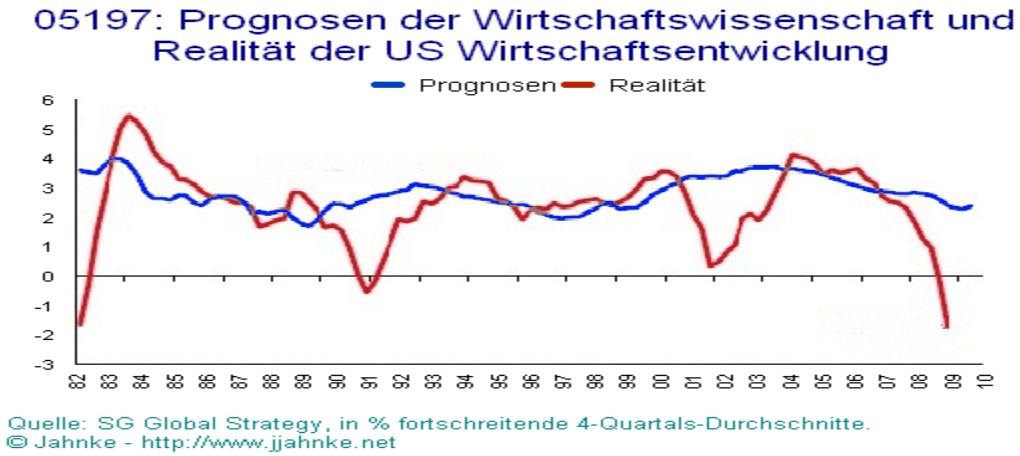


Figure 13: "Neoliberal"-economics GDP forecasts (blue line) **vs. real GDP growth, US 1982-2010** (red line)**.**

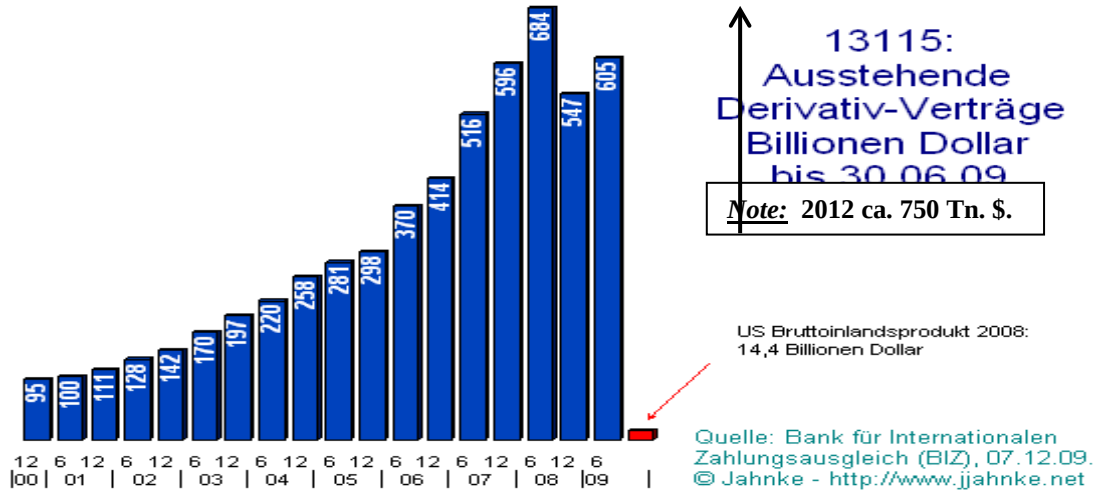


5. Consequences II: The impossibility of a „usual" average *PR* across countries and over time, subsequent self-reinforced redistribution, and the Bubble as Redistribution Mechanism

The explosion of *private fluid nominal (fictitious) money-capital* is indicated by the ca. 200 Tn. $ "market value" of fluid personal wealth stocks seeking interest yield, as currently estimated on average by different banks and insurance companies, the ca. 750 Tn. $ "market value" of *derivative papers* (CDOs), and ca. 60 Tn. $ "market value" of CDS. What of this can be added into a global amount of private fictitious money-capital still is largely unexplored. On top of this, what is the *institutionally held* money-capital wealth of banks, investment banks and funds, hedge funds, pension funds, insurance companies, and private equity companies? And what is the amount of fictitious capital held by (ex-) manufacturing corporations? … *So what would be the true size of the global fictitious capital?* This still is an unanswered and even largely unexplored question so far.

Illustrations again may provide a slight indication of those size dimensions:

Figure 14a: Nominal Fluid Money-Like Capital (Fictitious Capital): Derivatives, 2000-2009, Tn. $.



From indications we have, we probably are not completely wrong assuming around *1 Quadrillion $ (10^{16}) of global fictitious capital* ... while the global GDP currently is ca. 75 *Tn. $*. Now assume a *profit share of the global GDP* income of 50%, i.e. 37.5 Tn. $ of profit income p.a. from global economic activities. If this could be counted into the surplus *m* of an average global PR, the interest yield *just on the constant capital c* (which, however, now would *include the fictitious capital*) then would be *m*/*c* = *3.8%*, and the true PR, *m*/(*c*+*v*), would be even considerably smaller. Thus, a *general impossibility of a "usual" average PR* on the exploded (redistributed) private fictitious money-capital wealth stock becomes discernible. As reflected in a stylized PR:

$$\pi = \left[\frac{\left(\frac{m\uparrow}{v\downarrow\downarrow}\right)\uparrow\uparrow}{\left(\frac{c\uparrow\uparrow\uparrow\uparrow}{v\downarrow\downarrow}\right)\uparrow\uparrow\uparrow + 1} \right] \downarrow .$$

This obviously cannot work in the long run for the big powerful capitals, and in a fiercely rival environment. In fact, this *low PR* obviously is critical for *aggravating rivalry among the capitals.* Note that increasing dividends, special dividends and retained capital/cash at currently historically high levels can still be drawn from the surplus (which now includes surpluses from both conventional *and* fictitious capital, in whatever form, cash or derivatives) and from *c*, which contains conventional and fictitious capital as well, while the PR nevertheless may decrease. While this drain would remain as part of the PR constituents *m* and *c*, if used for ongoing speculation, it would drop out of the PR only if used for luxury consumption. …

The *PR standard requirement* of the largest financial entities has been 25% and more even in crisis years. Consider the *redistribution required* (and mostly realized so far), compared to the average possible yield on (*c*+*v*) of considerably below 3% ... The standard PR requirement, of course, is never guaranteed in the course of comprehensive crises, and with *exploding bank balances* and simultaneously *deteriorating real-economic conditions*, in the famous double and triple "dips" of the "neoliberal" austerity programs (see below), the PR standards will no longer be realized generally but rather displaced by "*bank crises*" as we can experience in the Eurozone currently.

Several things follow from that:

First, as said, the increasing *overshoot of fictitious capital* will coincide with *private household needs of a consumption level* that is insufficiently met by relatively decreasing household wage incomes under the "neoliberal" conditions of redistribution. Also, the *public budgets* have been additionally pushed into *structural deficits* by their bank flooding during the crisis (see below). The credit needs of private and public budgets thus meet an increasing need of overshoot fictitious capital to yield an interest-rate based profit, i.e., to be loaned as credit. Under these conditions, the *loan-debt-economy will be further built up*.

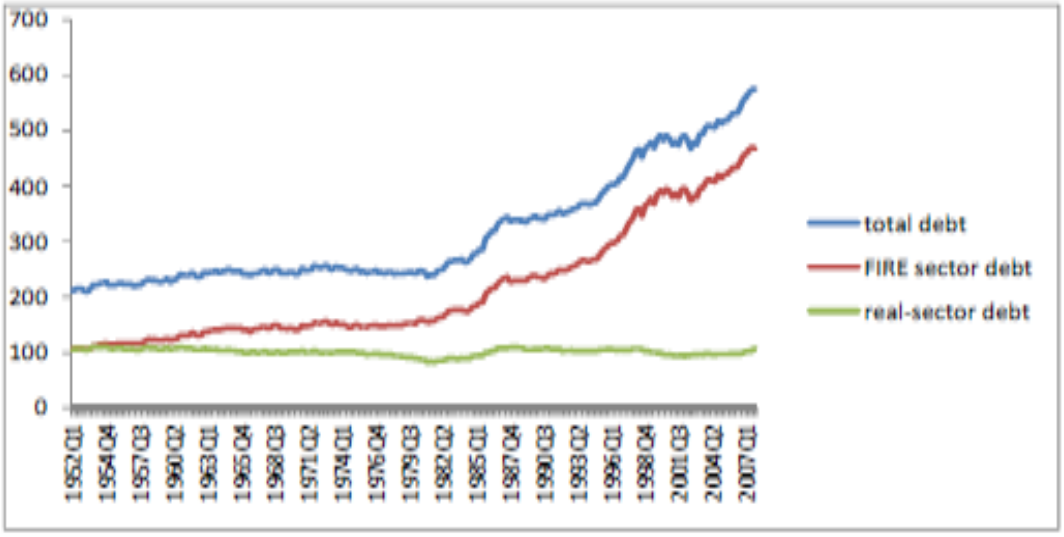
Second the overshoot of fictitious capital will be loaned by speculating manufacturing corporations to further increase their PR through financial "investment", particularly when their PR from real-economic activity remains increasingly insufficient. In addition, assets prices will be built up through that kind of speculation with overshoot fictitious capital. Even households have been incited to speculate on the increasing prices of their houses, corporations will speculate on any *increasing asset prices*. And when asset prices cyclically collapse the debt service nevertheless will have to be paid, as mentioned – with obvious further redistribution effects (for more detail, see again, e.g., Hudson, Bezemer 2012).

Thus, bank balances explode and become "overspeculated" with loans and derivatives (CDOs) and, consequently, smaller shares of liable equity. Many state bonds still appear as safe "investments" with safe debt service, for the time being.

Third, in order to expand this kind of business and redistribute into their own PR at the expense of the others' PRs, *derivatives* need to be increased, becoming more and more *opaque* and risky. In fact, *inflating a bubble*, and "managing" that bubble becomes the *main redistribution mechanism*. This basically takes place at a systemic level only, independent of an awareness of it by the big players. But as soon as they become aware of the fact that a bubble exists and may implode soon, they react as a herd and will try to "ride that tiger.

Illustrations below indicate how the explosion of fictitious capital in the "FIRE" sector (finance, insurance, and real estate) generates a *credit-debt economy*, how debt has exploded since the "neoliberal" turn at the end of the 1970s and particularly in the crisis 2008ff (exploding public debt), and how this leads to both a *redistribution of income into the speculation sector* and an ever *riskier structure of the banks' balance sheets* and the *economy as a whole*.

Figure 14b Private debt growth due to lending in the FIRE sector, US, 1952-2007.



Source: M. Hudson, D. Bezemer, 2012, p. 2.

Figure 15: Total debts of developed economies in % of their GDPs, 1880-2013.

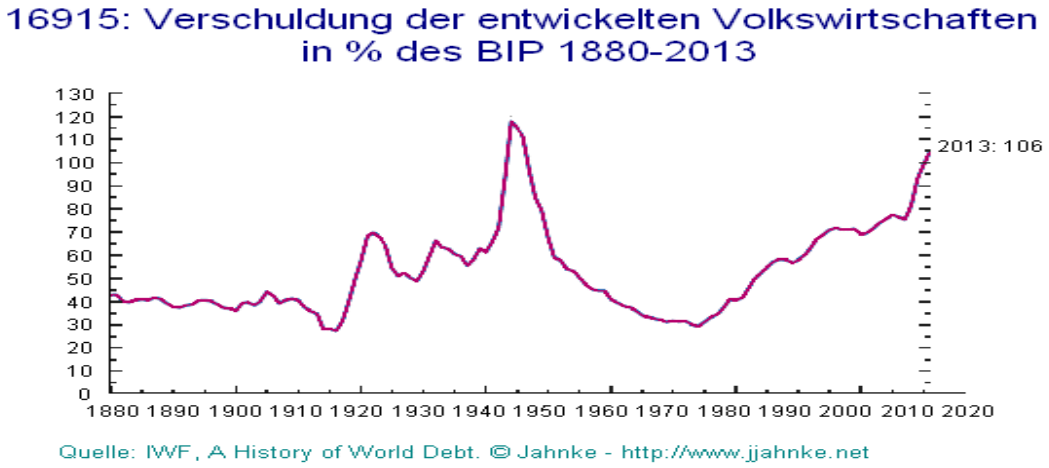


Figure 16: Total debt of developed economies in % of their GDPs, 1995-2016.

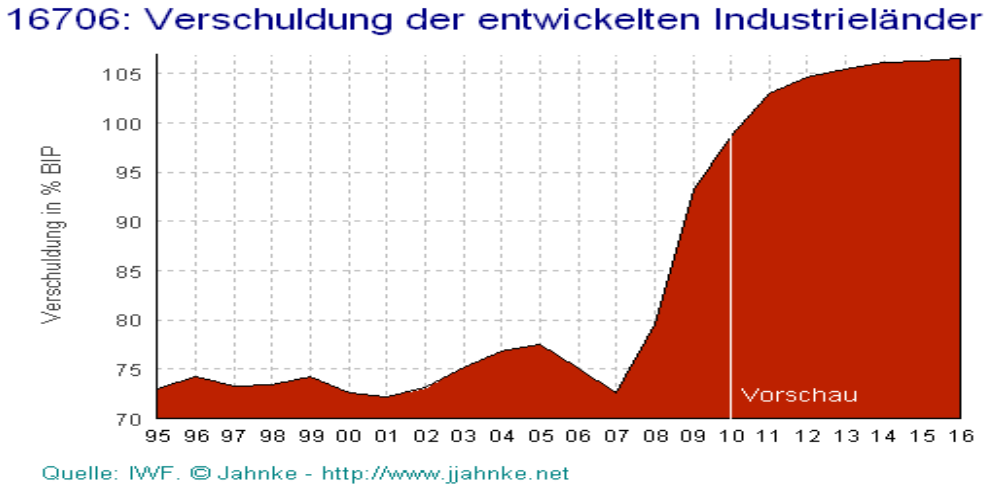


Figure 17: Profit redistribution: Share of speculation sector of all profits, US, 1948-2008.

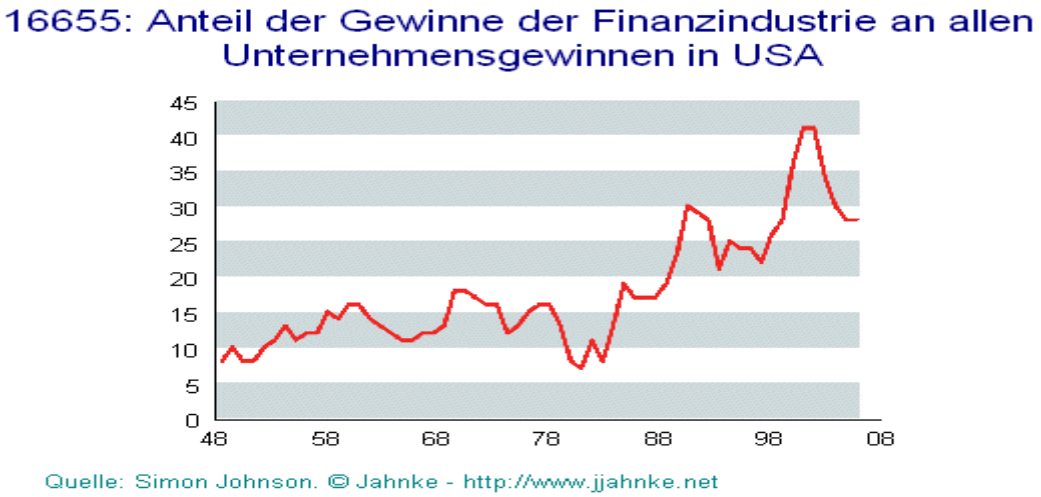


Figure 18a: Over-speculation of the speculation sector I: Share of liable equity in total balance sheet of banks, US and UK, 1880-2000s.

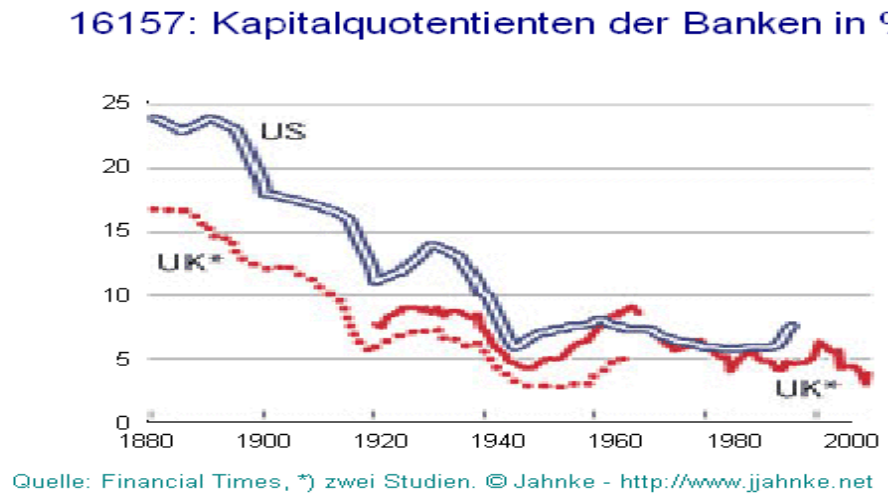


Figure 18b: Over-speculation of the speculation sector II: Total balance sheet of banks as a multiple of liable equity, Eurozone countries, 2011.

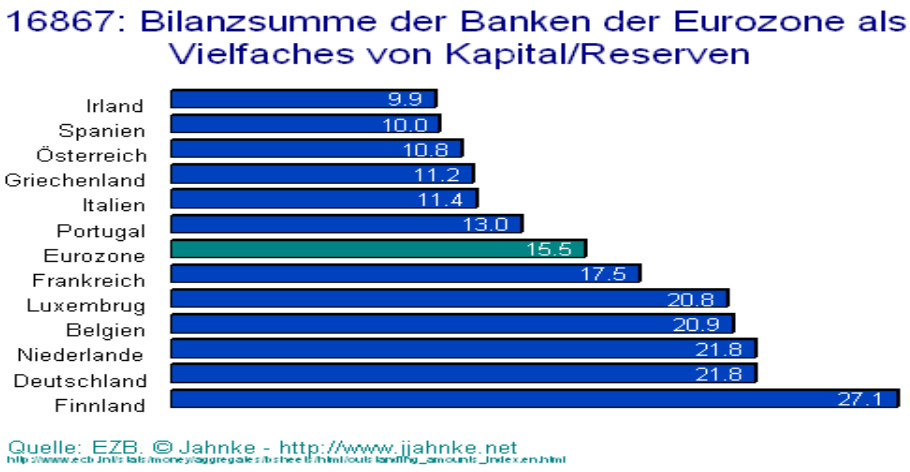
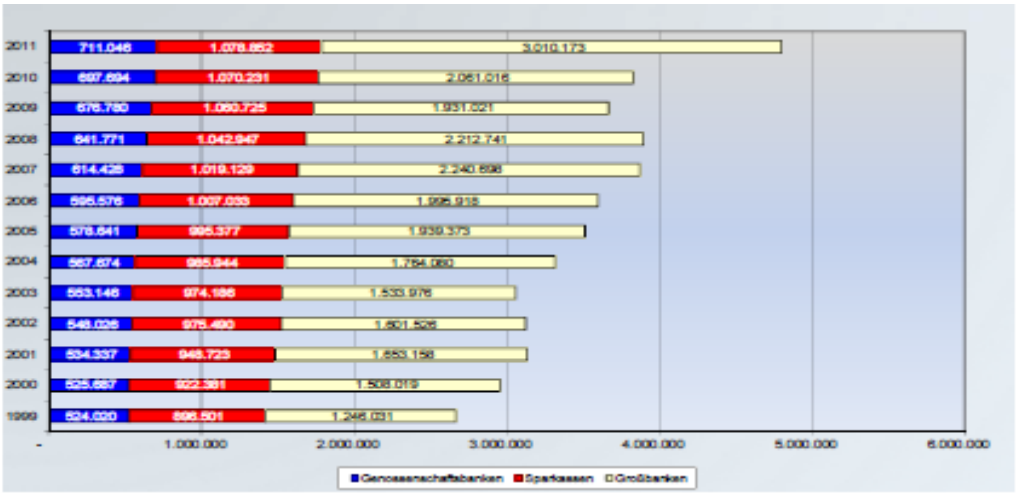


Figure 19: Over-speculation of the speculation sector III: Total balance sheet of banks, Germany, 1999-2011 (white bars: private universal banks)**.**



Source: Mark Roach, Ertragslage der Kreditinstitute 2011 – eine Auswertung der Bundesbankzahlen vom September 2012, Berlin: verdi.

Figure 20: Over-speculation of the speculation sector IV: Average balance sheet of banks, Germany, 2001-2011 (index, 2001=100; dotted line: private universal banks)**.**

Source: : Mark Roach, Ertragslage der Kreditinstitute 2011 – eine Auswertung der Bundesbankzahlen vom September 2012, Berlin: verdi.

Figure 21: Over-speculation of the speculation sector V: Bank debts, Eurozone countries, 2012, Tn. €.

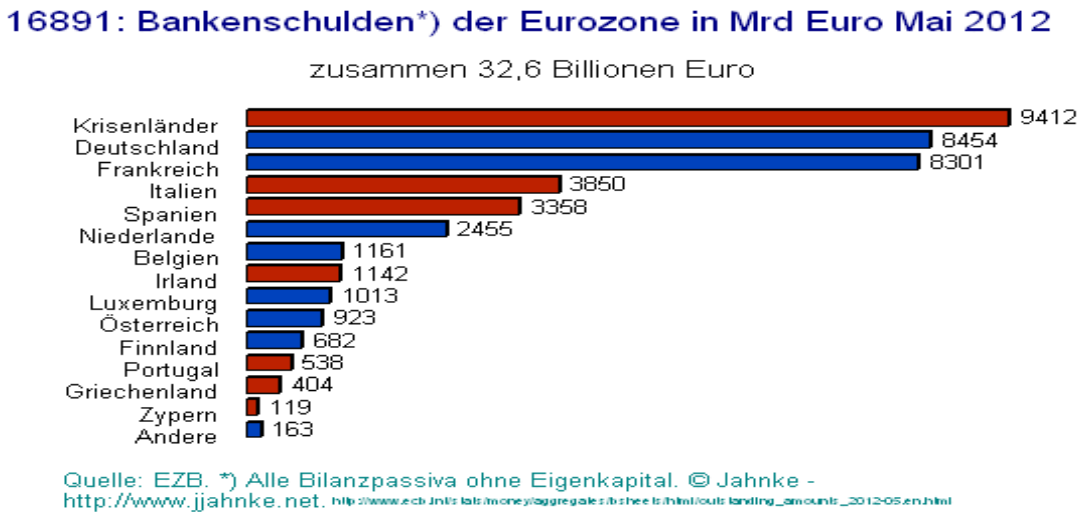
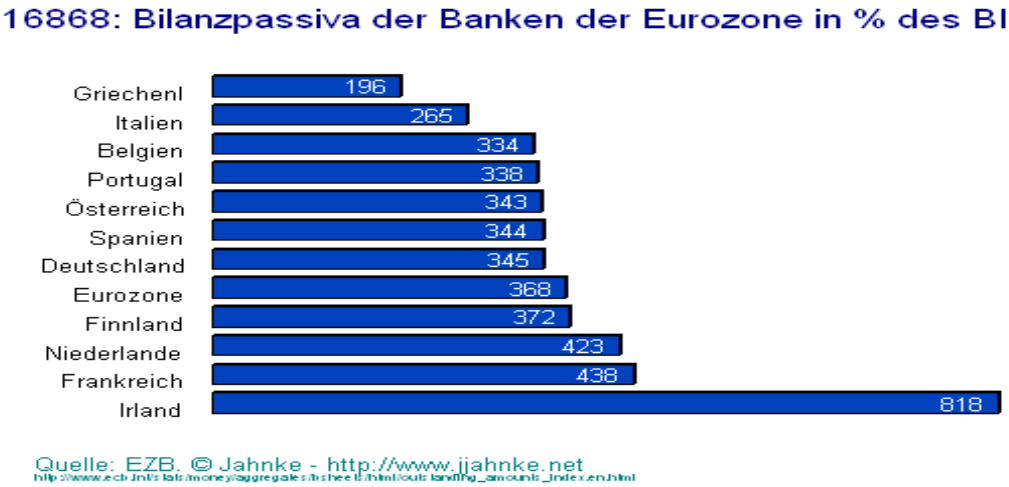


Figure 22: Over-speculation of the speculation sector V: Bank liabilities in % of national GDP, Eurozone countries, 2011.



However, while the bubble still expands, *fictitious capital needs to be transformed into something of real value* that is capable of *surviving the coming implosion of the bubble* with relatively little loss of value, or may quickly (relatively) grow in value again after the implosion and across the whole bubble cycle. Thus, the big owners of fictitious capital must *pull out of fictitious capital as much as possible and transform it into real values*. Among those measures figure those flows of the drainage of the real-economy that go into the *exploding luxury consumption*, the further transfer of *public wealth* into the private PR as described, and eventually – as even the whole *global GDP is not sufficient for a PR required*, as seen – the individual *appropriation of all potential value stocks of the earth* …

Transforming fictitious money-capital into real values would imply that the money circuit again transforms

from $M – M'$ to $M – M' – C$.

As said, *further redistribution within just the (global) GDP, let alone just the public budgets, is not* sufficient. A general *land- and resource-grabbing* and a *speculation on anything that might have some real value in the future* (as it might be *needed by humankind for living and survival*) is therefore what is needed to save one's individual PR and what in fact we can observe today – a drainage of the earth.

"Neoliberal" State Intervention: Bailing Out the "Too-Big-To-Fail" or "Systemic" Financial Entities, Subsequent Austerity Policy and Double Dips – Redistribution Requirements vs. Democracy

The circular feedback of a downward spiral now becomes a more complete picture. To resume:

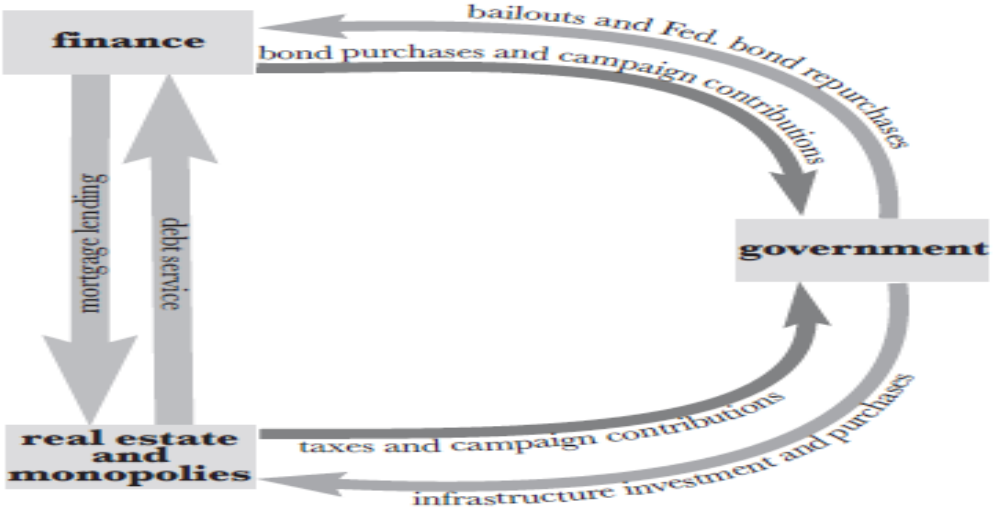
- de-regulation, power-ization, oligopolization of markets
- redistribution through labor-market policies, tax policies, globalization policies, …
- explosion of private richness in the top ranks
- relative under-consumption / over-accumulation / real-economic slack
- money surplus in industries redirected into speculation / drainage
- explosion of speculative nominal "fictitious" capital
- more loans non-performing / bank crises …

The "neoliberal" *state intervention* under these conditions then will aggravate the real-economic and social downturn:

- bailing out the "too-big-to-fails" / bank guarantees and bank balance flooding with the money of current and future taxpayers generations
- *subsequently reinforced austerity policies* / "*budget consolidation*", worsened redistribution, double and triple dips …
- followed by again reinforced austerity policies …

The following *illustrations* first show the real-world macro-circuit relations between "neoliberal" governments, the speculation sector and the assets- and (ex-) manufacturing-sectors, with an important role for government bailout of the FIRE sector, further the government bailout measures and their budget implications:

Figure 23: Interactions between the FIRE and government sectors.



Source: Hudson, Bezemer 2012, p. 8.

Figure 24: Bailing out the banks: Bank shares and guarantees in the Government budgets, and repurchasing commercial papers by the Central Banks, 2011.

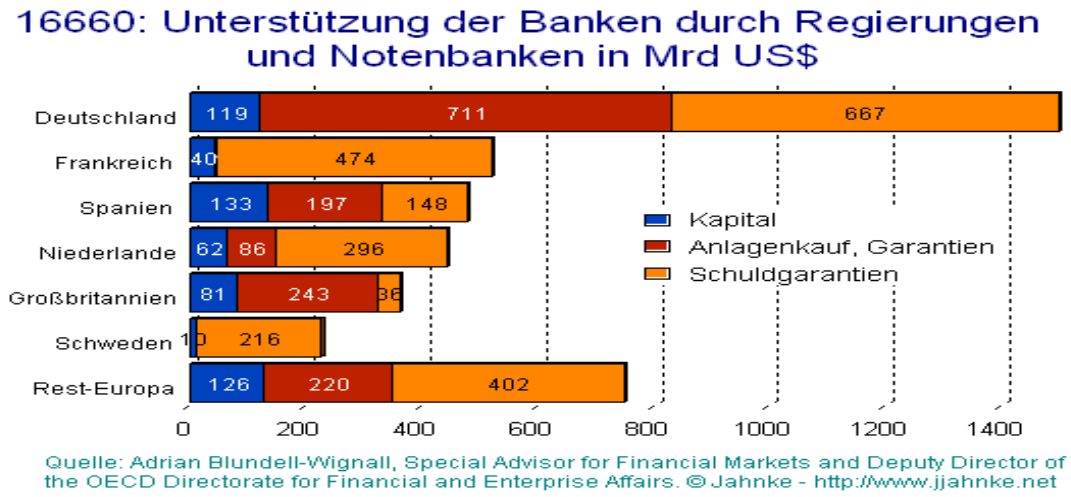


Figure 25: Subsequently exploding public budget deficit, Germany 1950-2012.

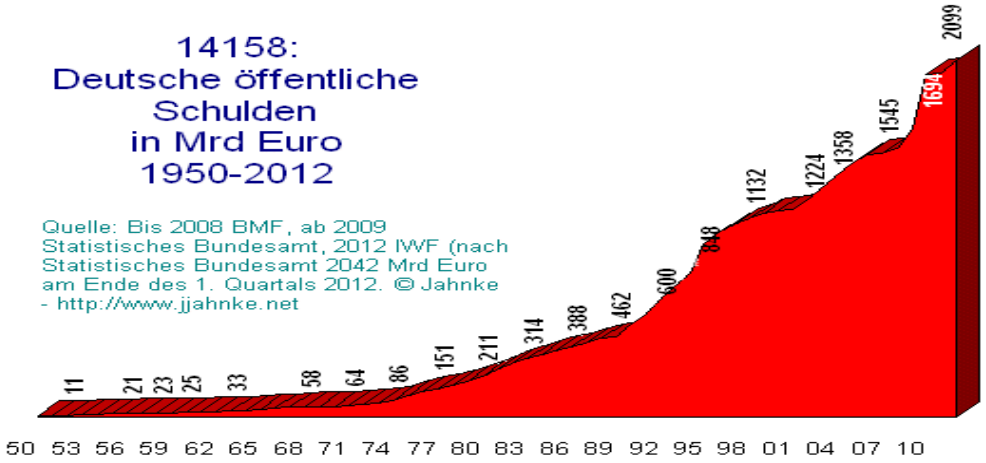
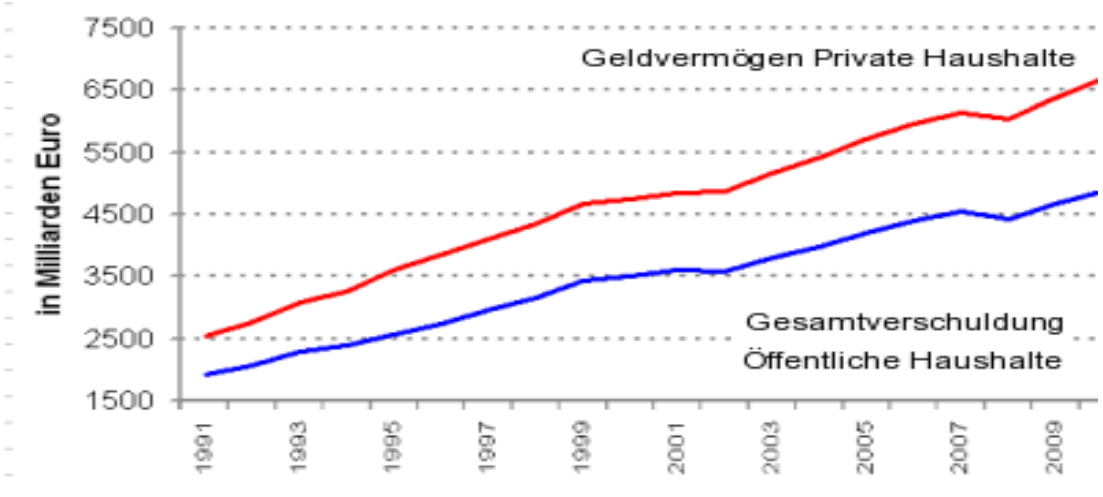


Figure 26: Public budget deficit and private money wealth; Germany, 1991-2010.



The full burden for the taxpayer is, though, rarely made transparent. For *example*, in Germany, on top of the ca. 550 Bn. € *extra debt officially displayed in the public budget* (displayed in *Fig. 25*; while *Fig. 24* displays 786 Bn. € extra government liability, incl. guarantees), the full risk loaded on current and future taxpayers is also constituted by

- public purchase of *bank shares*
- public *crediting and guarantees for private banks*
- *tax breaks and deferrals* for speculation industry entities (e.g., private equities do not pay taxes in Germany)
- German share of the *risks taken over from the private banks by the ECB* (toxic papers, negative real interest, see below)
- German share of *IMF credit lines* for EU countries under pressure
- German shares of *EFSF and ESM*
- German CB's *Target2 credits* to other CBs,

and, with this, the whole additional taxpayer's burden 2008 ff. has piled up to ca. *2 Tn. €*, approaching the amount of the German GDP p.a. …
Bailing out virtually any individual bank has also implied the weird effect of *prohibiting any structural change in, or major adaptation pressure on, the speculation sector*. But also, this has *prohibited any re-redistribution*, saving the super-rich, the shareholders and creditors of the banks, absolving them from any contribution to solve the crisis. The current and future taxpayers' burdens explode at the same time, and a *future expropriation* of wage earners, savers, and retirees through a potential *secular inflation* from money creation has not only become a real danger but is also considered an appropriate way out of the debt burdens of governments in the ranks of the "elites" – as it has been "successfully" exercised several times in the history of the 20th century. (As said, inflation may continue to be split between *real-economic slack and wage and commodity deflation* on the one hand and fictitious capital and debt explosion, and *asset inflation* on the other; see, e.g., Hudson, Bezemer 2012; but this is not to say that the money explosion through the speculation sector, the Central Banks and the governments will be innocuous, revocable by the Central Banks, or can be confined to the asset sector in the longer-run.)

With the *Eurozone* efforts to set up the *EFSF and ESM*, in particular, but also with any *Quantitative Easing* by the central banks, a *speculative race of the states against the speculation industry* began in order to attain the "confidence of the markets" – a *battle that is already lost* for the taxpayer from its very beginning, if we *consider* the *sheer relative amounts of the "financial weapons of mass destruction"* (W. Buffet) allocated on both sides of the "taxpayer vs. the speculation industry" gamble. The "hostage-taken" taxpayer has no chance in this gamble.

It follows that not only *increasing shares of the public budgets and the GDPs* are to be *redistributed into the profit* masses *M'* (or *m*), if, as far and as long as the PRs on the private fictitious money-capital, still unswayed from the crisis, are to be saved and kept at the levels required. It appears obvious that such exploding amounts of redistribution of public budgets, GDPs, and the social and natural resources of the earth are *incompatible with democracy*.

Further *illustrations* go beyond the bailouts by the governments proper and show the costs and risks incurred by the *Central Banks* at the expense of the taxpayer.

Figure 27: Risk taken on by the ECB from the private banks: Euro-system total balance, 2007-2012.

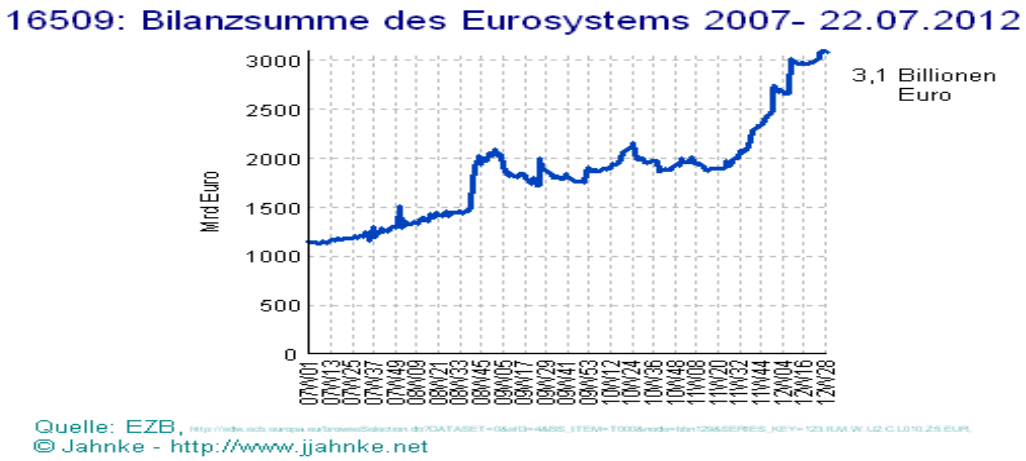
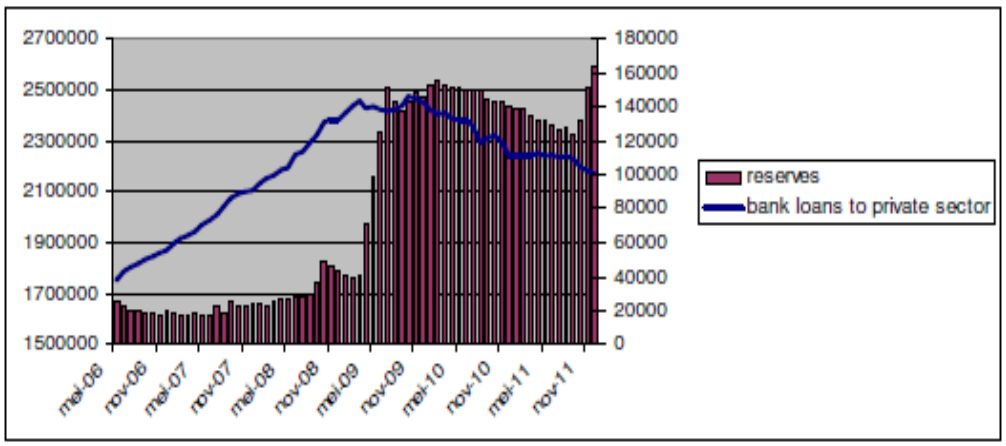


Figure 28: "Quantitative Easing" in the UK: Increased bank reserves held by the BoE (right axis)**, with reduced lending to the real sector** (left axis) **(Bn. Pound Sterling).**



Source: Hudson, Bezemer 2012, p. 4.

Figure 29: ECB interest-rate subsidies to private banks, 2000-2012: Real interest rates corrected by inflation rates.

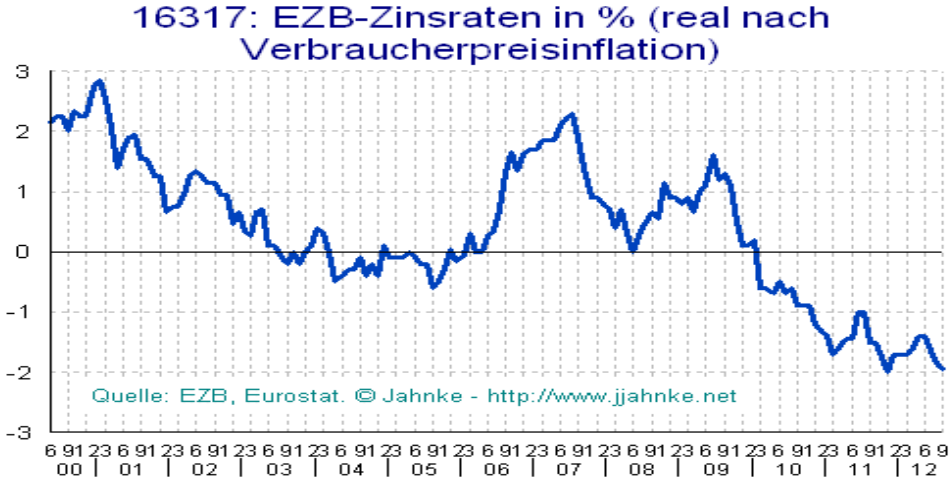
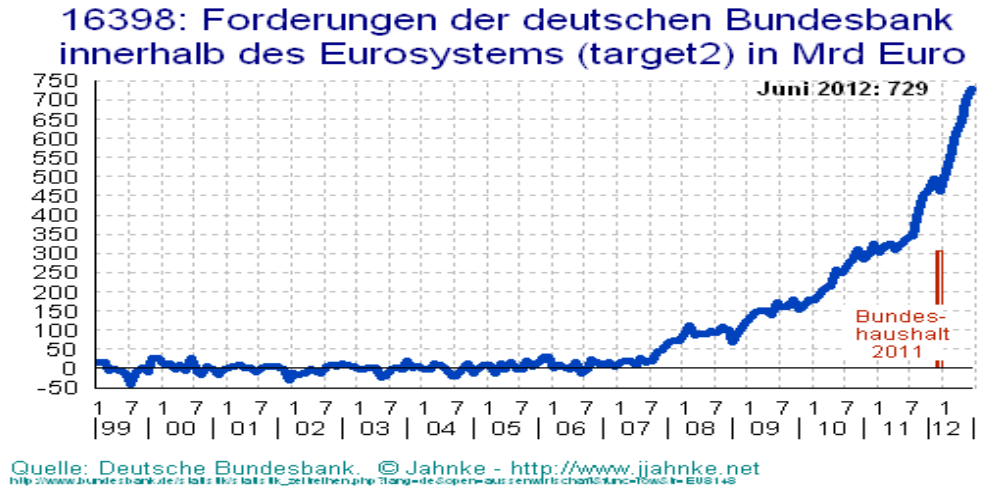


Figure 30: The German special case: German CB Target2 credits, 1999-2012.



Two QE-waves of the ECB in 2011 and 2012, in fact, have piled up to 1,600 Bn. €.
But nevertheless, the deteriorating real economy, in its *government-induced austerity and double/triple dip mode* has unavoidably added, on top of the financial and state budget crises, the *bank crises* that necessarily were to come in spite of public bank flooding. Thus, bank credits given to the real economy tend to increasingly fail:

Figure 31: Share of failing bank credits given to the real economy, Spain and Italy, 2008-2012, % of all credits.

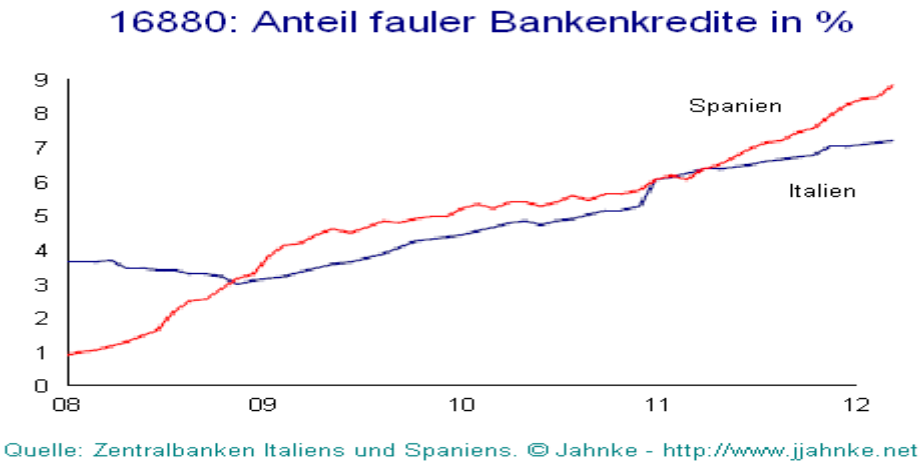
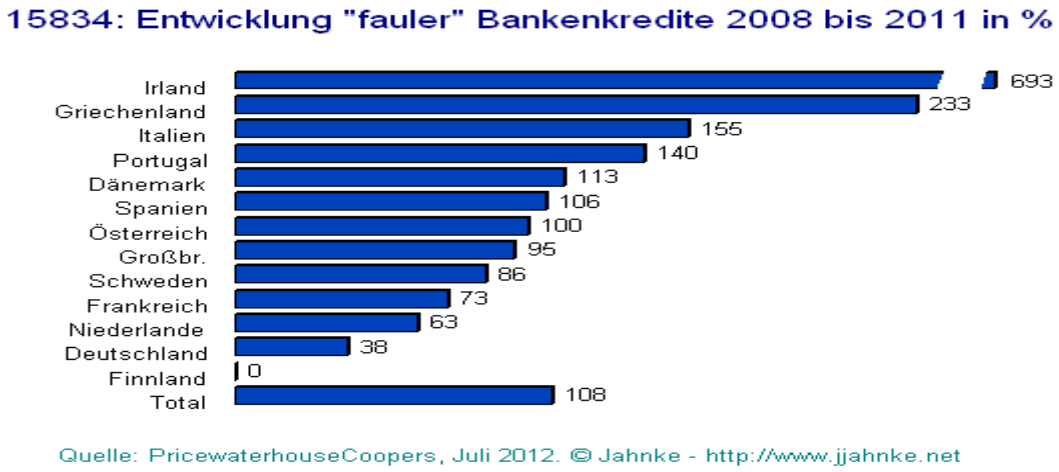


Figure 32: Share of failing bank credits to the real economy, EU countries, 2008-2011, index, 2008=100.



7. Conclusions: At odds with democracy, and no way out other than …

Saving each and every bank, sparing their mega-rich shareholders and creditors from any contribution to pay for the crisis and its social costs, made the *fictitious capital further grow even during the crisis*. Thus, there has so far been *no classical capitalist meltdown of (fictitious) capital*, and, therefore, *no "solution" for the PR* observable. The average PR still remains historically low and tends to further decrease. In fact, the PR itself becomes "*obese*", "*sclerotic*", and no "cleaning" appears feasible, as can be illustrated in a stylized PR:

$$\pi = \left[\frac{\left(\frac{m\uparrow}{v\downarrow\downarrow}\right)\uparrow\uparrow}{\left(\frac{c\uparrow\uparrow\uparrow\uparrow}{v\downarrow\downarrow}\right)\uparrow\uparrow\uparrow + 1} \right] \downarrow .$$

Note, however, that we do not just advocate a classical capitalist cyclical crisis. Given the power distribution in capitalism, the (social) costs of such crisis were always to be borne by the average people, as wage earners, tax payers, recipients of public services, savers, retirees, … This is also the case in the current crisis and will be that way in the foreseeable future. Therefore, a classical cyclical crisis cannot simply be recommended.

The *values still at risk in the bank balances* alone and the *amounts required to maintain high PRs* of the big players *exceed the redistribution capacities of the public budgets, of the GDP* shares that realistically can be further redistributed, and probably (sooner or later) even the *potentials of the CBs* to bailout the banks (with their still considerable amounts of junk papers, which even further increase through the double dips). Since public budgets, GDPs, and CB potentials already have reached, or probably will reach, their limits and thus do no longer suffice for the redistribution requirements to increase *M* to *M'* (and then *C*), the *weird run for potential future real values in the earth's natural stocks*, in order to generate M'↑ (or *m*↑), becomes comprehensible.

Further redistributing risks and values of the sizes implied, and saving the speculation industry by playing its gamble and betting „against" it with taxpayers' money will further generate social costs and increasingly become *incompatible with democracy*.

In the *Eurozone*, for instance, which has its own specific birth defects on top of the general financial (fictitious) over-accumulation crisis, there is a tendency *towards technocratic governance*: The EU „*Economic and Financial Governance (or Government)*" by the President of the EU Commission, the ECB president, the heads of IMF and ESM, the Council of Economic and Finance Ministers, and top bankers, may easily become the *post-democratic prototype* and even a pre-dictatorial governance structure against national sovereignty and democracies. Presidential systems, such as that of the US, have always been more akin to decisions structures beyond classical civilian parliamentary systems anyway. And in fact, the actual *main protagonists of some proactive policy* in general already seem to be the *Central Banks* (FED, ECB, BoE, …) anyway – entities that have already deliberately put beyond and above democracy by the "neoliberal" counterrevolution.

Without a *secular re-redistribution* project, freeing the PR and the real-economy from fictitious-capital obesity, and freeing economy and society from the bottleneck of the PR, making them workable again, there will be no way out. "Neoliberal" redistribution has been a *40-year planned secular state-bureaucratic and political-economic project*. Therefore, there is no way out other than to *reverse that very process in the same dimension and strictness* in order to restore a functioning solid real economy. In this way, a *solid credit sector for the real economy* needs to be created *independent of the speculation sector*, and as far as the speculation sector still exists, it needs to be *strictly reduced to gambling for own account* of the mega-rich and their funds and special institutes, with the slightest public bailout strictly prohibited.

References

Elsner, Wolfram, 2012a, *Wirtschaftswissenschaften – Realität – Politik. Der Beitrag des ökonomischen Mainstream zum Kasino-, Krisen- und Katastrophen-Kapitalismus – und Perspektiven der heterodoxen Ökonomik*, Bergkamen: pad Verlag, 2012.

Elsner, Wolfram, 2012b, Neoliberale Vereinheitlichung der EU versus Vielfalt und Resilienz, Innovation und Demokratie, *Wirtschaftsdienst. Zeitschrift für Wirtschaftspolitik*, 92. Jg. (2012), Nr. 4, 234-7.

Elsner, Wolfram, 2013a, „Neo-Liberaler" Finanzkapitalismus versus Demokratie. Finanzkrise, Systemkrise – und warum der degenerierte Finanzkapitalismus selbst mit formaler Vertretungsdemokratie unverträglich geworden ist. Eine Polemik, in: W.O. Oetsch, J. Nordmann, K. Hirte (Eds.), *Demokratie! Welche Demokratie? Postdemokratie kritisch hinterfragt*, Marburg: Metropolis, 2013, 221-44; extended version: Bergkamen, pad Verlag, 2012.

Elsner, Wolfram, 2013b, Zur Aktualität, Relevanz und Brisanz des Marx'schen Werkes in der Systemkrise des Finanzkapitalismus. Vorwort zur Neuauflage der Marx-Werkeausgabe, Darmstadt: Wissenschaftliche Buchgesellschaft, 2013.

Heinrich, Michael, 2012, *An Introduction to the Three Volumes of Karl Marx's* Capital, New York, US: Monthly Review Press.

Hudson, Michael, and Bezemer, Dirk, 2012, Incorporating the *Rentier* Sectors into a Financial Model, *World Economic Review*, **1.1** (2012), 1-12.

Palley, Thomas, 2012, *The Economic Crisis: Notes From the Underground*, Washington DC: Self-published monograph, 2012.

Vitali, S., Glattfelder, J. B., Battiston, S., 2011, The Network of Global Corporate Control (Study at the TU Zurich), *PLoS ONE*, **6(10)**: e25995, doi:10.1371/journal.pone.0025995.

Author contact: welsner@uni-bremen.de

SUGGESTED CITATION:
Wolfram Elsner, “Financial Capitalism – at Odds With Democracy: The trap of an "impossible" profit rate”, *real-world economics review*, issue no. 62, 15 December 2012, pp. 132-159,
http://www.paecon.net/PAEReview/issue62/Elsner62.pdf

real-world economics review, issue no. 62
subscribe for free

A hot wheels idea for looking at the distribution of household wealth in Mexico 1984-2010

Carlos Guerrero de Lizardi* [Tec de Monterrey, Mexico]

Abstract
It is clear that how well off people are, is not only a matter of income, but also a matter of wealth, in both absolute and relative terms. Using an almost non-observed data approach, Davies et al. (2006) estimated the household wealth and its distribution for a basket of countries for the year 2000. For this year, the reported wealth Gini for Mexico was 0.748. Using information from *automobiles* and other consumer durables from each of the electronically available *National Survey of Household Income and Expenditure*, we approximated wealth Ginis for each sample. We obtained almost equal figures for 2000, which is a welcomed statistical coincidence. The rest of wealth Ginis allowed us to find out its trend for the analyzed period. It suffices to say that, statistically speaking, we live in an almost perfectly unequal world, of which Mexico is a clear example.

JEL classification: D31, E01, C43

Keywords: wealth Gini, automobiles, consumer durables, statistical measurements of economic well-being

Quotations
"Average measures of income, consumption and wealth should be accompanied by indicators that reflect their distribution. Median consumption (income, wealth) provides a better measure of what is happening to the 'typical' individual or household than average consumption (income, wealth)… It is also important to know what is happening at the bottom of the income/wealth distribution, or at the top." Joseph E. Stiglitz, Amartya Sen and Jean-Paul Fitoussi (2009, pp. 13-4).

"The study of the distribution and composition of household wealth is a flourishing research field. Empirical analysis must, however, cope with considerable weaknesses in the available data. Household surveys of assets and debts, for instance, typically suffer from large sampling errors due to the high skewness of the wealth distribution as well as from serious non-sampling errors. In comparative analysis, these problems are compounded by great differences in the methods and definitions used in various countries. Indeed, in introducing a collection of essays on household portfolios in five countries, Guiso, Haliassos and Jappelli (2002, pp. 6-7) mention 'definitions' as the 'initial problem' and warn the reader that 'the special features and problems of each survey … should be kept in mind when trying to compare data across countries'." Markus Jantti, Eva Sierminska and Tim Smeeding (2008, p. 5).

"Stretching somewhat my argument about the value of data, endless billions of dollars have been spent on space exploration by the United States government just to collect a few observations of some lumps of rock and gas (with incidental kudos, 'technical spin-off' and tenuous 'defence' advantages). What government anywhere has spent one-thousandth as much in deliberately observing (experimentally or non-experimentally) or trying to understand an economic system of at least equal importance to our lives?" David F. Hendry (1980, p. 398)

1. Introduction

Tension prevails between the current statistical measurements of economic well-being and people's perception. Its consequence is obvious and inevitable: citizens are suspicious of

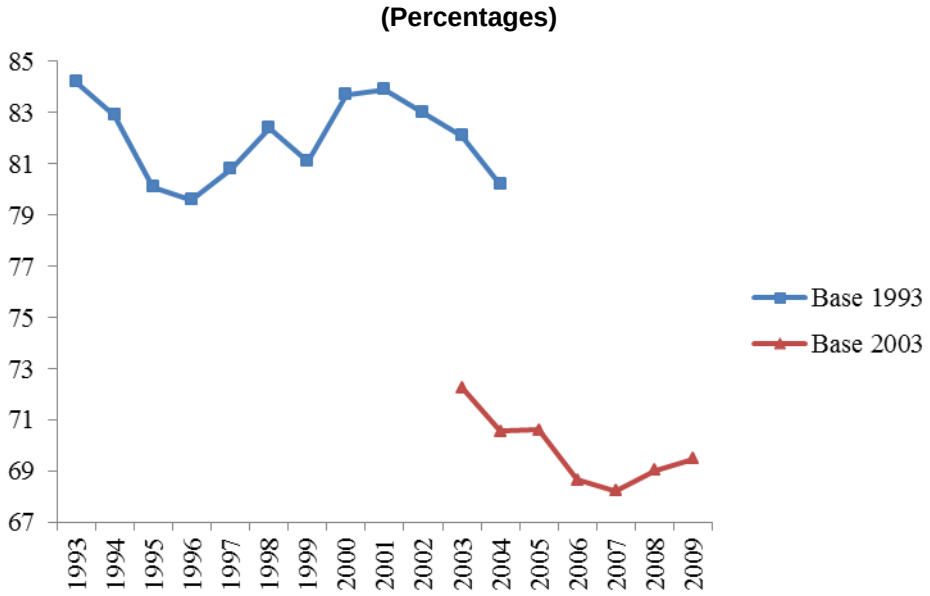
* EGAP Gobierno y Política Pública, Tecnológico de Monterrey.

official numbers.[1] Certainly, this seriously erodes the economic and social cohesion in Mexico, among other countries. One clue to this problem is that both early and modern national accounts were designed to "provide quantitative frameworks for war-time resource mobilization and peacetime reconstruction" (Lequiller and Blades 2007, p. 398). In simpler words, accounting systems were designed to measure market production.

The gap between the government's point of view about economic performance and societal opinions is caused not only by national account statistics, but also by the measurement of consumer prices (CPI). According to Deaton (1998, p. 43), American CPI weights are correct for households that lay at the 75th percentile of the expenditure distribution. In Spain, the applicable percentile is the 61st (Izquierdo, Ley and Ruiz-Castillo 2003, p. 149), and for Mexico, the percentile in question is the 86th (Guerrero 2010, p. 2). It is unreasonable to expect that one single plutocratic index could adequately reflect the consumption pattern of the majority in Mexico, among other countries.

The following figure shows household disposable income as a percentage of the Mexican economy, measured by the Gross Domestic Product (GDP) between 1993 and 2009, using information from the National Account System, at current prices, bases 1993 and 2003. There is no information for the first variable before 1993.

Figure 1 Household disposable income as a percentage of the Mexican economy (GDP), 1993-2009



Source: own calculations using data from National Account System, INEGI.

First, it is worth emphasizing that changing from base 1993 to base 2003 involves a reduction of ten points of household income participation in the economy. Second, there is a slightly negative slope in the proposed measure of overall well-being or, in other words, it seems that the paths of household disposable income and the economy diverge. Incidentally, figure 1 does not address income distribution considerations. Third, the exercise was done using current and not constant Mexican pesos, because of the lack of information. Schreyer (2009) reminds us that, in current terms, income and production are equal, but "real income" and

[1] According to Stiglitz, Sen and Fitoussi (2009, p. 7), "in France and in the United Kingdom only one third of citizens trust official figures, and these countries are not exceptions".

"volume of production" are not equal. Assuming that price indices are correct, volume is the quantity of goods and services coming out of the "national factory door", and real income is how many goods and services (some of them produced abroad) can be purchased with the income generated in the factory. It would be desirable to evaluate the proposed ratio using constant figures.[2]

Our concern here refers to the measurement of economic well-being. It is clear that how well off people are, is not only a matter of income, but also a matter of wealth, in both absolute and relative terms.[3] The major difficulties are that not only is wealth far from being correctly measured, but distributional measures are typically focused in income, and not on wealth.[4]

In section 1 we will review an ambitious paper recently written by Davies, Sandstrom, Shorrocks and Wolff (2006), retrieved from the website of the World Bank. The goal of the paper is to estimate the household wealth and its distribution for almost every country in the world in the year 2000. In doing so, the authors exercise what it is correct to call "an almost non-observed data approach". They make use of, among other resources, limited available information, regression analysis, a wealth per capita imputation method and a large set of assumptions.

In Mexico, there are two small, but relevant, pieces of wealth information. The first one describes non-financial assets at a disaggregated level, basically consumer durables. The second set of data contains financial net wealth at an aggregated level. Here we will propose a sort of a "shortcut" based on micro data, recorded in the *National Income and Expenditure Household Surveys* from 1984 to 2010. Specifically we will approximate for each sample three Gini coefficients of wealth. Attempting to put the exercise carried out into perspective, the last section presents some final remarks.

2. Wealth Gini: an almost non-observed data approach

As usual, economists have more than one definition of, in our case, household's wealth. In a broad sense, wealth is the value of all family resources, both human and non-human, over which people have command. According to a second definition, relevant to the current discussion, wealth is a net worth: the value of physical and financial assets less liabilities. In this sense wealth represents the ownership of capital.

---

[2] In the words of Stiglitz, Sen, and Fitoussi (2009, p. 11): "capturing quality change is a tremendous challenge, yet this is vital to measuring real income and real consumption, some of the key determinants of people's material well-being. Under-estimating quality improvements is equivalent to over-estimating the rate of inflation, and therefore to under-estimating real income. The opposite is true when quality improvements are overstated."

[3] In 2001 household net wealth as a percentage of nominal disposable income in Canada, France, Germany, Italy, Japan, United Kingdom, and United States was 503, 552, 536, 742, 744, 714, and 557, respectively (OECD, 2009). According to Davies et al. (2006), in 2000 wealth Gini for the same countries was, in the same order, 0.663, 0.730, 0.671, 0.609, 0.547, 0.697, and 0.801.

[4] A broader definition of economic wealth is implied by Lequiller and Blades (2007, pp. 37-8): "it may seem strange that GDP rises if there are more road accidents. This is partly because of greater activity by emergency services. On the contrary, one would intuitively like to see GDP diminishing in such circumstances. But this would be to confuse a measure of output (GDP) with a measure of welfare, which GDP is not. At most, GDP is a measure of the contribution of production to welfare… Undoubtedly, major calamities destroy part of the economic wealth (buildings, houses, roads and infrastructure), but they do not, *per se*, constitute negative production and so do not directly contribute to a decline in GDP. Destruction can indirectly affect production in a negative or positive way."

Unfortunately a warning applies here in the following senses (Kennickell, 2007, pp. 3-4):

> "The measurement of even the most straightforward concepts of wealth poses substantial technical and cognitive problems. Values of some assets, such as a personal business or a residence, may not be clear unless they are actually brought to the market; even then, there is a question of the conditions under which such a transaction might take place… Some assets and liabilities may be poorly understood, even by people who hold them."

Commonly there are two sources of information, "household balance sheets" (HBS) and "wealth surveys" (WS).[5] According to Davies et al. (2006) around the world only twenty two countries have "complete" financial and non-financial data, eighteen based on HBS (Canada, United States, Denmark, France, Germany, Italy, Netherlands, Portugal, Spain, United Kingdom, Australia, Taiwan, Japan, New Zealand, Singapore, Czech Republic, Poland, and South Africa), and four based on WS (Finland, China, India, and Indonesia); sixteen countries have incomplete information, among them Mexico.[6] Using an almost non-observed data approach, Davies, Sandstrom, Shorrocks and Wolff (2006) estimated the level of wealth per capita and its distribution among households for 229 countries in the year 2000. Unfortunately, they only reported on 26 countries, leaving 12 countries with available data off of the study. Putting its strategy schematically, the authors followed a two-step process:

A. In order to impute per capita wealth Davies et al. (2006) estimated three log-log regressions. The dependent variables were non-financial wealth, financial wealth, and liabilities, accordingly. The sample for the first one consisted of eighteen countries with HBS data and five with WS, and for the second and third regressions the sample consisted of thirty four countries with HBS data or financial balance sheet data, and four with WS. Based on the existence of a strong correlation between wealth and disposable income (0.958), and wealth and consumption (0.860), the selected independent variable was the real consumption per capita. From a theoretical perspective it is difficult to argue that the relationship between income and wealth, and consumption and wealth, are linear, but for Davies et al. (2006) it was a sufficient approximation for the empirical work.[7]

Davies et al. (2006) also considered five other independent variables: population density, market capitalization rate, public spending on pensions as a percentage of GDP, income Gini, and domestic credits available to the private sector. We are sure that the variables were selected at least in part due to a lack of data. In the non-financial assets regression, OLS were used, and in the financial assets and liabilities regressions the SUR estimation method

[5] Davies et al. (2006, pp. 8-9) reminds us the following: "like all household surveys, wealth surveys suffer from sampling and non-sampling errors. These are typically more serious for estimating wealth distribution than e.g. for income distributions. The high skewness of wealth distributions makes sampling error more severe. Non-sampling error is also a greater problem since differential response (wealthier households less likely to respond) and misreporting are generally more important than for income. Both sampling and non-sampling error lead to special difficulties in obtaining an accurate picture of the upper tail, which is of course one of the most interesting parts of the distribution… In order to offset the effects of sampling error in the upper tail, well-designed wealth surveys over-sample wealthier households."

[6] It is worth noting that even a project such as the *Luxemburg Wealth Study* has been able to analyze wealth distribution exclusively in five countries (Jantti, Sierminska and Smeeding, 2008).

[7] Similarly, Jantti, Sierminska and Smeeding (2008, p. 26) conclude that "net worth and disposable income are highly, but not perfectly, correlated in the countries we look at… Part of the positive association of disposable income and net worth is associated to observable characteristics of the household, such as age and education. Once this part is taken into account, a sizeable correlation remains."

was used. The authors only reported the standard errors and the "R^2". It is worth mentioning that the income Gini turned out to be insignificant, and goodness of fit reached almost one in each regression. Unfortunately the "statistical adequacy" of regressions was not tested.[8] In this sense the authors made use of the "axiom of correct specification" (Leamer, 1983).

B. To estimate wealth distribution shares for countries for which no direct information existed, the authors made use of income distribution data for 145 countries recorded in the WIID dataset. Specifically, what Davies et al. (2006, pp. 23-4) did was the following:

> "The common template applied to the wealth and income distributions allows Lorenz curve comparisons to be made for each of the 20 reference countries… In every instance, wealth shares are lower than income shares at each point of the Lorenz curve: in other words, wealth is unambiguously more unequally distributed than income. Furthermore, the ratios of wealth shares to income shares at various percentile points appear to be fairly stable across countries, supporting the view that income inequality provides a good proxy for wealth inequality when wealth distribution data are not available. Thus, as a first approximation, it seems reasonable to assume that the ratio of the Lorenz ordinates for wealth compared to income are constant across countries, and that these constant ratios (14 in total) correspond to the average value recorded for the 20 reference countries. This enabled us to derive estimates of wealth distribution for 124 countries to add to the 20 original countries on which we have direct evidence of wealth inequality."

Davies et al. (2006, p. 26) concluded the following: "our wealth Gini estimates for individual countries range from a low of 0.547 for Japan, to the high values reported for the USA (0.801) and Switzerland (0.803), and the highest values of all in Zimbabwe (0.845) and Namibia (0.846). The global wealth Gini is higher still at 0.892. This roughly corresponds to the Gini value that would be recorded in a 10-person population if one person had $1000 and the remaining 9 people each had $1."[9]

3. Wealth Gini: a sort of a "shortcut" based on observed-data

The Mexican *National Income and Expenditure Household Surveys* (ENIGH) include information about some durables goods, among others, the number of personal computers (PCs), vacuums and vehicles owned by each family. The surveys do not distinguish between laptops and desktops, so the record includes both types. Somewhat the same applies for the vacuums. The wealth variable "vehicles" includes three types: cars, closed vans, and open vans. The following tables contain information about the number of PCs, vacuums and vehicles as percentages of the total households. Please note that the information is presented in physical units, not in monetary values, because of the lack of information.

[8] According to Spanos (1989, p. 151): "a *statistical model* constitutes a set of probabilistic assumptions related to random variables giving rise to the data chosen by a theory. Such a model is said to be *statistically adequate* when the underlying assumptions are tested and not rejected by the data in question."

[9] Davies et al. (2010, p. 223) reported slightly different figures: "the top decile owned 71% of world wealth and the global Gini value was 0.802."

Table 1. Number of PCs as a percentage of total households

Year	0	1	2	3	4	5	6	7	8	Sum
1992	97.99	1.96	0.05							100
1994	96.71	3.21	0.07	0.00	0.01					100
1996	96.90	2.93	0.17							100
1998	94.18	5.56	0.25	0.01						100
2000	89.49	9.99	0.51	0.01						100
2002	86.29	13.01	0.54	0.06	0.06	0.04				100
2004	83.22	15.93	0.70	0.11	0.03	0.00	0.01			100
2005	81.56	17.40	0.83	0.16	0.02	0.03				100
2006	80.20	18.16	1.30	0.29	0.04	0.00	0.01	0.00	0.01	100
2008	77.51	20.31	1.67	0.34	0.12	0.03	0.01			100
2010	74.12	22.03	2.69	0.76	0.30	0.06	0.02	0.01		100

Source: own calculations using data from ENIGHs.

Over the years, there is a decrease in the percentage of families that do not have a PC, going from 97.99 percent in 1992 to 74.12 percent in 2010. In other words, there is a significant increase in the percentage of households that have a PC, from 1.96 percent in 1992 to 22.03 percent in 2010, which means an increase of nearly twenty one points within the period under review.

Table 2. Number of vacuums as a percentage of total households

Year	0	1	2	3	4	5	Sum
1992	92.06	7.85	0.10				100
1994	92.10	7.75	0.14	0.01			100
1996	93.48	6.45	0.07				100
1998	92.06	7.87	0.06	0.01			100
2000	91.41	8.48	0.12				100
2002	93.06	6.80	0.14				100
2004	92.17	7.60	0.22	0.01			100
2005	91.48	8.38	0.14				100
2006	91.01	8.76	0.22	0.01			100
2008	91.05	8.66	0.24	0.03	0.01	0.01	100
2010	92.89	6.91	0.17	0.01			100

Source: own calculations using data from ENIGHs.

The case of vacuums is quite different from that of PCs and with that of vehicles as we will see in a moment. As time goes by, as a constant less than ten percent of households own a vacuum.

Table 3. Number of vehicles as a percentage of total households

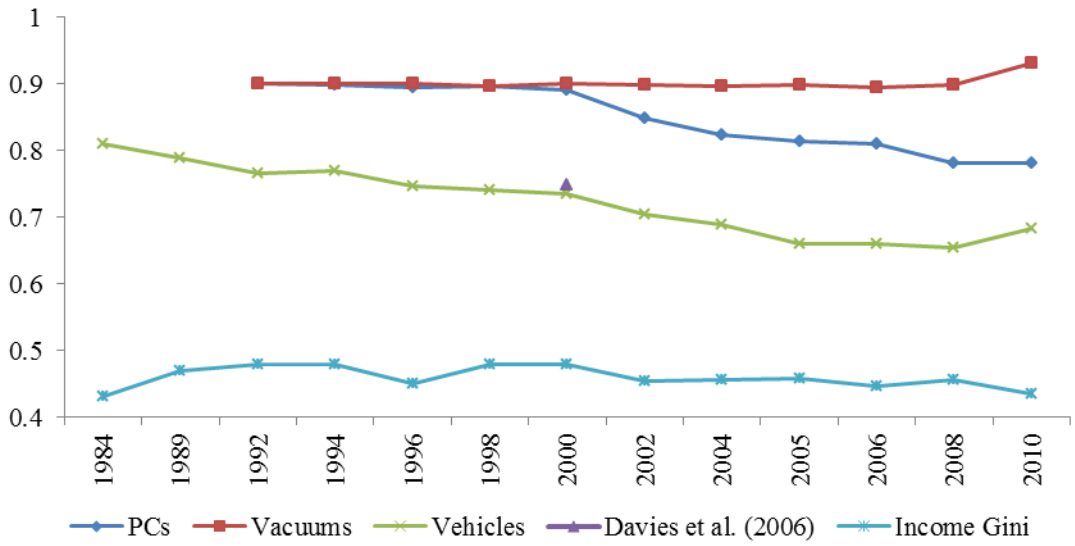
Year	0	1	2	3	4	5	6	7	8	9	10	Sum
1984	81.07	14.95	3.60	0.36	0.01	0.01						100
1989	76.74	18.24	3.93	0.73	0.25	0.03	0.05	0.02				100
1992	73.59	20.73	4.28	1.10	0.23	0.01	0.06					100
1994	73.84	19.95	4.94	0.93	0.24	0.11						100
1996	70.64	22.81	5.34	0.92	0.24	0.02	0.02	0.02				100
1998	68.22	24.58	5.65	1.20	0.30	0.04	0.01					100
2000	67.09	24.29	6.69	1.62	0.27	0.04						100
2002	64.36	26.54	6.93	1.58	0.45	0.13	0.01	0.01				100
2004	61.88	27.81	7.94	1.68	0.46	0.08	0.15	0.01				100
2005	58.45	30.72	8.29	1.91	0.36	0.17	0.08	0.01				100
2006	58.34	30.20	8.75	2.05	0.49	0.13	0.02	0.01			0.01	100
2008	57.97	31.29	8.36	1.74	0.46	0.13	0.03	0.01	0.00	0.00	0.01	100
2010	60.35	29.81	7.67	1.54	0.42	0.10	0.05	0.00	0.01	0.00	0.04	100

Source: own calculations using data from ENIGHs.

In 1984, the vast majority of families did not own a vehicle. However, in 2010 almost one third of households in Mexico owned at least one vehicle. It is also clear that, as time goes by, the number of families that may have access to a greater number of vehicles has also increased.

The following figure shows Gini coefficients for PCs, vacuums and vehicles that may be derived from the ENIGHs, the wealth Gini reported by Davies et al. (2006), and the official income Gini for Mexico between 1984 and 2010.[10]

Figure 2. Wealth Gini and income Gini coefficients for Mexico 1984-2010



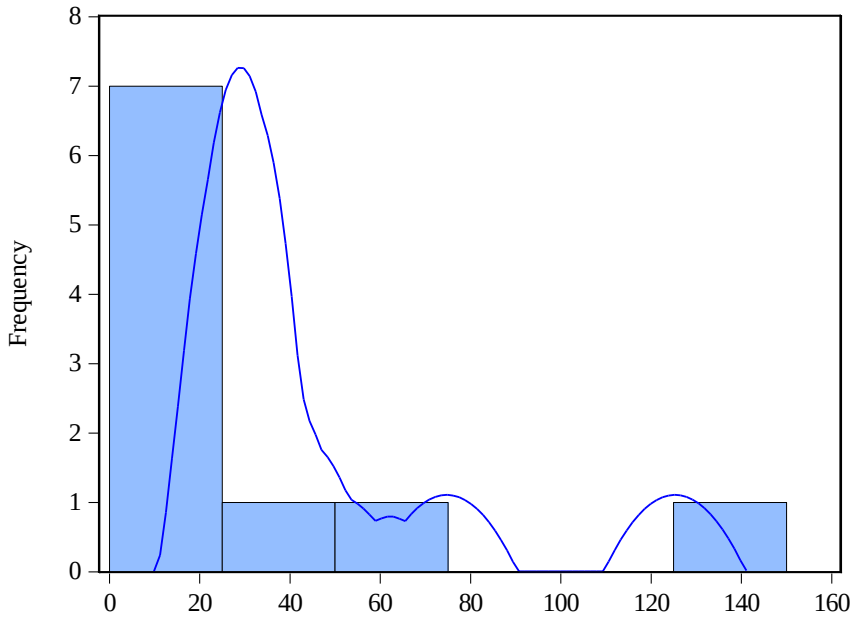
Source: own calculations using data from ENIGHs, and Davies et al. (2006, p. 48).

[10] A somewhat similar approach is Burger et al. (2008). They used an index of consumer durables to investigate wealth accumulation by households in Ghana. We prefer to avoid the dilemma regarding the determination of weights because there is no information about the value of the consumer durables. In this sense we made used of the rule number 5 proposed by Kennedy (2003, p. 392) that says "keep it sensibly simple".

It is worth mentioning the following. In first place, it is a welcomed statistical coincidence that, in 2000, wealth Gini figure estimated by Davies et al. (2006) and the one derived from the vehicles proposed here are almost equal.[11] In some sense, if we trust Davies´s estimate, then our analysis would allow us to garner information about the trend of the wealth Gini coefficient in Mexico between 1984 and 2010. Taking for granted what was stated above, in second place, it is fair to say that the patterns of wealth and income Ginis are somewhat different. Despite that this analysis is based exclusively on consumer durables, it is worth mentioning that this document offers the first available historic estimate for Mexico's wealth Gini. In third place, it seems that the wealth Ginis derived from the PCs and vacuums were useful to the extent that they served as some sort of confirmatory mechanisms.

Finally, we present an illustration about the meaning of a Gini coefficient equal to 0.662, which is the vehicles Gini obtained for the 2010 year.[12] Our assumptions are the following. The first decil has a wealth equal to one Mexican peso. In order to determine the wealth from the second to the fifth deciles we applied the same observed ratio between the decil in question with respect to the first decil considering its "current monetary income" registered in the ENIGH 2010. It is because it is not until the sixth decil that households are in an economic position to save. In order to determine the wealth from the sixth to the tenth deciles we just applied a constant growth. At the end we obtained the sought distribution. The following figure shows its histogram.

Figure 3. Simulated wealth distribution in Mexico 2010, (Gini=0.662)



Source: own calculations using data from ENIGH 2010.

[11] Another piece of evidence is the following. Using home ownership distribution for the year 2000, Torche and Spilerman (2008) estimated "wealth Gini" coefficients for some Latin American countries. For Mexico the figure obtained was 0.70. On page 160, the authors commented the following: "since direct measures of home value are not available in household surveys, we proxy it by rental value, as estimated by the homeowners… Admittedly, this approach may suffer from bias if some households systematically over or underestimate the rental value of their dwellings, and it assumes that the relation between market value and rental income in a country is constant across regions and neighborhoods".
[12] Considering that we are not taking account the value of the consumer durables, the proposed Gini coefficients are very optimistic.

To put our simulation into perspective it is convenient to quote Kennickell (2007, p. 6), who compared income and wealth distributions using observed data for the US: "The levels of income and wealth are quite different across their distributions... Income is higher than wealth at the bottom of the distribution and substantially lower at the top… Comparison of the quantiles of each distribution shows that the distributions also differ greatly in relative terms, with wealth being proportionally far higher in the upper tail of the distribution."

Based on ENIGH 2010 it is correct to say that the "current monetary income" observed ratio between the last and the first deciles was 25.1, and the two top deciles owned 51.9 percent of the "current monetary income". The income Gini coefficient reported in the same year was 0.435. In our wealth case the ratio was 146.6, and the two tops deciles owned 74.2 percent of household wealth.[13]

4. Final remarks

Before there was "good" data available, the researchers in the developed world implemented creative solutions in order to approximate wealth data and its distribution between households. By the way, in applied work it is allowed to do it as long as you follow "good practices".

Results obtained by Davies, Sandstrom, Shorrocks and Wolff (2006) and those reported here are complementary, rather than exclusive. Unequal wealth distribution is a salient feature of our societies. In 2000, world wealth Gini was 0.892 and the Gini was 0.734 for Mexico. Additionally, seeing the entire period we found an unexpected result: it seems that the income Gini is rigid and the wealth Gini has a slight tendency to decline. Interestingly, this pattern was broken during the last two observed years, as Ginis moved in opposite directions.

Lastly, the concern about wealth distribution clearly has theoretical implications, but it also has tremendous social and policy repercussions. Three examples. First, it is necessary to investigate the impact of not only income distribution but wealth distribution in the economic performance of countries.[14] Second, we recommend a major review of the Mexican tax structure in terms of the role of wealth taxes. Third, it is time to launch a project to measure wealth and its distribution in our country. Currently the US Federal Reserve Board is the example to follow. According to Jantti, Sierminska and Smeeding (2008, p. 17), its *Survey of Consumer Finances* "is the dataset which captures more assets in the United States and is reputed to be the best wealth survey in the world."

References

Burger, R., F. Booysen, S. Van der Berg, and M. Von Maltitz (2008). "Marketable wealth in a poor African country: wealth accumulation by households in Ghana", in Davies (2008).

Davies, J. B. (2008). *Personal Wealth from a Global Perspective*, editor, OUP.

Davies, J. B., S. Sandstrom, A. Shorrocks, and E. N. Wolff (2006). *The World Distribution of Household Wealth*, http://www.iariw.org/papers/2006/davies.pdf.

[13] If we use the Gini wealth coefficient derived from PCs, e.g. 0.782, the ratio would be 764, and the two top deciles would own 86.8 percent of household wealth.
[14] As a counterexample see Durlauf, Johnson and Temple (2005).

Davies, J. B., S. Sandstrom, A. Shorrocks, and E. N. Wolff (2010). "The level and distribution of global household wealth", *The Economic Journal*, 121 (March), pp. 223-54.

Deaton, A. (1998). "Getting prices right: what should be done?", *Journal of Economic Perspectives*, 12: 1, pp. 37-46.

Durlauf, S. N., P. A. Johnson, and J. R. W. Temple (2005). "Growth econometrics", *Handbook of Economic Growth*, edited by Philippe Aghion and Steven Durlauf, North-Holland.

Guerrero, C. (2008a). "Sesgos de medición del índice nacional de precios al consumidor, 2002-2007", *Investigación Económica*, LXVII: 266, pp. 37-65.

Guerrero, C. (2008b). "Sesgo de medición del PIB derivado de los cambios en la calidad del sector TI: México 2000-2004", *Estudios Económicos*, 23: 2, pp. 253-80.

Guerrero, C. (2009). "Contribution of the information and communication technology sector to Mexican Economic growth from 1999 to 2003", *EconoQuantum*, 6: 1, pp. 11-30.

Guerrero, C. (2010). "Alternative consumer price indexes for Mexico", *Center for International Development Working Paper*, No. 42, John F. Kennedy School of Government, Harvard University.

Hendry, D. F. (1980). "Econometrics- alchemy or science?", *Economica*, 47: 188, pp. 387-406.
Izquierdo, M., E. Ley, and J. Ruiz-Castillo (2003). "The plutocratic gap in the CPI: evidence from Spain", *IMF Staff Papers*, 50:1, pp. 136-55.

Jantti, M., E. Sierminska and T. Smeeding (2008). "The joint distribution of household income and wealth: evidence from the Luxemburg Wealth Study", *OECD Social, Employment and Migration Working Papers*, DELSA/ELSA/WD/SEM(2008)2.

Kennedy, P. (2003). *A Guide to Econometrics*, fifth edition, The MIT Press.

Kennickell, A. B. (2007). "What's the difference? Evidence on the distribution of wealth, health, life expectancy and health insurance coverage", *Federal Reserve Board*.

Leamer, E. E. (1983). "Let's take the con out of econometrics", *The American Economic Review*, 73: 1, pp. 31-43.

Lequiller, F. and D. Blades (2007). *Understanding National Accounts*, OECD Publishing.

OECD (2009). *Economic Outlook*, No. 89.

Spanos, A. (1989). "Early empirical findings on the consumption function, stylized facts or fiction: a retrospective view", *Oxford Economic Papers*, 41: 1, pp. 150-69.

Stiglitz, J. E., A. Sen and J.-P. Fitoussi (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*, http://www.stiglitz-sen-fitoussi.fr.

Torche, F. and S. Spilerman (2008). "Household wealth in Latin America", in Davies (2008).

Author contact: carlos.guerrero.de.lizardi@itesm.mx (please check)

SUGGESTED CITATION:
Carlos Guerrero de Lizardi, "A hot wheels idea for looking at the distribution of household wealth in Mexico 1984-2010", *real-world economics review*, issue no. 62, 15 December 2012, pp. 160-169,
http://www.paecon.net/PAEReview/issue62/Lizardi62.pdf

ISSN 1755-9472

Articles, comments on and proposals for should be sent to the editor at
pae_news@btinternet.com

Subscriptions to this email journal are free to all members of the World Economics Association (WEA). WEA memberships are free at http://worldeconomicsassociation.org/

Back issues of this journal and material related to the PAE movement are available at www.paecon.net.

To subscribe to this journal go **here** (http://www.feedblitz.com/f/f.fbz?Sub=332386)

To unsubscribe to this journal go to
http://www.feedblitz.com/f/f.fbz?EmailRemove=_NDUzNDkzMHwzMzIzODZ8cGFlX25ld3NAYnRpbnRlcm5ldC5jb218MTA5OTU4_