How reflexive have economists been in the wake of the crisis: 'the times they are a –changin'?

Ioana Negru

24 July 2013

PKSG

Post Keynesian Economics Study Group

Working Paper 1306

How reflexive have economists been in the wake of the crisis: 'the times they are a-changin'?

Abstract: The current global economic crisis provides a window of opportunity for both *reflection* and *change* within economics. This paper examines the response of the discipline to questions surrounding the need for change by surveying commentaries provided by economists (and to some extent economic commentators) within the media and literature of professional economics associations. The paper seeks to address two questions. Firstly, is there recognition that the economic crisis poses serious questions for the discipline of economics – and if so what is the scale and nature of this self-awareness? Secondly, the paper seeks to identify the type of diagnoses being provided by the economics profession in terms of whether the clamor for change relates to focus, theoretical framework, or methodological foundations of the disciplines (or all three). Empirical findings suggest that future effort might be better directed towards economic theory and its assumptions rather than towards method and methodology.

Keywords: Reflexivity, change in economics, methodology in economics, economic crisis, economists' practices

JEL classifications: A1, B1, B4

Acknowledgements: The author would like to thank Bruce Philp, Sheila Dow, Fred Lee, Jamie Morgan, Nina Kaltenbrunner and Nigel Cooper for helpful comments to improve this paper.

Name of Author: Ioana Negru

Author affiliation: Anglia Ruskin University, Cambridge

Address for correspondence including email: Lord Ashcroft International Business School, East Road, Cambridge, CB1 1PT; email address: ioana.negru@anglia.ac.uk

1. Introduction

Since 2007 the profound global economic problems encountered have served to raise amongst a wider and more public audience the question as to whether there is also a crisis within economics as a *discipline*. The past five years, in particular, have witnessed an impressive array of academic and media voices reflecting on the role of economists in forecasting, preventing and/or solving the "puzzle" of recession (e.g. Acemoglu (2009), Colander et al (2009), Eichengreen (2009), Buiter (2009), Krugman (2009) etc.).[1]

The view pushed within media and academic circles concerned the failure of economics and economists to diagnose the impending crisis – although the media were equally quick to seize on 'voices in the wilderness' whom they claim foretold the impending crash (e.g. Roubini, Taleb, Soros, Palley). The failure of economics as a discipline to anticipate the crash is portrayed by certain economists as understandable because it is an exceptional event (Altig 2009), which is not readily foreseeable (Saint-Paul 2009). Economics is still seen, in general, as being capable of delivering accurate predictions that enable a better management of the economy. For media commentators, and certain economists, it is simply a case of fine-tuning the theoretical models and reverting to one or other tried and tested economic approaches (e.g. replacing theoretical assumptions such as rational investors, efficient market hypothesis, etc.).

As economists, these presumptions in the media tell us a lot about how our discipline is seen from the outside. External observers perceive economics as a discipline that is overly preoccupied with markets, economic forecasts and economic efficiency, whilst the richness and diversity of views within economics is rarely communicated to the public. Such perceptions also illustrate, however, the rather limited appreciation from outside the profession of the structural problems that exist within economics as a form of academic enquiry. Where problems with the discipline are identified, commentators in the media seem to be unsure as to whether the crisis tells us that economics is based upon: (a) a flawed conceptual framework (i.e. economists don't really understand the economy); (b) a flawed methodological framework (i.e. economists conceptually understand the economy, but methodological problems provide them with incomplete models populated with flawed data with

[1] Even Queen Elizabeth II asked of economists: "How come nobody could foresee it?" when visiting the London School of Economics in November 2008. This question inspired various responses from "the lack of collective imagination of economists worldwide in understanding the systemic risks" (in a letter addressed to the Queen by two LSE-based economists) to "the crisis was predictable and it was predicted Ma'am" (from Palley; the response letter from Thomas Palley can be found at: http://www.thomaspalley.com; see also Palley 2009). The Queen's introspection has also inspired Hodgson to send a letter (signed by ten leading British-based economists, and one leading Australian economist) as a response that outlines all the issues faced and challenges faced by economics today (from its teaching to the sociology of the profession and institutional entrenchment) that might explain the non-making sense of the current crisis on the part of economists. To add further pressure, Krugman (September 2009) has accused economists as having a love affair with mathematics rather than a genuine interest in pursuing "truth".

which to test their assumptions) or (c) a flawed conceptual *and* methodological framework. In reality, of course, the answer to such a question rests on a more far-reaching issue concerning the nature and function of economics as a discipline.[2]

Various authors have considered these fundamental issues. For example Lawson (2009) has claimed that the difficulties faced by mainstream economists are manifestations of profound methodological problems that are essential in their approach. In particular, he criticizes the mathematical deductive models advanced by mainstream economics and advocates an alternative, non-formalistic framework, which can be used to analyse the present economic crisis. Echoing the current argument, Lawson argues that the introspection exhibited by various mainstream economists in the wake of the crisis was insufficiently radical, leaving the discipline vulnerable to future, equally profound problems. Specifically, Lawson (2009: 762-763) claims that mathematical deductive methodology is a problem in itself: "The fundamental problem of modern economics, as I see it, is the mainstream insistence that mathematical modelling is the only useful, and the proper, way to do economics. It is this insistence on mathematical deductive modelling that I am primarily seeking to criticise here". His argument is that the mathematical deductive methods that mainstream economists use are inappropriate tools to deal with an open, structured and in-motion, social reality. This is why "mathematical deductive methods are equally of little assistance in the analysis of most social phenomena" (Lawson, 2009:763). In other words, methods matter. Whereas Lawson focuses on mathematics, prediction, econometrics and the methodological approach of mainstream economics, the present paper aims to consider whether the recent crisis has precipitated a serious, self-reflexive, re-evaluation of economics from *within* the economics profession, both in terms of methodology and theory. Of course all discourses and practitioners claim to be self-reflexive and critical, including mainstream economists. The issue is rather what are the terms on which they are self-critical, the extent to which they were constrained by the 'institutional context' of the discipline and, relatedly, the openings and closures that characterise that self-criticism?

The aim of this paper is thus to capture the extent and nature of the *initial* responses within the profession to the crisis as it relates to the state of economics as a discipline. More specifically, the intention of the paper is to explore the reflective responses of the economics profession in response to the crisis. The analysis uses the texts and writings of economists within newspaper articles, media interviews and *new media* (such as blogs) between September 2007 and December 2009 in order to

[2] In typically provocative interventions, Mejias asks if all economists are autistic, whilst Taleb proposes to engineer a revolution in economics by shutting down all economics departments worldwide (see Mejias 2009). In *Measuring Crisis*, Mejias (2009) discusses the views expressed by various scientists on the current state of economics in a special event organized by the Perimeter Institute of Theoretical Physics – "The Economic Crisis and its Implications for The Science of Economics" in May 2009.

examine the nature and extent of the profession's *immediate* response to the crisis in terms of its implications for the future scope and direction of the discipline. This paper presents an analysis of the level and focus of economists' self-criticism and reflection in order to gauge both the degree of reflection within the profession and to identify whether the proffered diagnoses propose theoretical and/or methodological reform as a means of salvation. As such this paper represents a field study that attempts to categorise economists' responses in the wake of the crisis. Thus it deals with the most current problems of economics.

The paper begins by outlining the analytical framework and data collection approach employed in the analysis of the newspaper articles, new media interviews and blogs. The results of the literature survey are then presented in terms of key themes and issues. Two features, in particular, are highlighted: (i) the lack of immediate focus on the economic crisis at conferences and in journals; (ii) little formal public debate or acknowledgment concerning the fundamental problems in economics as a discipline. Both serve to focus our attention on an issue of profound importance: is there a lack of self-reflection in economics? In particular, it is argued that the failure of the mainstream to be self-critical impedes the development of economics and that significant reform is necessary if it is to avoid further crisis in the discipline.

2. Self-reflection, scientific activity and economics

Science is supposed to represent the embodiment and personification of reflexive self-criticism. Although this practice varies across disciplines, self-reflexivity is an important standard for any discipline that wishes to be progressive. Self-reflexivity makes criticism possible but implies a degree of awareness that goes beyond the ability of merely offering arguments and counterarguments. Self-reflexivity is the ability to articulate the ways in which various social contexts generate the potential for transformation and change at the level of theories, practices and understanding. It is the ability of economists to be reflective about the contribution of economics to contemporary events and to be critical about the merits of their own potential and of alternative frameworks that forms the basis for their capacity to develop. The consequences of the presence or absence of such an ability are quite pragmatic: the lack of self-reflexivity would imply the impossibility of assessing and evaluating the potential of change within the discipline or of recognizing practices or degrees of consciousness that might enhance progressive and transformational moments. A few economists have expressed doubts about the choices that the members of the profession have made, or about the professional standards and implied rules that govern the profession. As Klein (1999: 1) states, economists are quick to find flaws with everything apart from themselves "yet they rarely aim their flaw-finding at their own professional institutions". The profession's tendencies have been criticized by some well-known economists of the twentieth century such as Graham, Coase, Hutt, Philbrook, Kirzner, von Hayek, McCloskey and Tullock (see Klein 1999) and, more recently by the sociologist Fourcade (2009). However few economists have, as yet, engaged in rigorous self-criticism of economic practices and their discipline in the context of the actual turmoil brought about by the crisis and the lack of understanding of the causes of the crisis. Furthermore, economists such as Lucas (2009) and Altig (2009) have gone to great lengths to maintain a positive view concerning their economic knowledge at the start of the financial meltdown, assuring the public that recession was avoidable and, in fact, that the global economy was in a strong position.[3] According to Rodrik (2009), the fault of not making sense of the current crisis lies not with economics, but economists themselves, guilty of pride and over-confidence in their ideas and models (similar arguments have been made by: Eichengreen 2008; Kaletsky 2009a and b; and, Spaventa 2009). Furthermore, Rodrik (2009) blames the fragmentation of the profession and the poor communication of ideas between economists and the public as a complicating factor.

What, then, might we expect from the economics profession itself? One would expect economists to reflect on the actual causes of the crisis (be they systemic, policy driven, or regulation related) via various communication channels. This they did, but it was not accompanied by a detailed introspection concerning their own practices. Some economists blamed the intricate web of financial rules and regulations (e.g. Friedman J. 2009), or governmental policy errors (e.g. Stiglitz 2009a). Others blamed risky behaviour coupled with under-regulation of banking activity and the over-regulation of securities (Bhidé 2009). In addition, some have pointed to the institutional theory and practice of the central banks (Morgan 2009). All these views, of course, are by no means uncontroversial. The experience of the crisis has prompted a call for humility and modesty regarding how much economics can achieve as a science. As Acemoglu (2009:190) states: “...on the bright side, the crisis has increased the vitality of economics and highlighted several challenging, relevant, and exciting questions”.

Some economists have acknowledged the failure of formalistic models because of the unexpected turn of economic events – whether due to a lack of empirical evidence relating to previous depressions or

[3] Altig (2009), for instance, argues against Krugman’s (2009) critique of economics: “So does all this lead to the conclusion that we ought to ditch the presumptions of rationality and (largely) efficient markets, as Professor Krugman suggests? I have my doubts”. Also: “In short, I accept the criticism that the dominant New Keynesian framework for forecasting and economic modeling needs some work (to say the least). I’m less convinced that we require a major paradigm shift. Despite suggestions to the contrary, I’ve yet to see the evidence that progress requires moving beyond the intellectual boundaries in which most economists already live”. Posner (2009) criticized Lucas for understating the risk of a financial collapse after the fall of Lehman Brothers and for making erroneous forecasts that the subprime mortgage crisis would not spread and affect the rest of the financial system.

downturns, or simply because some of the behavioural reactions of economic agents (e.g. herd behaviour) had not been predicted. Some economists, as the following sections of the paper will show, have acknowledged the various limitations of economics such as the failure of theory, of models, or of both. In contrast others, in the view of Kling (2008), have been too preoccupied with narrative and less with the deficiencies in their own knowledge and performance in the past decades, especially in relation to macroeconomics. Eichengreen (2009) comments on the high non-conformity costs for academics that resist rather than give way to the pressures of social convention. This, it is claimed, is a partial explanation for the current lack of critical assessment of the use of mathematical tools within economic analysis.

Kaletsky (2009 a and b) argues that economics as a profession has failed to guide the world and thus must carry some of the blame for leading us into the present crisis. Hodgson (2008) argues that the economics profession has no knowledge of history, being thus *institutionally* ignorant. Oswald, a leading mainstream economist, has recognized that in the light of the biggest economic failure, economists' reputation has been tarnished: "As economists, we have to accept part of the responsibility for what has happened. It is the job of experts to prevent crises in the domains in which they are meant to be experts. In this sense, economists have let down the country. Some will favour mental gymnastics that allows us to shrug off responsibility and blame. But in my view the grown-up thing is to admit it, swallow your pride, and work out how the profession can do better next time" (Royal Economic Society Newsletter, 144, 2009: 18).

The financial crisis represents both an ethical and an intellectual challenge to the profession (Colander et al, 2009). It is *ethical* because economists have failed in communicating to the public and the users of models their fragility and limitations and it is *intellectual* because it has confined ourselves to simplistic assumptions underlying the economic models such as stable states, representative models, conceptual reductionism, etc. Pleas for more modesty and humility have emerged from various corners of the profession. Leijonhufvud (2009) and Wolf (2008) make an epistemological claim that the economic profession should be more humble about their achievements and that economists have not criticised themselves sufficiently for the lack of prediction of the crisis. In a similar fashion, Ritholtz (2009) argues that it is the whole economics profession which has forgotten how to be introspective. Spaventa (2009) blames the economics profession for contributing to inadequate policies which did not redirect the unsustainable path of the financial system, while Cameron (2009) blames the American profession for spreading systemic conformity to norms around the World.

Of course, one needs to recognize that, amongst all the shortcomings of mainstream economists, their inability to change and transform progressively is a significant barrier to progress. Unfortunately, simply shifting theoretical frameworks or modifying assumptions alone may not solve the problem, and may even contribute to the continuation of support for the status-quo, and the dominance of existing frameworks. Many are looking towards the adoption of a different mindset that recognizes the merit of alternative ideas and frameworks, and is more modest regarding what it is possible to achieve and what is likely to be beyond its capabilities.

3. Analytical approach and data collection

This paper consists of a field survey of economists' initial reactions to the economic crisis that has started in 2007. Responses to the crisis from various groups of economists were identified by the author on the basis of a survey conducted between the onset of the economic downturn (in September 2007) and December 2009. It used the following range of sources: the proceedings of leading academic conferences in the UK and the USA (please see Appendix point a for details); academic journals (please see the Appendix point b for details); newspaper articles and interviews (please see Appendix point c for details); economic blogs (including those on specific economic themes e.g. *Causes of the economic crisis*, and the personal blogs of economists e.g. Krugman, Rodrik, Thoma's *The Economist's View* etc., see Appendix point d for details).

The themes and papers at economics conferences were examined since these offer an obvious window of opportunity for those seeking to provide an early response to the current economic problems. In marked contrast, the time lags associated with writing, submitting and revising academic scripts for refereed academic journals, along with the high level of demand for places within certain economic journals, means that journals represent a *limited* avenue for advancing an immediate commentary on the crisis. However, special issues of the *Cambridge Journal of Economics* and *Critical Review* (in 2009) were devoted to the crisis, demonstrating the capacity for editorial boards and academic journal publishers to respond to contemporary issues and debates.[4] On this basis all of the outputs published within the research timeframe (in the relevant economics journals) relating to economic issues, theory and methodology were also included in the survey. In relation to newspaper articles on the crisis, the websites of all of the leading English language broadsheet newspapers in England (e.g. the Times, the Guardian, the Financial Times) and the United States (e.g. the New York Times, the Washington Post) were accessed via a search through the different newspaper archives in order to identify relevant

[4] It is also worth mentioning the Post-Autistic Review edited by Fullbrook, which since December 2008 has consistently provided space for discussions on the crisis and its links with economics.

articles, editorials and columns devoted to any aspect of the crisis. Finally, the real wealth of information concerning the topic under consideration has been located in the new media of economic blogs that have served to swiftly reflect the emergence of debates on the causes and solutions to the crisis in "real" time. Of course, blogs as a source of information are by no means as definitive or as capable of being referenced, as are academic journals in their use of numbers for volumes and issues. A further limitation in using economic blogs as a potential source of relevant knowledge is the constantly changing nature of this medium both in terms of postings and comments. The aim here has therefore been to survey the discussion on a selected sample of blogs, based on their popularity, thematic focus and reflections on the current economic crisis. A complete list of sources used in this survey is set out in the Appendix.

In conducting a critical literature survey of various media, a number of analytical issues arise. These concern the development of a framework for analyzing the views of commentators, decisions concerning the criteria for inclusion of viewpoints, and the timeframe of the survey. Given the nature of current debates within the economics literature it is likely that reflections on the health of the discipline would focus on aspects of theory (e.g. the assumptions and frameworks of macroeconomics) and/or methodology (such as the use of mathematical modelling). This dual focus was therefore used when reviewing the source material upon which this study was based. In the results section of the paper further issues, such as the teaching of economics and pluralism, are also raised. As a final point, the author has attempted to categorise the responses belonging to the whole economics profession without imposing any particular framework. The author's own considerations are present only within the concluding remarks section.

4. Literature survey results

The kernels of this paper – the findings of the critical literature review – are detailed in this section in two parts. The first part reflects on the state of economics within the forum of academic conferences and symposia. Thereafter we examine the writings of leading economists and economic commentators in academic journals, newspaper articles and economic blogs.

4.1 Academic conferences

The themes and proceedings of the conferences connected to the main economics societies and associations in the United Kingdom and the United States were analyzed in order to identify whether there was any collective or institutionalized attempt to stimulate discussion on the state of the discipline in the wake of the economic crisis. In essence, the results of the survey suggested only a limited recognition of the need to reflect upon economics as a discipline.

In the United Kingdom consideration was given to the events organized and activities undertaken by the Royal Economics Society, Association for Heterodox Economists, the Post-Keynesian Society Group and the Scottish Economic Society within the relevant time frame. The Royal Economic Society, which is seen by many as the bastion of the dominant economic paradigm in the UK, organized one plenary lecture of the *Economic Journal* on Securitisation and Financial Stability, and two special sessions on the Credit Crunch and instability in International Financial Markets, in 2008. However, none of these events provided a specific reflection on the crisis of economics, focusing instead on the financial crisis as an economic event, using established mainstream approaches. In 2009, in a similar fashion, two sessions on the Financial Crisis brought forward discussions concerning the challenges to the micro foundations of modern macroeconomics, and a plenary lecture on the importance of behavioural issues in the interpretation of the crisis – but, again, neither provided a specific remit for speculation concerning either economics or economists *per se*.[5] The Association for Heterodox Economics (AHE) concentrated, to a limited extent, on the crisis in 2008, with one plenary session on "Financial Issues and the Credit Crunch" at their annual conference. However, in 2009, the AHE organised an entire symposium at the University of Kingston that was designed to reflect on economics in the context of the crisis. In 2009 the Post Keynesian Economics Study Group organized four sessions at the annual conference of AHE relating to the crisis, business cycles, Keynes, Marx and Minsky.[6] The Scottish Economic Society organized no such events (intended to enable economists to reflect on their discipline) between 2007 and 2009. The European Association of Evolutionary Political Economy (EAEPE) had 'institutional explanations of the crisis' as a central theme of their annual conference in 2009.

In the United States, at the Allied Social Sciences Association (ASSA) meetings in 2008, there were several sessions considering the assumptions of financial economics, financial markets' failures, and the macroeconomics DSGE models – but no sessions on the crisis of economics or the economists' responsibility for the crisis. The History of Economics Society (HES) and the Union of Radical Political Economists (URPE) organized three sessions concerning alternative perspectives on macroeconomics, or discussion of its foundations. In 2009, despite an increase in the number of sessions organized by various societies at the ASSA, all of the discussions were about the economy itself, with a few exceptions only that were devoted to the sub-discipline of macroeconomics. In 2009

[5] Ironically Arrow (1994) has considered methodological individualism, arguing that irreducible social forces are important drivers in economic outcomes. This runs counter to the approach adopted in much of the work written prior to his receiving the Nobel Memorial Prize in Economics.

[6] The Post-Keynesian Economics Study Group also organized several workshops and seminars throughout 2008 and 2009 on the crisis and its financial implications, for example the one hosted by SOAS, University of London, on 23 October 2009.

the distribution of sessions discussing macroeconomics in relation to the crisis was more evenly distributed amongst different societies. However, at the Western Social Sciences Association, the Association provided some interesting insights for Institutional Thought (AFIT). In 2008 there were only three panels relating to Minsky, Post Keynesians and the financial crisis (including current issues in central banking). However in 2009 further interesting reflections emerged. Besides sessions organized on Post Keynesian institutionalism, institutional analysis of the current economic crisis, and some Mynskian inspired analysis, there was a session reflecting on "Economists as Enabling Myth Makers: Thoughts on the Economic Crisis" (panel 16). At the Midwest Economics Association conference in 2008 there were only two sessions that examined financial markets, once again with no reflection on economics as a discipline, although in 2009 there were six sessions on credit markets, banking and business cycles. At the 2008 Eastern Economic Association Conference sessions were organised which focussed on the economy itself (five in total), whilst in 2009 the number of sessions on such issues increased to nineteen. Among these five sessions were sponsored by The Society for Development of Austrian Economics, while one further session explored macroeconomics. Finally, and most significantly, one session explored 'Why Georgists correctly predicted the crisis and what has conventional economics to learn from them and vice-versa'. No papers on the crisis were obvious in the conferences organized by Southern and Southwestern Economics Associations.

The announcements, and call for papers, of various learned societies in 2011 and 2012, suggest that there will be entire events dedicated to discussing the crisis of economics as a discipline. So the future perhaps bodes well for an intensification of the debate. However, the survey of conference proceedings between 2007 and 2009 reveals a marked reluctance of the profession, taken collectively, or as separate identifiable schools of thought, to engage in critical self-reflection. As a past conference organizer (in 2008) the author recognizes that there are significant constraints which frame the nature and themes of conferences, set as they are some time in advance. However, calls for papers are usually written in sufficiently flexible ways to enable those economists minded to reflect on the current merits (or otherwise) of the economics discipline to do so at academic conferences. In this context it is possible to suggest that the findings presented above reflect a genuinely limited level of self-reflection amongst different groups within the profession or, alternatively, reluctance to repeat what they have been saying about economic theory and methodology for a long time.

4.2 Outcomes from Academic Journals, Broadsheets and New Media

After discussing learned conferences, this section of the paper provides a summary of the issues raised by economists, in relation to the discipline, in academic journals, newspaper articles and economic blogs. A problem in analyzing the perspectives of various contributors in the latter two media has been to tease out viewpoints on specific aspects of the current problems in economics. Many commentators have used the short space they have been allocated to pack in a large number of (in some instances under-developed) points concerning wide-ranging aspects of the discipline. On the basis of surveying the contributions of economists and economic commentators it has, however, been possible to identify three key themes or issues for concern: (i) theory; (ii) methods and models; (iii) teaching of economics.

4.2.1 Principal Theoretical Propositions

The greatest proportion of economists whose voices have been examined in this the survey have identified various aspects of 'theory' as the *loci* for explanations of the crisis. The main theoretical points of contention that emerged revolve around assumptions, knowledge building and fragmentation.

- *Theoretical Assumptions*: A consistent aspect of the criticisms raised concerned the existence of poor, incorrect and irrelevant assumptions of economic theories that do not resemble economic reality. Furthermore, the nature of these assumptions, it is alleged, has prevented attempts to apply such theories in order to explain reality. Examples of assumptions deemed to be problematic (and which have long been contested by different schools of economic thought) include those relating to rationality and complete information of agents, utility maximization, belief in the knowledge and foresight of investors, and the efficient market hypothesis. A particular crisis of confidence has been highlighted in relation to macroeconomic theory that has not succeeded in asking the right questions and has overlooked the cyclical character of the economy.
- *Theoretical fragmentation*: Here the theoretical fragmentation within economics has been seen as an impediment towards a holistic understanding of the economy. The economic theory that has informed policy-makers, central bankers and the financial world has been fatally flawed. The theoretical framework advanced by economists to explain financial and macroeconomic issues has provided intellectual justifications to all the economic agents involved in the financial disaster. The existence of choice has also resulted in the 'cherry picking' of economic theory that has supported enhanced risk taking by bankers and decision-makers.
- *Knowledge building*: Following the first point – the criticism is of the prevalence of unrealistic and untested assumptions – in combination with the selective use of the available evidence. The outcome has been a form of economics that is profoundly unscientific in character.

There is no doubt that problems with economic frameworks existed before the crisis, and that the past four decades have seen numerous controversies about theorizing and assumptions, not just in macroeconomics, but in other areas of economics as well. A dominant and minimalist macroeconomic framework that many financial institutions and central banks have implemented over recent decades (as embodied in dynamic stochastic general equilibrium models, DSGE) can be blamed for the recent events. The DSGE models are derived from microeconomic foundations, such as maximization of utility by consumers, profit maximization by companies, rational expectations of agents and a specification of all imperfections and nominal rigidities. These models are based on representative agents and they do little justice to the complexities, irrationalities and the heterogeneity that are dominant features of economic agents within all economies. The "Great Moderation" might have brought economic stability, growth and low inflation, but it was not conducive to a better macroeconomics. The macroeconomic models have gaps and omissions: for example they assume a frictionless finance (although financial markets are always vulnerable to liquidity shocks); they maintain exaggerated beliefs in the knowledge, rationality and complete information of investors (see Frydman and Goldberg 2009); and, finally, macroeconomics has neglected uncertainty and mistreated risk (e.g. Ormerod 2009).

Blanchard claims that the state of macro "is good" (2008:2), despite researchers engaging in bitter disputes and controversies.[7] This is a view rejected by Solow (2010). Meanwhile, some blame Lucas for encouraging a move away from the economics of recession, booms and slumps. As he suggests: "My thesis … is that macroeconomics in this original sense has succeeded: its central problem of depression-prevention has been solved, for all practical purposes, and has in fact been solved for many decades" (Lucas, 2003:1). In contrast Posner argues that the fatal sin committed by economists was their disbelief in asset bubbles and their confidence that they have conquered economic fluctuations (e.g. as argued by Lucas 2003). In his blog Posner (2009) blames various sub disciplines for failing to anticipate the burst in the housing bubble:

> "A number of macroeconomists and financial economists, including leading figures in these important branches of economics, had believed until last September that there could never be another depression, that asset bubbles are a myth, that a recession can be more or less effortlessly averted by the Fed's reducing the federal funds rate, that the international

[7] Specifically: "Researchers split in different directions, mostly ignoring each other, or else engaging in bitter fights and controversies. Over time however, largely because facts have a way of not going away, a largely shared vision both of fluctuations and of methodology has emerged. Not everything is fine. Like all revolutions, this one has come with the destruction of some knowledge, and suffers from extremism, herding, and fashion. But none of this is deadly. The state of macro is good" (Blanchard, 2008: 2).

banking industry was robust, and that our huge national debt was nothing to worry about, nor our very low personal savings rate. All these beliefs have turned out to be mistaken, along with influential versions of the rational expectations hypothesis, the efficient-markets theory, and real business cycle theory".

We would contend that assumptions do indeed matter and that the limits of the theories Posner describes can perhaps be traced to the acceptance of unrealistic assumptions. This view can be contrasted with Friedman (1953) who adopts a narrow position in his influential essay on the *Methodology of Positive Economics.* There he stated that economists should not be concerned with whether assumptions were realistic or not: theories should be judged by their predictive power. Thus 'realism' of assumptions – whether arising from abstraction or descriptive inaccuracy – is immaterial in Friedman's analysis. Assumptions concerning the motivation of agents (e.g. utility maximization), statements about the behaviour of agents (e.g. rationality and herd behaviour) and the assumption of complete knowledge and information, imply a systematic failure to build frameworks that are relevant to the analysis of everyday economic problems, and Friedman must bear some responsibility for this. As Stiglitz (2009b) points out, we definitely have more sophisticated theories, but also a number of remarkably irrelevant assumptions. Furthermore, an interesting development concerns the growing recognition amongst economists that the numerous assumptions of theories (such as the efficient market hypothesis) that have not yet been corroborated with evidence/data should be refuted. Colander et al (2009) and Cameron (2009) develop this criticism further, claiming that, by not testing their theories (such as the theoretical assumptions of financial risk models), economists have misapplied the very scientific approach, which they have sought to adopt. In a similar vein, Leijonhufvud (2009) criticizes economics for its retention of certain theories, founded on unrealistic assumptions, in spite of the prevailing evidence. This illustrates a profound disinterest in the application of a sound scientific method in economics, and the unscientific character of its enquiry and knowledge-building processes.

Colander et al (2009) and Acemoglu (2009) comment on the remarkable lack of engagement by economists with early economic studies on bubbles and financial crises (e.g. Bagehot 1873 and Minsky 1986). As Colander et al (2009:251) argue: "Confining theoretical models to 'normal' times without consideration of these aspects might seem contradictory to the focus that the average taxpayer would expect of the scientists on his payroll". The economy has been deprived, metaphorically, of earthquakes for many decades and the economists had no incentive to pay attention to 'black swan events'. Clearly there is a need for reconsidering macro-fundamentals (e.g. Akerlof and Shiller 2009; Buiter 2009; Frydman and Goldberg 2009; Oswald 2009; Warsh 2009) and to re-direct research towards understanding theories of financial failure (e.g. Kaletsky 2009a), such as how to manage moral hazard (both at an individual and institutional level).

Consequently, some proposed solutions have emphasised the need to incorporate what can be known about actual human behaviour into macroeconomics. Oswald (Royal Economic Society Newsletter, 144, 2009: 18) suggests that we are in need of a different macroeconomic apparatus that will incorporate behavioural assumptions such as herd behaviour (see also Miller and Stiglitz 2008; Akerlof and Shiller 2009). Kobayashi (2009) considers that this crisis calls for a change in the theoretical structure of macroeconomics and a new paradigm of economic thought. In contrast other economists have specifically admitted that “macroeconomics has problems”, but have stopped short of calling for a ‘scientific revolution’ (e.g. Altig, 2009) vis-à-vis alternative paradigms and additional knowledge (e.g. Saint-Paul 2009). Blanchard (2008) recommended three specific ways to reform macroeconomics: a rehabilitation of partial equilibrium in macroeconomics; the introduction of more realistic descriptions of aggregative behaviour; and the re-instatement of simple models. There is no doubt that the implementation of such proposals would provide a welcome boost to the reform of economics and, in particular, of macroeconomics, but questions remain as to whether they will deliver the more fundamental changes advocated by some in terms of how we do economics!

These more stringent critics argue that to correctly analyze the crisis and formulate effective policy responses it is necessary to create a new framework of thought within the field of macroeconomics that links macroeconomics to the stability of financial systems. Further research is seen as needed to develop new insights, and perhaps new paradigms, for economic theory, built on assumptions that will be more attuned to economic realities.

4.2.2 Methods, prediction and modelling

Reviewing the way economics has evolved as a discipline, there is no doubt that economists have been conservative in entertaining new philosophies and methodologies, with some contending that methodological issues have either been trivialized or ignored. Such critics often draw a contrast between the extensive discourse of economists on abstract theorising and the limited attention given to finding methods, techniques and methodologies to improve the understanding of the current economic crisis!

Certain themes and ideas predominate in the narrative of economists who have reflected on methodology in this survey. Some economists consider that the crisis has undermined confidence in the usefulness of modelling in predicting economic phenomena to a much greater extent than expected. The petition to the British Queen by Hodgson (in September 2009) has focused attention on the preference of economists for elegant mathematical models. This petition has stated that mathematical tractability has, for many economists, become a higher goal and academic objective than the predictive power of models and their correspondence with reality. In keeping with the discussion above, many models are also regarded as being unrealistic in terms of their underlying assumptions. For example, even the DSGE models cannot accommodate issues such as agency problems and asymmetric information, and are limited in their grasp of reality, based, as they often are, on short-term rather than long-term statistical data. According to Colander et al (2009) and Kaletsky (2009a) the DSGE models can become extremely dangerous when they actually replace common sense. Indeed some economists such as Colander et al (2009) blame the current issues with macroeconomics on an excessive use of mathematical models in making economic decisions. They ask the following question: why did mainstream economists stick to such faulty models and ignore basic truths about how the economy really works? According to Colander et al (2009) mainstream economists are overly interested in modelling *per se* rather than in demonstrating the relevance of models to real-world situations. Lawson (2009) concurs, linking the failure of economics to understand and foresee the global economic crisis with an excessive preoccupation with mathematical modelling.

Of course, this raises the issue of the grounding of our methods. Perhaps some of the ideas and warnings concerning the potential of a global downturn in economic activity would have been taken more seriously if *conformity* had not dictated that serious ideas cannot be expressed in words, but only in equations (see Kaletsky 2009a). Romer (2008) and Leijonhufvud (2009) have suggested that the battle in economics is between the *fundamentalists* (i.e. those who use unrealistic models with unrealistic assumptions) and the *realists*; in other words, between those who wish to portray the world as they want it to be and those who wish to portray the world as it is.

Similar suggestions that mainstream economists are overly concerned with models that bear little resemblance to reality have been made by the heterodox economist Boettke (1997) (see also Lawson 1997 for instance). Using the Hayekian theory of knowledge, Boettke (1997) argues that real markets are characterised by imperfections, whilst mainstream theory falsely assumes that markets will always clear at equilibrium because agents possess perfect knowledge. He goes on to suggest that testing models against reality has become of secondary importance: "Despite economists' official adherence to Milton Friedman's methodological positivism, the testing of theories against reality has become less and less central to their activity; instead, the generation of formal models has become an end in itself" Boettke (1997: 44). In a similar vein Solow (2010) criticizes the DSGE macroeconomic models, claiming they do not have anything to add to antirecessionary policies, as they are built on the assumption 'that everything is well with the economy' and Kay (2010) concurs, arguing that DSGE models are not an appropriate way to look at the world. Indeed Kay (2010) sees the two failures of economics in the recent crisis as stemming from the shortcomings of the efficient market hypothesis and the irrelevance of macroeconomic theory. Thus: "New economic thinking must necessarily be eclectic" because the "environment faced by investors and economic policymakers is one in which actions do depend on beliefs and perceptions, must deal with uncertainty and are the product of a social context" (Kay 2010). According to Erwin (2010), the warnings of Austrian Economics have long been neglected: "Over 40 years ago, Mises (1966) taught us that economics is about human action, unforecastable and untranslatable into mathematical models; economics, he said, can only provide qualitative predictions about particular policies". Finally, the issue of prediction and its impossibility in a complex world have been raised on numerous occasions, both before and during the crisis. In particular econometric forecasts cannot reliably forecast the future as the world is too susceptible to random shocks, dynamism and complexity (see Lawson 2003, 2009; Taleb 2007). In summary, there would seem to be reluctance among many economists to accommodate approaches other than mathematical modelling, with the adoption of qualitative methods perceived by many as compromising the progress of economics.

4.2.3 Mainstream Economics and the Curriculum

The crisis has also served to bring back into the spotlight established critiques of economics that focus on the teaching of economics and the economics curriculum. Concerns around the teaching of economics include the alleged inadequacy of 'canonical' textbooks, the lack of economic methodology and the absence of courses in history of economic thought within curricula worldwide and more specific criticisms of the content of macroeconomic principles for both undergraduate and postgraduate students.

Deep dissatisfaction with various aspects of the economics profession (including teaching policies and content) was prevalent during the 1970s and 1980s. Colander and Klamer's (1987) interest in understanding the practices of economists, and the link with economists' education, raised important issues concerning research and training in economics departments. In their study (1987: 98) they found that even students who genuinely believed that extending their reading to areas such as history and philosophy was important "did not undertake such reading because they lacked the time".

Furthermore, and most dramatically, students believed that knowledge of the workings of the economy and a broad appreciation of the economic literature did not make an economist successful. In contrast excellence in mathematics was regarded by the majority of the interviewed students to be *very important* to their future prospects. As Colander and Klamer claim: "There was a strong sense that economics was a game and that hard work in devising relevant models that demonstrated a deep understanding of institutions would have a lower payoff than devising models that were analytically neat; the façade, not the depth of knowledge, was important" (1987: 100). This study influenced the COGEE (Commission on Graduate Education in Economics) report that was commissioned by the American Economic Association to investigate how economics is taught throughout economics departments. Several recommendations were made regarding the content of curricula, but Colander (1998) argued that these recommendations had no impact on the profession. Instead, mathematical requirements were actually raised and the existing culture continued to belittle the importance of economic history, the history of economic thought and economic methodology in the formation of graduate economics students. The self-selection of graduates that have technical abilities and are comfortable with these approaches within the profession arguably makes the process of stepping outside the prevailing norms that value formal skills much more difficult and this way contribute to the reluctance to do so in the context of the current crisis.

The trend in insisting on teaching intensive mathematics to graduate students has been worried many earlier economists such as Leontief, Galbraith, Phillbrook, Hutt, Graham, Coase, Solow and Stigler. For instance, Coase (1994, quoted in Klein 1999: 45) comments on the 'costs' of relying mainly on quantitative methods: "But this development is not without its costs. It absorbs resources that might otherwise be devoted to the development of our theory and to empirical studies of the economic system of a non-quantitative character. Aspects of the economic system that are difficult to measure tend to be neglected. It diverts attention from the economic system itself to the technical problems of measurement". More recently, from a heterodox perspective, Hodgson (2008) criticized the dogmatic mathematical teaching of economics and the lack of economic history within the curriculum leaving economic graduates ignorant of the 'great minds' of the discipline. Sachs (2008) made similar remarks at the event organized by the Earth Institute at Columbia University: students are trained to be sceptical of deep underlying mechanisms and to concentrate on the 'economic reality that surfaces':

"…since the early 1980s…the way we train people to think in mainstream economics has left them almost unable anymore to distinguish the surface from the underlying reality. Not only was it the age of Reagan and the beginning of market fundamentalism that came in the early 1980s, and the rational expectations revolution and all the rest, but a fundamental break in how we actually train our students to think…Because the new kind of economic modelling, that won all the Nobel prizes said: you don't have to understand the deep picture…you don't really have to know underlying mechanisms in the economy because the prices reflect the underlying mechanisms".

Many such critics argue that the teaching of economics is based mainly on an adherence to conformity and convention. Eichengreen (2009) denounces existing economics teaching in most business schools and rails against the conformity in the delivery and teaching of ideas that are thought to be welcomed and expected of 'any conventional business school'.[8] Cameron (2009) takes a similar view, arguing that independent thinking is not really valued within economics and as a result there is no questioning in many academic institutions of the lack of any elements of alternative types of economics, economic history or methodology within curricula (Cameron, 2009). Since the 1970s in particular, the teaching of macroeconomics has failed to expose students to the existence of long-run business cycles and their importance for growth theory and has failed to introduce them to notions of open macroeconomics (Kling 2008). For instance, Kling (2008) expresses his frustrations with the standard of teaching and textbooks on macroeconomics: "My main beef with economists is that standard macroeconomics does such a poor job of describing what is going on. The textbook models are pretty much useless. Where in the textbooks is "liquidity preference" a demand for Treasury securities? Where in the textbooks does it say that injecting capital into banks is a policy tool? Graduate macro is even worse. Have the courses that use representative-agent models solving Euler equations been abolished? Have the professors teaching those courses been fired? Why not?"

Both Krugman (2009), and the heterodox economist Keen (2009), advocate a change in pedagogy, and highlight the ignorance of economists trained without knowledge of the origins of macroeconomic ideas. Even mainstream economists such as Deaton (2009) recognize that the inadequate teaching of macroeconomics might have led to both forecasting and responsiveness failures in the current crisis. The solution put forward by Colander to the USA Congress in September 2009 was to train our graduates differently in order that future generations of economists might have the potential to broaden the horizons of the discipline. Students need to be exposed to different perspectives and schools throughout the curriculum. Such an approach is likely to contribute towards the development or a more open and reflective economics education.

[8] "Business schools are rated by business publications and compete for students on the basis of their record of placing graduates. With banks hiring graduates educated in Value at Risk, business schools had an obvious incentive to supply the same … And what is true of investors and regulators, introspection suggests, can also be true of academics. When it is costly to acquire and assimilate information about how reality diverges from the assumptions underlying popular economic models, it will be tempting to ignore those divergences. When convention within the discipline is to assume efficient markets, there will be psychic costs if one attempts to buck the trend. Scholars, in other words, are no more immune than regulators to the problem of cognitive capture" (Eichengreen, 2009).

4. Conclusion

Few mainstream economists have accepted explicitly that this crisis has any implications for economics as a discipline or that the crisis has destroyed the reputation of economists. At most there is some recognition that some of the macroeconomic assumptions that characterise mainstream economics should change. But is this enough to stimulate the debates and bring about the changes that many see economics as needing in order to progress?

Given the severity of the crisis, one would expect a degree of introspection over the causes of the crisis and the role that economics and economists have played, both before and during this recession. Whilst there has been considerable reflection over how the economy, the government, or capitalism itself has performed, there has been less introspection and self-criticism of the actual discipline of economics. Those who have reflected on economics, economists and their practices can be classified into several categories. Some have focused on theoretical shortcomings, especially in macroeconomics, whilst others have related the 'failure' of economics to the excessive use of mathematical modelling in attempting to forecast the economy. Other economists and commentators have emphasised a lack of pluralism in economics, in terms of teaching, methodology and theory. In the context of the current crisis, this paper has sought to review how reflective economists have actually been with regards to their own discipline and practices. Critics have suggested that the economics profession has, for some time, exhibited a profound disinterest in the scientific character of its approach, and in exploring developments with neighbouring disciplines such as mathematics and physics, or within the philosophy of science at large. There are two possible explanations regarding such neglect and the lack of reaction of mainstream economics to the current state of economics. Firstly, there could be a genuine belief that crisis in the economy does not necessarily imply a crisis in economics and so no changes are required. Secondly, it could be that mainstream economists are aware of the fallibility of their practices, but prevailing norms imply there is likely to be a profound career-cost in deviating from such practices.

The results of our survey illustrate the reluctance of economists to foster debates in the formal arenas of academic communication (journals and conferences). Indeed, many more interesting ideas are expressed and played out against each other in the new media of blogs and in other less academic channels. There are a number of implications for economics as a discipline from such a survey. Firstly, the assumptions and theories that economists use have clearly been challenged before the crisis and these have arguably exacerbated the crisis by the use of inadequate theoretical frameworks with which to understand, predict or explain the economy. The insistence on quantitative methods and mathematics, to the detriment of qualitative methods, has also been deemed problematic, constraining how economists think about and build knowledge. The fact that most economists have indicated that economic theory exists as both a cause and a potential solution to the crisis is significant. Most of the changes that have been led from within the discipline that have occurred over the past five decades have been conducted via incremental improvements, adaptations, changes of theories and/or assumptions. Responses to the crisis from the profession, as evidenced by our survey, fit such a general evolutionary pattern to date, leading many to be concerned for the future of the discipline. If, as Lawson (e.g. 2009) has argued, the root of the crisis within the discipline is one of method, it is easy to understand the reluctance of economists to question the prevailing use of techniques. Unfortunately, many believe that minor adjustments to theoretical frameworks, or changes in assumptions alone, will not solve the problem, but rather maintain the continuation of support for the status quo, and the dominance of certain frameworks. Economists may find it difficult to maintain that the crisis is just an 'economic blip' with no major changes required in terms of economic theory or methodology. There is a growing body of opinion that economics must reform itself, fundamentally, to address contemporary problems, with an emphasis on economics as a discipline that is reflective and pluralist, rather than predicated on demonstrably false assumptions that rule out crises with an unwarranted faith in efficient markets or equilibrium outcome.

References

Acemoglu, D. (2009), "The Crisis of 2008: Lessons for and from Economics", *Critical Review*, Special Issue on the Causes of the Financial Crisis. 21 (2-3): 185-194.

Akerlof, G. A. and R. J. Shiller (2009), *Animal Spirits*, Princeton and Oxford: Princeton University Press.

Altig, D. (2009) "Economists got it wrong, but why?", Federal Reserve Bank of Atlanta. Macroblog/10.09. Available at:

http://macroblog.typepad.com/macroblog/2009/09/index.html

Arrow, K.J. (1994), "Methodological Individualism and Social Knowledge", *American Economic Review*, 84 (2): 1-9.

Bagehot, W. (1873), *Lombard Street: a Description of the Money Market*, London: Henry S. King.

Bhidé, A. (2009), "An Accident Waiting to Happen", *Critical Review*, Special Issue on The Causes of the Financial Crisis, 21 (2-3): 211-247.

Blanchard, O. J. (2008) "The State of Macro", NBER Working Paper No. W14259./August Available at SSRN: http://ssrn.com/abstract=1248781

Boettke, P. (1997), "Where did Economics Go Wrong? Modern Economics as a Flight from Reality", *Critical Review*, vol.11 (1): 11-64.

Buiter, W. (2009), "The Unfortunate Uselessness of most 'state of the art' academic monetary economics", Financial time Economists' Forum. Available at: http://blogs.ft.com/maverecon/2009/03/the-unfortunate-uselessness-of-most-state-of-the-art-academic-monetary-economics/

Cameron, D. (2009), The Rabble Blog (8.09.2009), Available at: http://www.rabble.ca/columnists/2009/09/problem-economics

Coase, R.H. (1994), *Essays on Economics and Economists*, Chicago: Chicago University Press.

Colander, D. (1998), "The Sounds of Silence: the Profession's Response to the COGEE Report", *American Journal of Agricultural Economics*, 80(3): 600-607.

Colander, D. and A. Klamer (1987), "The Making of an Economist", *Journal of Economic Perspectives*, 1(2): 95-111.

Colander, D., Goldberg M., Haas A., Juselius K., Kirman A., Lux T. and B. Sloth (2009), "The Financial Crisis and the Systemic Failure of the Economics Profession", *Critical Review*, Special Issue on The Causes of the Financial Crisis, 21 (2-3): 249-267.

Deaton, A. (2009), "Letter from America-Bankrupt!" *Royal Economic Society's Newsletter*, 145:3-4. Eichengreen, B. (2009), "The Last Temptation of Risk", National Interest, May/June issue available at: http://www.nationalinterest.org/Article.aspx?id=21274

Eichengreen, B. (2008) "Anatomy of an Economic Crisis", *Real Clear Markets,* 22 September. Online, available at: http://www.realclearmarkets.com/printpage/?url=http://www.realclearmarkets.com/articles/2008/09/anatomy_of_an_economic_crisis.html (Accessed June 2009).

Eichengreen, B. (2009) "The Last Temptation of Risk", *The National Interest*, 30 April. Online, available: http://www.nationalinterest.org/Article.aspx?id=21274> (accessed June 2009).

Erwin, R. (2010), “What is the Current State of Economic Science?”, December 22, Available at: http://mises.org/daily/4886.

Fourcade, M. (2009), *Economists and Societies*, Princeton and oxford: Princeton University Press.

Friedman, J. (2009), “A Crisis of Politics, Not Economics: Complexity, Ignorance and Policy Failure”, *Critical Review*, Special Issue on The Causes of the Financial Crisis: Introduction, 21 (2-3): 127-183.

Friedman, M. (1953), *Essays in Positive Economics*, Chicago: University of Chicago Press.

Frydman, R. and M.D. Goldberg (2009), “An Economics of Magical Thinking”, *Financial Times Economists’ forum*. Available on-line at: http://blogs.ft.com/economistsforum/?p=2281

Hodgson, G. (2008), Post-Autistic Review no. 48 (December), pp. 273-279.

Kaletsky, A. (2009a), “Now is the Time for a Revolution in Economic Thought”, Times Online (9.02), available at:

http://www.timesonline.co.uk/tol/comment/columnists/article5689642.ece

Kaletsky, A. (2009b), “Goodbye, Homo Economicus”, *Prospect*, 26th of April, issue 157, available at

http://www.prospectmagazine.co.uk/2009/04/goodbyehomoeconomicus/, accessed on 10th September 2009.

Kay, J. (2010), “Economics may be dismal, but it is not a science”, *Financial Times*, April 14, 2010.

Keen, S. (2009), “Mad, Bad and dangerous to Know”, *Real-World Economics Review*, 49:2-7.

Klein, D.B. (1999), “Introduction: what do economists contribute?” in *What do Economists contribute,* D.B. Klein (ed.), pp. Hampshire and London: Macmillan.

Kling, A. (2008) “Economists with Pseudo-Knowledge” (22.10). Available at: http://econlog.econlib.org/archives/2008/10

Kobayashi, K. (2009), ‘Why this crisis needs a new paradigm of thought’. Available on-line at: http://www.rieti.go.jp/en/rieti_report/108.html

Krugman, P. (2009), “How did Economists Get it so Wrong”, *The New York Times,* September 2 available at

http://www.nytimes.com/2009/09/06/magazine/06Economic-t.html, accessed on 21st September 2009.

Lawson, T. (1997), *Economics and Reality*, London and New York: Routledge.

Lawson, T. (2003), *Reorienting Economics*, London and New York: Routledge.

Lawson, T. (2009), "The Current Economic Crisis: its Nature and the Course of Academic Economics", *Cambridge Journal of Economics*, 33: 759-777.

Leijonhufvud, A (2009), "Out of the Corridor: Keynes and the Crisis", *Cambridge Journal of Economics*, 33: 741-757.

Lucas, R.E. (2003), Macroeconomic Priorities, paper available on-line at: http://home.uchicago.edu/~sogrodow/homepage/paddress03.pdf

Lucas, R.E. (2009), "In Defense of Dismal Science", *The Economist*, 6.08, available at www.economist.com.

Mejias, J. (2009), "Measuring the Crisis", *Edge/The Third Culture,* available at: http://www.edge.org/3rd_culture/mejias09/mejias09_index.html;

Miller, Marcus and Stiglitz, Joseph (2008), "Leverage and Asset Bubbles: Averting Armageddon with Chapter 11", Unpublished paper, Warwick University.

Minsky, H. P. (1986), *Stabilizing an Unstable Economy*, New Haven: Yale University Press.

Morgan, J. (2009), "The Limits of Central Bank Policy: Economic Crisis and the Challenge of Effective Solutions", *Cambridge Journal of Economics*, Special Issue on the Global Financial Crisis, 33(4): 581-608.

Negru, I. (2010). "Economist Heal Thyself: Reflections on the Dismal Science in the Wake of the Crisis". Paper presented at School of Oriental and African Studies, London, Money and Development Seminar Serie, February 2010.

Ormerod, P. (2009), "The Current Crisis and the Culpability of Macroeconomic Theory". Paper presented to the Annual General meeting of the British Academy of Social sciences, London, July 2009.

Oswald, A. (2009), "Herds, Houses and the Crisis", *Royal Economic Society's Newsletter*, 144: 18-19.

Palley, T. I. (2009), "After the Bust: The Outlook for Macroeconomics and Macroeconomic Policy", The Levy Economics Institute of Bard College, Public Policy Brief, Working Paper, no. 97.

Posner, R. (2009), 'A failure of Capitalism', Correspondents 9/08/2009. Available on-line at: http://correspondents.theatlantic.com/richard_posner/2009/08

Rodrik, D. (2009), "Blame the Economists, not Economics", The Guatemala Times, 11/03. Available at:http://www.guatemala-times.com/opinion/syndicated/roads-to-prosperity/887-blame-the-economists-not-economics.html

Romer, P. (2008), 'Fundamentalists versus Realists', Growth Commission Blog (10.06). Available at: http://www.growthcommissionblog.org/print/78.

Sachs, J. (2008), "Can We Save the World Economy?", a conversation with George Soros, Nouriel Roubini and Jeffrey Sachs , 20th October 2008, event organized at the Earth Institute, Columbia University, available at: http://www.earth.columbia.edu/worldeconomy.

Saint-Paul, G. (2009), "A "Modest" Intellectual Discipline", Vox, 19.09. Available at: http://www.voxeu.org/index.php?q=node/3996

Spaventa, L. (2009), "Economists and Economics: what does the crisis tell us?", Centre for Economic Policy Research, Policy Insight no.38, August, pp.1-8. Available at www.cepr.org.

Stiglitz, J.E. (2009a), "The Anatomy of a Murder: Who Killed America's Economy?", *Critical Review*, Special Issue on The Causes of the Financial Crisis, 21 (2-3): 329-339.

Stiglitz, J.E. (2009b), "The Current Economic Crisis and Lessons for Economic Theory", Eastern Economic Journal, 35: 281-296.

Taleb, N.N. (2007), *The Black Swan: the Impact of the Highly Improbable*, London: Penguin Books.

Warsh, D. (2009), "Economics and its Discontents", Economic Principals, 13.09, available at: http://www.economicprincipals.com/issues/2009.09.13/706.html

Wolff, Martin (2008), "A Time for Humility". Financial Times- The Economists Forum. 27/11, available at: http://blogs.ft.com/economistsforum/2008/11/a-time-for-humility

Appendix

a. Conferences: UK: Royal Economic Society's annual conferences; AHE; Post Keynesian Group; Development Studies Association; Scottish Political Economy Society; US: AEA-ASSA, Eastern Economics association meetings; AFIT at the Western Social Sciences Association; Midwest; Southern Economic meetings; Midwest meetings; West Coast meetings; also NBER events; Association of Feminist Economics conferences; Financial management association; special event: 2009 Canada Conference at the perimeter institute of Physics: a Tale of 2 crises: the Financial Crisis and its intellectual counterpart.

b. The written literature: academic journals. We have consulted the following economics journals (time-frame September 2007-October 2009): American Economic Association Quaterly, The American Economic Review, American Economist, The American Journal of Economics and Sociology, Applied Economics, ASEAN Economic Bulletin, Asian Economic Papers, Australian Economic Papers, The Australian Economic Review, Bell Journal of Economics, Bulletin of Economic Research, Business and Economic Review, Cambridge Journal of Economics, The Canadian Journal of Economics, The Canadian Journal of Economics and Political Science, Capital and Class, Comparative Economic Studies, Contemporary Economic Policy, The Critical Review, Eastern Economic Journal, Eastern European Economics, Econometric Reviews, Econometric Theory, Econometrica, The Econometrics Journal, Economia, Economic Affairs, Economic Analysis and Policy, Economic Analysis Working Papers, The Economic and Social Review, Economic Review, Economic Systems, Economic Theory, Economica, Economics Bulletin, The Economics of Transition, Economics and Politics, Economy and Society, Empirical Economics, European Economy, The European Journal of Comparative Economics, European Journal of Economic and Social Systems, The European Journal of Finance, European Journal of Political Economy, Finnish Economic Papers, Fiscal Studies, German Economic Review, History of Economics Review, International Economic Review, International Journal of Political Economy, International Journal of Social Economics, International Review of Applied Economics, Journal of Applied Econometrics, The Journal of Behavioural Economics, The Journal of Business and Economic Studies, Journal of Development Economics, Journal of Econometrics, The Journal of Economic Affairs, Journal of Economic Behaviour and Organisation, Journal of Economic Education, The Journal of Economic History, Journal of Economic Issues, The Journal of Economic Methodology, The Journal of Economic Perspectives, Journal of Economic Research, Journal of Economic Theory, Journal of Economics, Journal of Economics and Business, Journal of Economics and Finance, Journal of Evolutionary Economics, Journal of Financial Economics, Journal of International Economics, Journal of Macroeconomics, Journal of Mathematical Economics, Journal of Monetary Economics, The Journal of Political Economy, Journal of Post Keynesian Economics, Journal of Public Economic Theory, Journal of Public Economics, The Journal of Socio-Economics, Journal of the Economics of Business, Journal of the European Economic Association, Journal of the History of Economic Thought, Labour Economics, Local Economy, The Manchester School of Economic and Social Studies, Metroeconomica, New Economy, Oxford Bulletin of Economics and Statistics, Oxford Economic Papers, Oxford Review of Political Economy, Problems of Economics, Publications of the American Economic Association, The Quaterly Journal of Austrian Economics, Quaterly Journal of Business and Economics, The Quaterly Review of Economics and Finance, The Rand Journal of Economics, Research in Economics, Review of Austrian Economics, The Review of Economic

Studies, Review of Financial Economics, Review of Financial Studies, Review of International Economics, Review of International Political Economy, Review of Political Economy, Review of Social Economy, The Scandinavian Journal of Economics, Scottish Journal of Political Economy, Southern Economic Journal, The World Bank Economic Review, World Economic Outlook, The World Economy.

c. The written literature: newspapers. Besides the academic economic journals, we have consulted the following newspapers, periodicals or magazines in UK: the Guardian; Daily Telegraph; the Independent, Sunday telegraph, Sunday Times and Financial times; the Economist. We have also consulted the Newsletter of the Royal Economic Society. Within US, we consulted: Chicago Tribune, Los Angeles Times, St. Louis Dispatch, Wall Street Journal, San Francisco Chronicle and The American Prospect.

d. Blogs and podcasts: we consulted a series of blogs that are representative regarding a variety of economists groups discussing economics at large: Tyler Cowen's column; Robert H. Frank's column; Greg Mankiw's column; Vox; econlog and econtalk; Adam Smith's Institute; Becker-Posner blog; Nouriel Roubini's websites; Paul Krugman's website; Café Hayek; Dani Rodrik; Dean Baker's commentary; Economic Perspectives from Kansas City; Economist's forum; Economist' s view (Mark Toma); Willem Buiter's blog; Economic Principals (David Warsh); Marginal revolution; The Causes of the Crisis.