POST-KEYNESIAN ECONOMICS

New Foundations

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Notation used in the book

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a	real autonomous expenditures	5
A	nominal autonomous expenditures	5
A_{LT}	number of long-term securities	4
A_{ST}	short-term assets	4
ABP	accounting balance of payments	7
$AFAB$	accounting financial account balance	7
B	debt of firms (or of households, Chapter 6)	3, 4, 6
B	bank loans	4, 6
BP	balance of payments	7
c_v	propensity to consume out of wealth	5, 6
C	consumption	4, 7
CAB	current account balance.	4, 7
D	deposits	4, 6
DC	direct costs	3
e	estimate of a parameter	1
e	price elasticity of demand (its absolute value)	3
e	nominal exchange rate	7, 8
$\bar{e}$	fundamental exchange rate assessed by fundamentalists	7
e_R	real exchange rate	7, 8
$\bar{e}_R$	real exchange rate target	8
e_c^e	exchange rate expected by chartists	7
e_f^e	exchange rate expected by fundamentalists	7
e_w	Webb effect elasticity (efficiency wage effect elasticity)	5
E	rate of employment	6
f	ratio of overhead workers to variable workers at full capacity	5, 6, 8
f	forward exchange rate (in logs)	7
f_f	financial to tangible asset ratio	3
F	forward exchange rate (in level)	7
FC	full capacity of the firm	3
FC_{th}	theoretical full capacity	3
FY	foreign income accruing to domestic residents	4, 7
FAB	financial account balance in its economic sense	7
g	rate of capital accumulation (growth rate)	3, 6–8
g_B	balance-of-payments constrained growth rate	7
g_q	actual rate of growth of output	6
g_n	natural rate of growth	5–8

g_y	growth rates of sales	6
g_z	growth rate of autonomous consumption expenditures	6
g^i	investment function (in growth terms)	6–8
g^s	saving function (in growth terms)	6–8
g^s_r	saving function of rentiers	6
G	government expenditure	4, 5, 7
h	annual number of hours worked per worker	5
H	high-powered money (banknotes, reserves)	4
i	interest rate	3–6
i_B	interest rate on borrowed capital or loans	3, 4, 6
i_D	interest rate on bank deposits	4, 6
i_d	domestic interbank interest rate	7
i_f	foreign interbank interest rate	7
i_R	real rate of interest	7
i_s	dividend rate on stock-market shares	3
i_s	rate of return on stock-market shares	4
i_{CB}	target interest rate of the central bank	4
i_{LT}	yield on long-term securities	4
i_{ST}	yelds on short-term securities	4
i_{fair}	fair rate of interest	4
I	investment expenditure	3–7
I_h	residential investment	4
I_f	investment by firms	4
IN	inventory stocks of firms	4
j	ratio of material costs to direct labour costs	3, 7, 8
J	$= (1 + j)$	8
k	number of machines per worker	1
K	capital stock	4, 6
K_B	capital borrowed through loans or bond issues	3
K_s	capital owned by the shareholders	3
l	debt to capital ratio	3, 6
L	labour employment	1, 4, 5, 6
L_f	indirect labour, overhead labour	5
L_v	direct labour, variable labour	5
L_{fe}	full employment	5
L_v^{fc}	direct labour at full capacity	5
m	share of gross profits	3, 5
m_{va}	share of gross profits in value added	3
M	number of machines	1, 3
M_d	deflated capital	1
M	imports	4, 7, 8
MR	marginal revenue	3
MC	marginal cost	3
n	labour per unit of output $(= 1/y)$	3
N	active population	1, 6
NDC	normal direct costs	3

$NUDC$	normal unit direct cost	3
NUC	normal unit cost	3, 5
OF	own funds of banks	4
OR	official international reserves	7
p	price level	1, 5, 8
p_d	price of domestic goods	7, 8
p_f	price of foreign goods	7, 8
p_i	price of machines	3
p_m	price of imports	7
p_x	price of exports	7
p_s	price of stock-market shares	4, 6
p_{LT}	price of long-term securities	4
P	profits	3, 5–7
P_D	dividends	4
P_{ND}	non-distributed profits (retained earnings)	4
q	output level	1, 3, 5, 7
q_d	deflated output	1
q^d	real aggregate demand	5
q^s	real aggregate supply	5
q_n	normal or standard level of output	3, 5
q_{fc}	full-capacity level of output	5
r	rate of profit	1, 6, 8
r^e	expected rate of profit	6
r_n	normal rate of profit, target rate of return on capital	3, 5, 6, 8
s	spot exchange rate (in logs)	7
s_f	retained earnings ratio	3, 6
s_h	propensity to save of households	6
s_p	propensity to save out of profits	5–8
s_r	propensity to save of rentiers	5
s_w	propensity to save out of wages	
s_y	propensity to save out of income	5, 7
s_{yd}	propensity to save out of disposable income	5
S	spot exchange rate (in level)	7
S	saving of the private sector	4, 7
S_f	retained earnings of firms	3, 4
S_h	saving of the household sector	4, 7
SE	standard error of estimate	1
tb	trade balance ratio	7
T	taxes	4, 7
TB	trade balance	7
u	rate of capacity utilization	5–8
u^e	expected rate of capacity utilization	6
u^k	short-period Keynesian or Kaleckian equilibrium rate of capacity utilization	6
u_f	foreign rate of capacity utilization	7, 8
u_n	normal or standard rate of capacity utilization	3, 5–8

U	rate of unemployment	1
UC	unit cost	3
UDC	unit direct cost (or average variable cost)	3, 5
$UDLC$	unit direct labour cost	3, 7
UMC	unit material cost	3, 7
v	capital to full-capacity output ratio	3, 5–8
v_o	capital to output ratio	1, 7
v_m	material inputs to output ratio	7
v_r	valuation ratio (Tobin's average q ratio)	6
V	wealth	4, 6
w	nominal wage rate	1, 3–6, 8
w_f	nominal wage of overhead labour	5, 6
w_M	mean nominal wage rate	5
w_v	nominal wage rate of variable labour	5, 6
x	units of consumer goods	2
x	proportion of investment financed by new share issues	3
X	exports	4, 7
y	output per worker (labour productivity)	1, 5, 6
y_f	labour productivity of overhead labour	5
y_h	hourly labour productivity	5
y_v	labour productivity of variable labour	5, 8
Y	individual income	2
Y	income (gross domestic product)	5, 7
Y_d	disposable income of the private sector	5
Y_{fe}	full-employment GDP	5
z	units of characteristics	2
z	ratio of autonomous expenditures to capital stock	6
Z	autonomous consumption expenditures of capitalists	6
Z	world income	7

Greek letters		Chapter
α (alpha)	output elasticity of labour	1
α	proportion of the feasible range of extra necessaries goods	2
α_1	parameter designed to calculate the natural rate of growth	6
α_i	parameters of a modified Phillips curve	8
β (beta)	output elasticity of capital	1
β_e	impact of an increase in the real exchange rate on the domestic rate of capacity utilization	7, 8
β_u	income elasticity of import demand in the domestic economy	7, 8
β_{uf}	income elasticity of import demand in the foreign economy	7, 8
γ (gamma)	parameter reflecting the animal spirits of firms or the trend growth rate of sales	6–8
γ_i	effect of the interest rate on the rate of accumulation	6

γ_r	effect of the profit rate or of the normal profit rate on the rate of accumulation	6
γ_u	effect of the rate of capacity utilization on the rate of accumulation	6–8
γ_v	effect of the valuation ratio on the rate of accumulation	6
γ_π	effect of the profit share on the rate of accumulation	6–8
Γ	adjustment coefficient related to the real exchange rate	7
ε (epsilon)	error term	1
ε	price elasticity of demand (in absolute terms)	3
ε	Webb effect of the real wage on labour productivity	5
ε	world income elasticity of the demand for exports coming from the domestic economy	7
ζ (zeta)	consumption emulation coefficient of workers	6
η (eta)	price elasticity of the demand for exports	7
η_1	effect of a change in the wage share on the growth rate of output	6
η_2	effect of technical progress on the growth rate of output	6
θ (theta)	percentage mark-up on direct costs (percentage gross costing margin)	1, 3, 5, 8
Θ	percentage net costing margin	3, 5
ι (iota)	reaction parameter tied to changes in expected spot rate	7
ι^T	target inventories to sales ratio	3
κ (kappa)	average markup of prices over unit labour costs	8
κ_d	proportion of bank deposits in household wealth	6
κ_s	proportion of stock-market shares in household wealth	6
λ (lambda)	growth rate of labour productivity	6
λ_g	Kaldor–Verdoorn effect of output growth on labour productivity growth	6
λ_k	effect of the growth rate of capital per head on labour productivity growth	6
λ_π	effect of the profit share on labour productivity growth	6
λ_ω	effect of real wage growth on labour productivity growth (dynamic Webb effect)	6
λ_{ij}	indicators of liquidity preference for various assets	4
μ (mu)	Hicksian measure of technical progress	1
μ	reaction of the rate of capacity utilization to excess demand	6
μ	propensity to import goods from abroad	7
μ_1	adjustment parameter tied to the expected rate of utilization	6
μ_2	adjustment parameter tied to the normal rate of utilization	6
ν (nu)	parameter related to export prices	7
ξ (xi)	implicit function indicating how the debt ratio changes as a function of itself and the growth rate of output	6
π (pi)	net share of profits in national income (or in value added)	5–8

π^d	net share of profits, from the demand side	5, 6
π^s	net share of profits, from the supply side	5, 6
Π	income elasticity of the demand for imports	7
ρ (rho)	ratio of the funds that can be borrowed to the retained earnings	3
σ (sigma)	risk and illiquidity premium or discount	4
σ	ratio of the wage of overhead labour relative to that of direct labour	5
σ	reaction parameter tied to the retained earnings ratio	6
σ_B	illiquidity and risk premium on bank loans	4
σ_i	risk and illiquidity discounts associated with different assets	4
τ (tau)	weighted sum of the growth rates of the real wage and the profit rate	1
τ	tax rate	5
τ	tariff rate	7
ν (upsilon)	parameter related to import prices	7
ϕ (phi)	reaction of the profit share to excess demand	6
ϕ_1	adjustment parameter tied to the expected profit rate	6
ϕ_2	normal profit rate adjusts to the values taken by the realized profit rate	6, 8
ϕ_c	reaction parameter related to expectations of chartists	7
ϕ_f	reaction parameter related to expectations of fundamentalists	7
χ_1 (chi)	impact of the rate of capacity utilization on price inflation	6
χ_2	impact of the rate of inflation on the interest rate	6
χ_3	negative effect of the rate of capacity utilization on the trend rate of growth	6
χ_4	negative effect of an increase in the rate of employment on the trend rate of growth	6
χ_5	negative effect of an increase in the rate of unemployment on price inflation	6
χ_6	positive effect of the rate of unemployment on the profit share	6
χ_7	positive effect of an increase in the rate of employment on the rate of technical progress	6
χ_8	negative effect of an increase in the rate of unemployment on the rate of technical progress	7
ψ (psi)	implicit function indicating how the growth rate of output changes as a function of itself and the debt ratio	6
ψ	price elasticity of the demand for imports	7
ψ_i	(i = 1, 2, 3) Harrodian destabilizing mechanisms	6
Ψ	parameters pertaining to price inflation	8
ω (omega)	real-wage rate (= w/p)	1
ω_f	real-wage rate targeted by firms	6

ω_h	hourly real wage	5
ω_M	mean real-wage rate	5
ω_w	real wage targeted by workers	6
Ω	parameters pertaining to wage inflation	8

Preface

The first version of this book was published in 1992 as *Foundations of Post-Keynesian Economic Analysis*. Ten years later, in 2002, I was asked to write a new edition; in fact Edward Elgar and Alan Sturmer proposed that I submit a complete rewrite instead of simply making minor modifications. I initially said that I could not start on this project before January 2004. Nothing much happened on that front, however, as I was busily collaborating with Wynne Godley in writing several articles and our *Monetary Economics* book, which attempted to fully integrate the real and financial sides of economic models in a truly consistent manner. That book was published in early 2007, and so in February 2007 I felt confident enough to sign a contract to deliver *New Foundations* by September 2009. But in the meantime I became involved with another time-consuming project with my long-time colleague Mario Seccareccia, adapting the Baumol and Blinder first-year textbook to the Canadian market, which ate all of my sabbatical time. Finally, Tara Gorvine at Edward Elgar reminded me that I had missed the delivery date, at which point I said that I would aim for December 2012. As I was also involved with an INET grant led by Mario Seccareccia, this is when I actually truly started working on the *New Foundations*, having accumulated notes on things to modify or topics to add for nearly ten years. I was not idle during this whole period. Between 2002 and 2012, besides the books mentioned above and a toned-down version of *Foundations* called *Introduction to Post-Keynesian Economics*, I calculated that I published four edited books, 35 book chapters and 42 journal articles.

To some extent, the present book is the result of several of these previously published papers. It also arises from some presentations that I made at various conferences, seminars and summer schools. Some chapters have not changed much, because not much new has been produced on the topics of these chapters over the last 20 years. This is particularly the case of the chapters on pricing and on employment. But the other chapters have required quite a lot of work, to keep track of the immense amount of new publications corresponding to the material covered in these chapters. I have also added a chapter on the international economy, which was an omission in the 1992 *Foundations* book. And of course the *New Foundations* reflects some slow changes in my own views, either endogenously, or through interaction with colleagues from all over the world.

But whatever the changes, the purpose of the book remains the same: it is targeted mainly at honours students and masters students, but I am sure that PhD students can also benefit from reading it. It may as well be useful to young colleagues who, despite being trained in mainstream economics, are looking for an alternative view of the world. The purpose is to provide comprehensive access to post-Keynesian economics, a guide through the maze of publications, showing that it does have some coherence. The book is not an introduction to post-Keynesian economics; rather, I think it is fair to say that it assumes that students have some knowledge of alternative theories in economics.

The outline of the new version is roughly similar to that of the old one. When I wrote *Introduction to Post-Keynesian Economics* (2006), first for a French audience in 2004, the editor of the book series did not like the order of the chapters that I had then proposed, and he suggested another order, which turned out to be identical to that of *Foundations*, so I suppose that this outline is indeed the most appropriate for the purpose at hand. Readers will note that I start out with general concepts, dealing then with the individual consumer and the individual firm, these chapters being followed by the chapter on money and credit, which constitutes the introductory chapter to macroeconomics – employment, growth and inflation. The chapter on the theory of inflation has been scaled down, compared to its 1992 version, perhaps reflecting the lesser concerns about inflation. And already stated, I have added a full chapter on open economies, about which I felt more comfortable to write, in part thanks to my past collaboration with Wynne Godley.

In the preface to the 1992 book, I thanked my spouse Camille for not having delivered our third child before I had finished the manuscript. This remark speared the attention of a few readers, who asked me what then happened. The three boys are now in their twenties. They all went to university and two of them are still there, the third having started a business. I still live with Camille, whom I met at a Christmas university party about 30 years ago, which seems like a great achievement given what happens now to couples, and I thank her for that.

On a more scholarly note, I wish to thank my colleague Mario Seccareccia for his intellectual stimulation during the 35 years that we spent together at the University of Ottawa and for his comments on Chapter 9. I also wish to thank colleagues who have spotted mistakes and have provided useful comments: Antonio Carlos Macedo e Silva, from the University of Campinas, on the growth chapter (Chapter 6); John McCombie, from the University of Cambridge, on the Harrodian open-economy model (Chapter 7); and Tom Stanley, from Hendrix College (Arkansas), on meta-regression analysis (Chapter 1). Eckhard Hein, from the Berlin School of Economics and Law, patiently went through most of the manuscript and provided several suggestions.

Students of mine or students who came to visit the University of Ottawa have also helped: Sima Ghasemi painfully went through the whole manuscript to pick up missing references, and she built up the list of notations used throughout the chapters; Dylan Gowans helped put the references in the right format and prepared the index; Louison Cahen-Fourot provided comments on Chapters 1, 2 and 9; Simon Julita did the same for Chapters 2 and 3; and post-doc Brett Fiebiger provided extensive comments on Chapter 4.

1. Essentials of heterodox and post-Keynesian economics*

1.1 THE NEED FOR AN ALTERNATIVE

1.1.1 The Global Financial Crisis

The Global Financial Crisis has been a wake-up call for economists. The alarm should have rung much earlier, when Japan and then East Asia were struck by a huge financial crisis in the 1990s, but few economists in the Western world paid much attention to the difficulties of these far-flung countries. The Global Financial Crisis is sometimes said to have begun in the summer of 2006, when real-estate prices in the USA stopped rising and started to fall, but few of us thought that this local phenomenon would induce a world crisis. Surprisingly, and demonstrating the importance of globalization, the first signs of financial tension arose on the European interbank markets at the beginning of 2007, when European banks started to express anxiety over the value of their financial investments in the USA. A mini-crisis occurred during the summer of 2007, and despite the difficulties encountered by issuers of asset-backed commercial paper, most of us believed that central banks had played their role and had relaxed the tensions.

This illusion persisted until September 2008, when the government-sponsored agencies Freddie Mac and Fanny Mae had to be rescued, when Wall Street banks tumbled one after the other, when two large banks – Washington Mutual and Wachovia – had to be acquired, and when the giant insurer AIG had to be bailed out by government, as was then a string of large European banks, including the whole Icelandic and Irish banking systems. The culmination of all this was that the US government decided to let go the Wall Street bank Lehman Brothers, sending a chilling message all over the banking world. Then, with the usual sources of finance cut off, as corporate paper markets started to collapse, and as banks became reluctant to grant lines of credit to new or returning customers, the real sector got into trouble, and even General Motors needed to be rescued by the American and the Canadian governments. The economic recession, caused by the imprudence of bankers and the incompetence or fraudulent behaviour of the rating agencies, led to large government deficits as tax revenues fell and some countries tried to counteract the slowdown with stimulus programmes, which achieved some success.

But this was not the end of such troubles. In late December 2009, it was noted that a small country of the eurozone, Greece, had particularly bad economic indicators and had hidden from official statistics some of its debt, thus creating worries about its capacity to redeem it. Investors realized that the eurozone had a peculiar setup, designed for a world in which financial crises could not occur, as the European Central Bank, in contrast to most other central banks, did not normally purchase government bonds. This exacerbated the worries of investors about the capacity of (some) eurozone countries to redeem

their debt. Worries over Greece spread to other countries – Ireland, Portugal, Spain and Italy – as the European Central Bank declined to intervene and purchase sovereign bonds except when it was too late, thus causing a sovereign debt crisis. With the possible feedback effects of sovereign defaults on the banks detaining sovereign debt, and with all European countries pursuing fiscal austerity policies, at the time of writing (2013) it is hard to see where and when all this globalized turmoil will end; some economists forecast a 'perfect storm'.

Roughly speaking, economists have had three reactions to the financial crisis. The middle reaction has been to say that existing mainstream theory is fine, but that it needs to be slightly tweaked and improved so as to take into account elements that were previously left aside and which explain why the crisis could not be predicted. The second reaction, associated with neo-Austrian and new classical authors, or those that Paul Krugman has called fresh-water economists, is to argue that the crisis was caused by misguided regulations, bad government interventions, ill-advised decisions by central banks, unsound government budgets, and by the naughty Chinese who had rigged their exchange rate. Finally, the third reaction is to claim that recent institutions, regulations and economic policies have been based on erroneous economic theories, and that these need to be scratched out. Of course, this last opinion has always been the belief of heterodox authors, and post-Keynesian authors in particular, but with the advent of the financial crisis, several former partisans of mainstream economics have changed their mind and been quite critical of standard theory.

1.1.2 Recantations

Perhaps the most surprising such recantation is that of Richard Posner, a judge and a senior lecturer at the University of Chicago School of Law. Posner was a stern defender of free markets and Milton Friedman's ideology. In his book, titled *The Failure of Capitalism*, Posner (2009a) argues that deregulation went too far and that financial markets need to be heavily regulated, because banking has a systemic significance that other industries do not have. In a follow-up article, provocatively titled 'How I became a Keynesian', Posner (2009b) goes further, arguing that 'we have learned since September [2008] that the present generation of economists has not figured out how the economy works'. Posner believes that Keynes's *General Theory*, despite its apparent antiquity, is the best guide to the crisis, because 'Keynes wanted to be realistic about decision-making rather than explore how far an economist could get by assuming that people really do base their decisions on some approximation to cost–benefit analysis'. A very similar point, showing disarray at the obviously counterfactual assumptions about human behaviour entertained by mainstream economists, was also made by Akerlof and Shiller (2009, p. 268) when they wrote that 'in their attempt to clean up macroeconomics and make it more scientific, the standard macroeconomists have imposed a research structure and discipline by focusing on how the economy would behave if people had only economic motives and they were also fully rational'. Robert Skidelsky (2009, p. x), the historian biographer of Keynes, claimed that to understand economics it was better not to be a professional economist, the advantage being 'of not having been brainwashed to see the world as most economists view it: I have always regarded their assumptions about human behaviour as absurdly narrow'.

Former winners of the Bank of Sweden prize in economic sciences in memory of Alfred Nobel (to which we will simply refer as the Nobel Prize in economics from now on), such as Paul Krugman and Joseph Stiglitz, have been unrelenting critics of mainstream economics, as reflected in the works of most of their peers, criticizing both their assumptions and their apparent lack of knowledge of elementary Keynesian economics, as the most famous new classical authors reverted to pre-Keynesian arguments to counter the justification of stimulus programmes. The most abrasive indictment of mainstream economics is probably that of Willem Buiter, an LSE professor and a former member of the Monetary Policy Committee of the Bank of England. In the following long quote, Buiter questions the usefulness of all the fads in macroeconomics over the last 30 years. Indeed, he would thus like us to go back to Old Keynesian authors such as Tobin, or post-Keynesian authors such as Minsky, or else to authors who have demonstrated originality, such as Shiller, Akerlof and Stiglitz, whose works show concerns that are close to those found in the works of post-Keynesian authors.

> Indeed, the typical graduate macroeconomics and monetary economics training received at Anglo-American universities during the past 30 years or so may have set back by decades serious investigations of aggregate economic behaviour and economic policy-relevant understanding. It was a privately and socially costly waste of time and other resources. Most mainstream macroeconomic theoretical innovations since the 1970s (the New Classical rational expectations revolution associated with such names as Robert E. Lucas Jr., Edward Prescott, Thomas Sargent, Robert Barro etc, and the New Keynesian theorizing of Michael Woodford and many others) have turned out to be self-referential, inward-looking distractions at best. Research tended to be motivated by the internal logic, intellectual sunk capital and esthetic puzzles of established research programmes rather than by a powerful desire to understand how the economy works – let alone how the economy works during times of stress and financial instability . . .
>
> In both the New Classical and New Keynesian approaches to monetary theory (and to aggregative macroeconomics in general), the strongest version of the efficient markets hypothesis (EMH) was maintained. This is the hypothesis that asset prices aggregate and fully reflect all relevant fundamental information, and thus provide the proper signals for resource allocation. Even during the seventies, eighties, nineties and before 2007, the manifest failure of the EMH in many key asset markets was obvious to virtually all those whose cognitive abilities had not been warped by a modern Anglo-American Ph.D. education. But most of the profession continued to swallow the EMH hook, line and sinker, although there were influential advocates of reason throughout, including James Tobin, Robert Shiller, George Akerlof, Hyman Minsky, Joseph Stiglitz and behaviourist approaches to finance. (Buiter, 2009)

There is indeed a great deal of dissatisfaction with economic theory and economists, at all levels. The administrators at the IMF have set up an enquiry to find out why IMF advice has led to such disastrous results in so many countries, discovering that the fault lay in the theories defended by their economists. Government and central bank officials are ever more wary of the advice proposed by their professional economists. Managers of large investment funds, burned by the financial crisis, search for alternative views on the economy. Students, in particular those in France who launched the post-autistic economics movement as a protest in 2000 and followed up with the PEPS-économie (2013) movement, have long been complaining that they are being brainwashed by their economics professors, who put forward a single view without telling the students that there exist other theories. Students further complain that all the emphasis is on techniques and formalization, with little link with actual economic events (Fullbrook, 2003). Even the

Queen of England complained in November 2008 that nobody had apparently been able to forecast the Global Financial Crisis (Earl, 2010). It took more than half a year for British orthodox economists to send a reply to the Queen, arguing that all this was caused by a lack of imagination on their part.

1.1.3 The Necessity of a Post-Keynesian Alternative

The argument put forward here is that, while prediction in economics has always been difficult, the danger of following bad advice has been greatly increased by the hegemony of neoclassical economics, that is, the fact that departments of economics throughout the world have been monopolized by this single broad view. This is in contrast to what occurs in other university departments, such as sociology or psychology, where directly opposite views are given pride of place in first-year textbooks. Dissent, or at least dissent of a certain kind, has been repressed in economics departments. But dissent is what is needed for a vibrant academic environment. Dissent, however, must go beyond criticism: a positive alternative must also be put forward. This is the main purpose of the book.

The crisis has clearly demonstrated, if such a demonstration were needed after the failure of the Washington Consensus just a few years earlier, that there is something drastically wrong with the dominant theory that has provided such bad advice to the decision-makers. As could be found on the website of the rather conservative *Financial Times* in 2009, 'the credit crunch has destroyed faith in the free market ideology'. In view of these failures, it is our social duty as economists, a duty that should have a high social rate of return, to develop an alternative outlook of the economic system. It is our duty to sustain and develop the heterodox traditions that question the efficiency and stability of unfettered markets.

In this book, I wish to highlight the 'post-Keynesian' tradition in economics. We shall see later that this school of thought can be subdivided into several strands. But for now we can say as a first approximation that this tradition extends and generalizes the seminal ideas that were developed by the radical followers of John Maynard Keynes (hence the term 'post-Keynesian'). These developments initially occurred mainly at the University of Cambridge, where Keynes was located. The originality of these ideas became pretty obvious in the 1950s, as researchers such as Nicholas Kaldor and Joan Robinson came to prominence. Of course, there were also other famous heterodox economists in Cambridge, most notably Richard Kahn, Pierro Sraffa and Maurice Dobb. This generation was then followed by another one, that of Luigi Pasinetti, Geoffrey Harcourt and Wynne Godley, who came with ideas of their own, albeit compatible with this radical Cambridge tradition. Outsiders also made contributions to this tradition, the most notable certainly being Michał Kalecki, the Polish economist. Starting with the early 1970s, several American economists contributed in their own way to this tradition and helped to institutionalize post-Keynesian economics. Naturally, the contributors to post-Keynesian economics can now be found throughout the globe and in certain cases can be associated with other schools of thought, as is the case for John Kenneth Galbraith, who is usually perceived as some kind of radical Institutionalist.

Table 1.1 Heterodox versus orthodox economics: alternative names

Heterodox economics	Orthodox economics
Post-classical paradigm	Neoclassical economics
Radical political economy	The dominant paradigm
Non-orthodox economics or unorthodox economics	Mainstream economics
Real-world economics	Marginalism
New paradigm economics	Old paradigm economics

1.2 HETERODOX ECONOMICS

1.2.1 Heterodox versus Orthodox Economics

At this stage some definitions are required. Table 1.1 shows the alternative names that have been given to the two wide traditions that exist in economics. We chose to call these heterodox economics and orthodox economics; an economist who is not part of the heterodox group then by definition must belong to the orthodoxy. We shall see in the next section that these two traditions can be defined by key methodological characteristics and beliefs. Orthodox economics is often referred to as neoclassical economics, marginalism, the dominant paradigm or mainstream economics. Over the last decade or so, various authors such as David Colander (2000) and John Davis (2006) have contended that all these terms are not synonyms. In particular, these authors have been arguing that important works in the orthodox tradition do not use some of the key assumptions that define neoclassical economics and the use of marginalist methods, making references to game theory, experimental economics, behavioural economics, neuroeconomics and non-linear complexity economics. While this may true, particularly in the field of microeconomics, despite obvious elements of continuity with the neoclassical framework, it is clear that macroeconomics, with its current use of the representative agent with rational expectations (RARE, as John King (2012a) calls it), is still fully within the neoclassical berth. Hence, until contrary evidence is truly convincing, I see nothing wrong in assimilating orthodox economics to the neoclassical paradigm.

In the 1992 version of the book, I made references to the 'post-classical' paradigm, in opposition to the neoclassical paradigm, and also because some of the concerns of the post-classical economists reflected the concerns of classical economists such as Ricardo and Marx. In the same spirit, Heinrich Bortis (1997) has suggested the name 'classical-Keynesian' political economy. I also occasionally used the term 'unorthodox' or 'non-orthodox' economics. Malcolm Sawyer (1989) proposed the term 'radical political economy' to identify a more or less homogeneous set of dissident schools, so as to distinguish it from the stand-alone 'political economy' that has also been used by right-wing authors concerned with public choice and the growth of the public sector. Edward Fullbrook (2013) has suggested the use of two expressions, 'new paradigm economics' and 'old paradigm economics', proposing ten distinguishing characteristics. In his efforts to regroup all those frustrated with orthodox economy, and as a follow-up to the post-autistic economics movement, Fullbrook has created the *Real-World Economics Review*,

the main publication of the World Economics Association. The converse of orthodox economics could thus also be called real-world economics.

I decided to adopt the denomination 'heterodox economics'. Over the years, in particular since the late 1990s, but even more so since the mid-2000s, the term 'heterodox' has become increasingly popular to designate the set of economists who view themselves as belonging to a community of economists distinct from the dominant paradigm. Indeed, there is now a huge *Heterodox Economics Directory* (Jo, 2013), which provides useful information to all those young scholars looking for an alternative economics. As a result, I shall speak of 'heterodox economists', as has been suggested in particular by Frederic Lee (2009).

Is it possible to summarize in a nutshell the difference between orthodox economics and heterodox economics? While much more will be said in the next section, at this stage we can focus on the definition of economics as an exemplar. The most accepted definition, which can be found in all orthodox textbooks, is that of Lionel Robbins (1932, p. 16), who defined economics as 'a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses', summing this up by saying that economics is the study of 'behaviour conditioned by scarcity' (p. xxxi). When asked, some of my students defined neoclassical economics as the study of an upward-sloping supply curve with a downward-sloping demand curve! Lee (2013a, p. 108) by contrast defines heterodox economics as 'a historical science of the social provisioning process'. I find this rather ambiguous, and personally I prefer the definition offered by John Weeks (2012), who objects to the standard definition of economics based on scarcity, proposing instead that 'economics is the study of the process by which society brings its available resources into production, and the distribution of that production among its members'.

1.2.2 Heterodox Schools of Thought

Who are these heterodox economists? Frederic Lee (2009, p. 7), in his *History of Heterodox Economics*, lists the following: 'Post Keynesian-Sraffian, Marxian-radical, institutionalist-evolutionary, social, feminist, Austrian and ecological economics'. Table 1.2 gives a similar list of the various schools of thought that I have associated with heterodox economics in the past. Post-Keynesians are listed first, not because of their numerical importance, but rather because they are the subject of this book, although it should be pointed out that Radicals/Marxians are probably most numerous among heterodox economists, with the Institutionalists next. As we shall see later, these various schools of thought have methodological features in common, although this may not always be obvious because the members of each school usually specialize in different fields or because they provide different sorts of critiques against orthodox economics, so that the contacts between the various schools can be rather sparse.

The financial crisis has given a boost to all alternative schools of thought, in particular heterodox Keynesian economics. Students in some economics departments devoid of heterodox courses have created their own sets of lectures. Journalists, who up to very recently, were still in awe of Milton Friedman, now turn to Keynes to provide some explanations of what is happening. The books of John Kenneth Galbraith, a post-Keynesian Institutionalist, are back in fashion, notably his 1955 book *The Great Crash 1929*. Furthermore, the financial crisis has brought to the fore the views of a well-known

Table 1.2 Heterodox schools of thought in economics

School of thought	Associations
Post-Keynesians	Post Keynesian Economics Study Group (PKSG) Association des Études Keynésiennes (ADEK) Associação Keynesiana Brasileiro (AKB)
Radicals, Marxists, Marxians	Union for Radical Political Economy (URPE) Association for Heterodox Economics (AHE) International Initiative for Promoting Political Economy (IIPPE)
Institutionalists (old)	Association for Evolutionary Economics (AFEE) Association for Institutional Thought (AFIT)
Evolutionary political economy	European Association for Evolutionary Political Economy (EAEPE)
Feminist economics	International Association for Feminist Economics (IAFFE)
Social and humanistic economics	Association for Social Economics (ASE) Political and Ethical Knowledge on Economic Activities (PEKEA)
(Social) Ecological economics (green economics)	International Society for Ecological Economics (ISEE)
Development Structuralists	International Celso Furtado Center for Development Policies
Schumpeterian economics, innovation economics, evolutionary economics	International Joseph A. Schumpeter Society
French Regulation School	Association Recherche et Régulation
Social structure of accumulation school	
The economics of conventions	
Monetary circuit school	
Behavioural economics (old)	Society for the Advancement of Behavioral Economics (SABE)
Polanyi economics	Karl Polanyi Institute of Political Economy
Gesellian economics	
Ghandian economics	Ghandi Foundation
Georgian economics	Henry George Institute
Neo-Austrian economics (?)	Society for the Development of Austrian Economics (SDAE), Ludwig von Mises Institute
Agent-based modelling	
System dynamics	System Dynamics Society

post-Keynesian economist – Hyman P. Minsky – to such as extent that journalists at the *Wall Street Journal* and other newspapers were making references to a 'Minsky moment'. Minsky conferences, organized by the Levy Economics Institute, now attract the presidents of some of the Federal Reserve banks in the USA. All this action around Minsky has led to new editions of three of his books, which for a while could be found even in airport bookstores.

But the revival of alternative economic thinking does not stop there. It extends to all brands of heterodox economics (see Table 1.2), in particular Marxism and the French Regulation School, whose credibility has also been given a boost. Indeed, in their explanations of the crisis, there are substantial similarities between the writings of several post-Keynesians, notably those concerned with the study of a monetary production economy, and those of members of the French Regulation School (for instance Robert Boyer, Jacques Mazier, Dominique Plihon, Frédéric Lordon), the French Convention School (notably André Orléan and his remarkably prescient 1999 book), and some Keynesian Marxians who share close ties with the post-Keynesian school (such as James Crotty and Gerald Epstein in the USA or Gérard Duménil and Dominique Lévy in France). A major reason why these authors of various backgrounds and traditions have a common understanding of the events of the last decade is that they hold a common view of what economics is all about.

Readers may have noted that Institutionalists and behavioural economists are listed in Table 1.2 with the additional 'old' qualifier. This is because, as we shall see, some of behavioural economics remains within the neoclassical tradition, while new Institutionalism is a variant of neoclassical economics. As a result, old Institutionalism and old behavioural economics could equally be called original Institutionalism and original behavioural economics. The labour economists of the old Institutionalist tradition helped to create a new field – industrial relations – which is still impervious to neoclassical influence (Kaufman, 2010a). Neo-Austrians carry a question mark, because, as we shall see in the next section, although they consider themselves as heterodox economists, they do not endorse the key features common to the other heterodox schools. The appearance of agent-based modelling, of which there are several brands, in this list may surprise some readers. But after discussion with some of these practitioners, I have come to the conclusion that several agent-based modellers share many of the criticisms that post-Keynesians would address to neoclassical economists, and that the key features of their models are genuinely of a heterodox nature. As to system dynamics, Michael Radzicki (2008, p. 157) has persuasively argued that system dynamicists 'view the world through the same lens' as Institutionalists and post-Keynesian economists, and there are certainly tight links between the feedback loops and the stock–flow analysis promoted by system dynamicists and the stock–flow coherent analysis advocated by some post-Keynesians. In a recent article, based on nearly 20 criteria, Earl and Peng (2012) attempt to assess to what extent eight of these schools, plus new Institutionalism and new behavioural economics, are more heterodox than orthodox.

1.2.3 Dissenters and Heterodox Economists

One problem in distinguishing heterodox and orthodox economics is that some orthodox economists, in particular New Keynesian economists such as Krugman and Stiglitz, are very critical of their orthodox colleagues. Some of their critiques are not dissimilar to those put forward by heterodox authors. Furthermore, sometimes the economic policies that they recommend are very similar to those that post-Keynesian economists advocate, albeit with less visibility. Thus one needs to make a further distinction, inspired by the proposals of Roger Backhouse (2004), whose article is devoted to understanding the nuances between disagreement, controversies and dissent in economics.

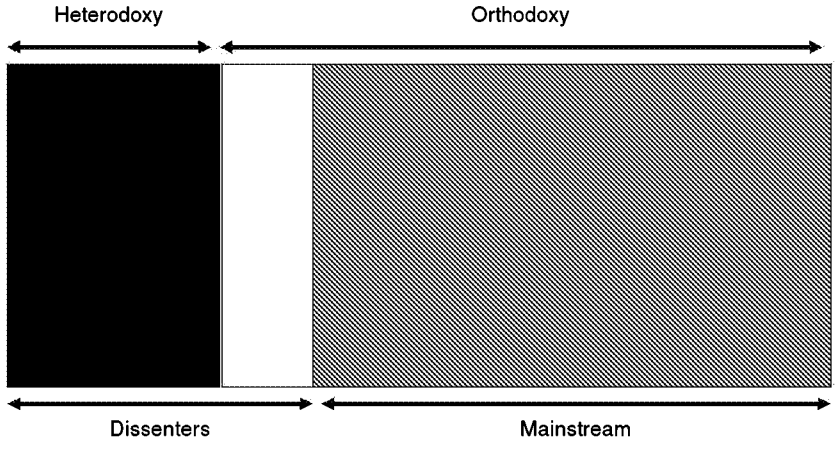

Figure 1.1 Orthodoxy, dissent and heterodoxy

Besides heterodoxy and orthodoxy, economists can be divided into two broad groups: the mainstream and the dissenters. The mainstream essentially corresponds to the textbook view. 'Its existence as a coherent intellectual whole is generally most strongly expressed in textbooks at the upper undergraduate and at the graduate levels' (Colander et al., 2007–08, p. 306). The dissenters, as argued by Backhouse (2004), are themselves subdivided into two additional groups: the orthodox dissenters and the heterodox dissenters. Those three groups are represented in Figure 1.1, with the heterodox dissenters on the left, the mainstream on the right, and the orthodox dissenters in between the other two groups. Schools of thought such as the post-Keynesians, the Marxians, the Radicals and the old Institutionalists are clearly heterodox dissenters. Orthodox dissenters include authors such as the Institutionalist Oliver Williamson.

In his paper on the nature of heterodox economics and neoclassical economics, Davis (2006, p. 27) does not use the terminology proposed by Backhouse, but I think that this is what he has in mind when he says that 'heterodox economics post-1980 is a complex structure, being composed of two broadly different kinds of heterodox work . . . : the traditional left heterodoxy and the "new heterodoxy" resulting from other science imports'. His 'traditional heterodoxy' is Backhouse's heterodox dissent, while his 'new heterodoxy' (later called 'mainstream heterodoxy' in Davis (2008, p. 359)) is orthodox dissent. Similarly, those that Colander et al. (2007–08, p. 309) call 'outside the mainstream heterodox economists' are Backhouse's heterodox dissenters, while their 'inside the mainstream heterodox economists' are Backhouse's orthodox dissenters. Lawson (2009b, pp. 93–114), without, however, using the terms orthodox dissent and heterodox dissent, but obviously being in agreement with such a nomenclature, explains at length why Davis's new heterodoxy is not part of the heterodox programme, and why heterodox dissenters are instead committed to the methodological project pursued by mainstream economists.

Frederic Lee (2009, p. 4) also utilizes a slightly different nomenclature, a more provocative one as it is akin to religion, an analogy that, nevertheless, may be quite adequate for economics, calling 'heretics' those that Backhouse would name orthodox dissenters, while the heterodox dissenters are named 'blasphemers'. Here Lee uses the term heretics in a

sense different from that of Keynes in the *General Theory*. In the context of economics, heretics believe in the mainstream and its methodology, but they advocate modifications to the doctrine. Thus they are not really a threat and are tolerated, the more so if they come from the upper ranks of the hierarchy. By contrast, the blasphemers are non-believers. They reject the core of the mainstream, deny its relevance and truth, and do not really wish to improve its doctrine. They have their own agenda, unrelated to that of the mainstream. They are apostates, who have apostatized from the mainstream, giving it up entirely. They are the heterodox dissenters.

Thus heterodox economists are dissenters in economics. But the concept of dissent is much broader than that of heterodoxy. Heterodox dissenters are unlikely to become part of the mainstream, and their position in the pecking order is likely to remain precarious. By contrast, orthodox dissenters may turn into heterodox dissenters or may become part of the mainstream, either from their own volition or because the bulk of the profession moved towards their propositions. Backhouse offers some examples of orthodox dissenters, such as the French Disequilibrium School in the late 1970s, with Malinvaud and Bénassy. Milton Friedman was certainly a dissenter in the 1950s, but then his views became mainstream in the late 1960s. Similarly, the new consensus model, now best known as the dynamic stochastic general equilibrium model (the DSGE model), based as it was on a central bank reaction function involving the rate of interest rather than the money supply stock, was certainly considered as orthodox dissent at its beginning, but it is now the bread and butter of central bank researchers. Keynes himself, with the publication of the *General Theory* in 1936, was most probably perceived as an orthodox dissenter. As Herbert Simon (1997, p. 14) says, 'without the acceptance of the marginalist methods of thought, *The General Theory* would not have had the enormous and relative quick impact that it had on the thinking of mainstream economists'. This, by the way, raises a problem mentioned by Wladimir Andreff (1996) and by Earl and Peng (2012, p. 466): what if some heterodox dissenting stances were to become the most accepted paradigm? Could we still call them heterodox views? This is a somewhat rhetorical question, because, as pointed out earlier, it is a rather unlikely possibility now.

Other examples of orthodox dissent may include the work of authors as diverse as Robert Shiller, Richard Thaler, Colin Camerer, Harvey Leibenstein, Dan Rodrick, Herbert Simon, Ronald Coase, Wassily Leontief, Amartya Sen, George Akerlof, Paul Krugman, Joseph Stiglitz, Oliver Williamson or William Vickrey, the last nine economists having won the Nobel Prize in economics. Some have explicitly stated that they certainly did not want to rock the mainstream boat. For instance Thaler, the behavioural economist, is cited as saying that he did not want 'to lay waste to the entire mathematical, hard science apparatus that economists had built after World War II' (Fox, 2009, p. 187). Others, like Simon and Vickrey, have turned towards heterodox economics.

1.3 PRESUPPOSITIONS OF THE HETERODOX AND ORTHODOX PARADIGMS

So far I have claimed that there exist two communities of economists, heterodox and orthodox. The philosophers of science would call these research programmes (Imre Lakatos) 'research traditions' (Laudan) or 'paradigms' (Kuhn). Both research pro-

grammes extend through all fields and domains of economics; within each field, each encompasses several theories or schools of thought; each theory entertains several models. Our task in this section is to identify the essentials of each of the two broad research programmes, what Leijonhufvud has called the presuppositions of a research tradition, that is, the set of commonly held metaphysical beliefs, which cannot be put in a formal form, and which are anterior to the constitution of the assumptions that rule specific models. These are the essentials of the research programme or their 'meta-axioms'. They are 'grand generalities somewhat in the nature of cosmological beliefs' (Leijonhufvud, 1976, p. 72). Tony Lawson (2006) expresses this by saying that orthodox and heterodox economists do not share the same 'ontology': they disagree on their pre-conceptions of the nature and structure of reality.

Although Marxians, Institutionalists, Structuralists, Evolutionarists, Socio-economists, the French Circuit and Regulation schools, Sraffians and post-Keynesians may have substantially different opinions on various topics, such as the theory of value or the relevance of long-period analysis, I believe they hold the same metaphysical beliefs, prior to the elements constituting the hard core of their respective theories. Similarly, Lawson (2009b, p. 123) argues that these various heterodox schools of thought hold a common implicit conception of social phenomena, and that to a large extent they can be mostly identified through the kind of questions that they ask, so that 'we can view the separate traditions as divisions of labour'. These heterodox economists are thus linked by something more than their dislike of neoclassical economics. If they dislike orthodox economic theory it is precisely because orthodox economics exudes presuppositions that are contrary to the metaphysical beliefs held by these economists. This is why they have become heterodox economists.

Showing that heterodox economists hold presuppositions that are different from those entertained in the mainstream will help to answer the main objection to the conception of an alternative to neoclassical economics. Mainstream economists rarely understand why any economist would want to work outside the framework of neoclassical economics. It is often believed that neoclassical theory offers the only viable approach to economic problems. Those who are not within the orthodoxy are said to be on the fringes of science. What is argued here is that there are two research traditions in economics, each with its own presuppositions, and that one cannot be called more scientific than the other, even though the orthodox research programme is much more in awe of formalization.

Several economists have attempted to identify what makes heterodox economics distinct from orthodox or neoclassical economics. This is not an easy task, as Andrew Mearman (2012a) reminds us. Over the last 20 years or so, I have argued that heterodoxy and orthodoxy can be distinguished through four pairs of presuppositions, to which I have recently added a fifth one; all these can be found in Table 1.3. These five pairs result from my understanding of the two research programmes as well as from my reading of fellow economists interested in methodology, some of which, like Malcolm Sawyer (1989, pp. 18–21) and Mauro Baranzini and Roberto Scazzieri (1986, pp. 30–47), have suggested the same essentials. More recently, Mark Setterfield (2003) has endorsed these same presuppositions. I am not claiming that Table 1.3 represents the absolute truth, or that the pairs could not be rearranged, or new pairs put forward. I am only alleging that it is a convenient way to describe two broad visions of economics. Indeed, in trying, *a posteriori*, to verify if these presuppositions also applied to feminist and ecological economics,

Table 1.3 Presuppositions of the heterodox and orthodox research programmes

Presupposition	Heterodox schools	Orthodox schools
Epistemology/Ontology	Realism	Instrumentalism
Rationality	Environment-consistent rationality, satisficing agent	Hyper model-consistent rationality, optimizing agent
Method	Holism, organicism	Individualism, atomicism
Economic core	Production, growth, abundance	Exchange, allocation, scarcity
Political core	Regulated markets	Unfettered markets

two fields about which I knew little, I discovered that these five presuppositions did a good job of describing these two traditions (Lavoie, 2003a; 2009a).

1.3.1 Instrumentalism versus Realism

Most outsiders would agree that 'economics should be about economic reality and should be demonstrably relevant to it' (Werner, 2005, p. 17). Some economic methodologists, most notably Lawson (1994), argue that the only crucial presupposition is that of realism. He argues that all the other presuppositions follow from it. This may be so, although Lawson himself seems to pay quite a bit of attention to another presupposition, atomicism, but I think it is worth spelling out all the others.

Realism and realisticness

Lawson, notably through his Cambridge Realist Workshop, has had a remarkable impact on economic methodologists in promoting the discussion of ontology, that is, the examination of the nature and existence of the phenomena under consideration, and a number of post-Keynesian economists have given explicit support to his philosophical views of transcendental realism and critical realism (e.g. Arestis, 1996; Dunn, 2008; Fontana, 2009). As Patrick Baert (1996, p. 513) has ironically written, 'a spectre is haunting the philosophy of the social sciences. It is called "critical realism", and, needless to say, it is spreading steadily throughout the academic community.' Indeed, several books in economics have been devoted to studies in critical realism and a full book has been devoted to a debate between Lawson and his critics on the topic of ontology and economics. In this book, Fullbrook (2009, p. 1) claims that Lawson's major point is 'that success in science depends on finding and using methods, including modes of reasoning, appropriate to the nature of the phenomena'. Lawson believes that, although some stylized facts can be identified, a constant conjunction of events rarely occurs when analysing economic and social phenomena. As a result, the researcher must go beyond surface phenomena and find the true structures and causal mechanisms that explain the observed phenomena, by going to the essential rather than the most general. This, according to Lawson, is not what orthodox economists do.

If this sounds overly philosophical and vague – after all, it seems to me that everyone tries to go beneath surface phenomena – one may prefer instead to refer to the more down-to-earth concept of realisticness, with which I am more at ease. According to Muskali Mäki (1989, p. 179), when talking about the assumptions of a theory, 'we should

not talk about "realism" of assumptions and theories, but rather about their realisticness ... "unrealisticness" means being not about reality or observables, being about inessentials, being false, disconfirmed in tests, idealizing, exaggerating, oversimplified, implausible, practically irrelevant. Both realisticness and unrealisticness are properties of representations'. Lawson (2009c, p. 171) himself agrees with this distinction, saying that 'realisticness' applies to the properties of actual theories, and suggesting that one should not say that mainstream theories lack realism, but rather that they lack realisticness.

There are certainly strong indications that heterodox authors attach great importance to discussing and modelling the economy on the basis of realistic assumptions. Caldwell (1989, p. 55) assesses that the most damning criticism of post-Keynesians against neoclassical economics is that it lacks realism, or rather that it lacks 'realisticness', arguing further that post-Keynesians value explanation rather than prediction, a characterization that can certainly also be applied to Institutionalists, who emphasize the storytelling method. Similarly, Morris Altman (2006, p. xvi), an author closer to the radical branch of behavioural economics, claims that 'what is critical to behavioral economics is the appreciation of the significance for economic analysis of the realism of one's modelling assumptions in terms of their behavioral and institutional dimensions'. Thus, as Lee (1994) says, theories should be 'empirically grounded'. And indeed, as Smithin (2009, p. 56) concurs, the 'emphasis on the realism of assumptions in macroeconomic models seems to be analogous to Lee's ... concept of grounded theory'.

Instrumentalism at work

By contrast, take the neoclassical presupposition of instrumentalism, defended by Milton Friedman (1953) in his famous essay on methodology. Instrumentalism is the belief that the truth of a theoretical statement is irrelevant. An assumption is sound when it allows precise predictions, in particular when it can help to find and calculate the value of an equilibrium position. Whether the assumption is realistic or not is irrelevant, and Friedman (1953, p. 14) even went so far as to argue that assumptions based on 'wildly inaccurate descriptive representations of reality' were more useful; ultimately, whether the prediction is accurate or not is also irrelevant (cf. Taleb, 2007, p. 280). The stance taken by Friedman, which Nathan Berg and Gerd Gigerenzer (2010) call 'Friedman's as if doctrine', gave neoclassical economists the freedom to start from wildly unrealistic foundations. Robert Lucas (1981, p. 270), the founder of new classical economics, continued this tradition, claiming that 'insistence on the "realism" of an economic model subverts its potential usefulness in thinking about reality', adding that good models had to 'necessarily be artificial, abstract, patently unreal'.

By contrast, for (most) heterodox economists, a theory cannot be correct unless it starts from realist or realistic hypotheses, although it is recognized that assumptions are always abstractions and simplifications, and hence means to avoid cluttering a model with insignificant details. However, one should not start from assumptions that are descriptively false. The structure of a model cannot be built on foundations describing an imaginary or idealized economy. What is needed is an abstraction, not a fiction. Many heterodox economists would agree with Nicholas Georgescu-Roegen's (1971, p. 319) statement that 'when abstraction loses touch with reality, science becomes dogmatism'. The heterodox desire for realistic assumptions can be related to the fact that heterodox economists attach great importance to the storytelling method. An explanation has to be

provided, usually associated with some causal mechanism, that goes beyond such simple claims as that supply or demand has shifted; therefore this or that has happened. Thus one has to go beyond surface phenomena, and examine the mechanisms or the structures that cause what is happening. What is required is an explanation of the causal processes at work. Obviously, if a story has to be told and explanations provided, one needs to pay more attention and scrutinize the starting assumptions, which need to be appropriately descriptive.

Heterodox economists are not interested in the counterfactual economies that have been the playground of researchers in general equilibrium theory such as Arrow, Debreu or Frank Hahn, and that are now the subject of state-of-the-art orthodox models. For instance, when Bliss (1975, p. 301) presents the intertemporal general equilibrium model, which is the twin of the now popular DSGE model, he claims that 'of course, that model does not serve to represent reality and that is not its purpose'. Hahn has made many similar claims regarding the irrelevance of his work for public policy. Unfortunately current neoclassical researchers do not appear to get this, as they maintain that variations on the Ramsey model, first designed to describe a planned economy, ought to be good enough to study capitalism.

Take as another example of neoclassical instrumentalism the so-called 'Gaussian copula function' that was used by financial engineers to model default correlation in the transformation of asset-backed securities (ABS) and the pricing of collaterized debt obligations (CDO), which were made up of tranches of ABS, and in the pricing of CDO-squared, which were made up of tranches of CDO (Salmon, 2009). As we know, these financial derivatives arising from securitized loans were at the core of the financial crisis. Instead of relying on the records of borrowers to assemble historical data about actual defaults to assess correlation and risk, finance economists looked instead at the evolution of the prices of credit default swaps (CDS) – the asset-backed securities index (ABX) –assuming that CDS markets can price default risk correctly. Another instance is the value-at-risk models that were based on high-frequency and very precise calibrated estimates; but they relied on samples that did not include catastrophic events and that were based on a particularly low volatility of the stock market, as pointed out by Boyer et al. (2005, p. 145). In those two instances we have instrumentalism in action. What counts most is to get a number. Whether that number is reliable is not so important. The fact that previous financial crises in the past, such as the Tequila crisis, have shown that markets do not necessarily correctly price risk is put aside; the fact that CDS markets had only been in existence for a short time, that is, only since housing prices had been on the rise, did not seem to matter either; the fact that the convenient normal distribution has long been shown by physicist Benoît Mandelbrot not to describe financial data, by under-representing extreme events, also seemed of little importance; and finally, the fact that the (recent) past is no guarantee of an uncertain future was also ignored.

Instrumentalism, in contradistinction to realism, implies, as Paul Davidson (1984, p. 572) would put it, that it is better 'to be precisely wrong rather than roughly right'. By contrast, post-Keynesians 'believe it is better to develop a model which emphasizes the special characteristics of the economic world in which we live than to continually refine and polish a beautifully precise, but irrelevant model' (ibid., p. 574). Nassim Taleb (2007, pp. 284–5) says nearly the same thing, arguing that heterodox economists 'want to be broadly right rather than precisely wrong', seeking 'to be approximately right

across a broad set of eventualities' instead of being 'perfectly right in a narrow model, under precise assumptions'. Storytelling puts less emphasis on formalistic methods. For instance, Lawson (2009a) has argued, rightfully so it seems, that one could certainly put forward an adequate explanation of the Global Financial Crisis while omitting formal economics altogether.

Some may object that there is a good deal of realisticness in many mainstream models, in particular in the models put forth by New Keynesian authors. This can certainly be granted. Realisticness is integrated into the auxiliary hypotheses – asymmetric information, credit rationing, liquidity-constrained households, sticky prices. Some realism is also now being added to the state-of-the-art DSGE models, by introducing frictions in the financial system and by assuming the existence of banks (!). The main assumptions, however, based on an all-knowing agent attempting to maximize some utility function for eternity, defy common sense, as argued below. Orthodox economists, even many dissident orthodox authors, dress up their unrealistic foundations with realistic auxiliary hypotheses. The question, then, is whether it is possible to arrive at a model that describes the real world adequately by adding auxiliary realistic characteristics.

Nicholas Kaldor (1966, p. 310), for one, thought it was not possible: in an attempt to relieve the programme of its unrealistic foundations, the whole edifice would crumble. As he put it, removing the scaffolding 'is sufficient to cause the whole structure to collapse like a pack of cards'. Indeed, Kaldor thought that this defect of neoclassical theory was so important that he repeated the same argument six years later.

> The process of removing the 'scaffolding', as the saying goes – in other words of *relaxing* the unreal basic assumptions – has not yet started. Indeed the scaffolding gets thicker and more impenetrable with every successive reformulation of the theory, with a growing uncertainty as to whether there is a solid building underneath. (Kaldor, 1972, p. 1239)

This can certainly be observed of neoclassical macroeconomics, which strives on ever more extraordinary and unrealistic foundations. The same can also be said about new behavioural economists: while they intend to relax the most unrealistic features of the neoclassical model of the rational man, such as the belief that agents have access to all information at no cost, they are being forced to superpose other, even more unrealistic assumptions, as their utility-maximizing agents now need extraordinary computational abilities to handle their new information-costly environment.

1.3.2 Model-consistent Rationality versus Environment-consistent Rationality

Closely related to realism and instrumentalism is the kind of rationality that is assumed in our economic models. Following the rational expectations revolution, the only type of rationality admissible to mainstream macroeconomists is model-consistent rationality, which we can also call unbounded rationality. Not only are economic agents assumed to know all contingencies, from now to eternity; since the rational expectations revolution they are further assumed to know how the world operates. Despite the fact that economists have been arguing with each other for centuries about the proper representation of the economy, modellers must assume that there is a single accepted model of the economy out there and that everyone agrees about how it functions. This is the RARE assumption of new consensus macroeconomics, as noted earlier. As Philip Mirowski

(2011, p. 503) puts it, 'orthodox macroeconomists came to conflate "being rational" with thinking like an orthodox economist. What this implied was that agents knew the one and only "true model" of the economy (which conveniently was stipulated as identical with neoclassical microeconomics)'.

It is true that behavioural economists have tried to modify this by introducing heterogeneous agents into the realm of expectations, traders and chartists who rely on trends, alongside presumed truly rational investors who still look at the fundamentals, but they have made little headway in the more reputable journals. Most of the behavioural economists who have published in reputable journals agree with the as-if Friedmanian doctrine and argue 'that the goal of their models is not to provide a veridical description of the actual decision processes being used by economic agents, but to predict the outcome' (Berg and Gigerenzer, 2010, p. 159). Still, in my view, the more radical segment of behavioural economics – the group still devoted to a description of actual decision-making rather than to the study of biases relative to neoclassical rationality – must be classified under the umbrella of heterodox economics. This other group deals with what I call 'environment-consistent rationality'.

Economic agents, on this view, live in an environment either devoid of relevant information or characterized by an overload of unreliable information, and hence must follow some simple rules to make decisions without wasting too much time and resources. Agents attempt to achieve norms and will modify their short-run behaviour when these norms are not satisfied, thus reacting to what they perceive as disequilibria. In the long run, norms will be modified if they are continuously under- or over-achieved, or if changes in society at large have an impact on what is considered normal in the economic field. A good example of this is the gradual acceptance of the claim that a 'normal' return on equity, the famous ROE norm imposed by financial investors to managers, ought to be no less than 15 per cent, although this norm is incompatible with average macroeconomic conditions in Western economies, as has been demonstrated by Plihon (2002). More about reasonable rationality will be said in Chapter 2.

1.3.3 Atomicism versus Holism

The third pair of presuppositions concerns methodology: methodological individualism or atomicism versus holism or organicism. For Lawson, the conception of an economy based on isolated atoms is an essential feature of the lack of realism of orthodox theories. Atomicism, as practised by neoclassical economists, has a long history. Voltaire, in his famous novel, *Candide*, was already making fun through his Pangloss character of those who, like Leibniz, thought that non-interacting 'monads' ensure that we live in the best of all possible worlds. There is certainly a great deal of similarity with the neoclassical claim that all analysis must start at the level of the isolated optimizing individual and that competition between free atomistic firms will generate a Pareto optimum. Similarly, uncertainty in neoclassical analysis is often represented in terms of subatomic particles being subjected to a random Brownian motion. Within the framework of the subprime crisis, atomism is exemplified by the long-held belief that risk analysis could focus exclusively on individual firms and banks, without taking into account the macroeconomic conditions and implications, that is, by ignoring systemic risk. Another example would involve consumer behaviour: neoclassical authors assume that consumption expen-