1 *Prosperity Lost*

> I think all of us here today would acknowledge that we've lost that sense of shared prosperity.
>
> Barack Obama, 27 March 2008[1]

Prosperity is about things going well for us: in accordance with our hopes and expectations.[2] 'How's life?' we ask each other. 'How are things?' Everyday exchanges convey more than casual greeting. They reveal a mutual fascination for each other's well-being. Wanting things to go well is a common human concern.

It's understood that this sense of things going well includes some notion of continuity. We aren't inclined to think that life is going swimmingly, if we confidently expect things to fall apart tomorrow. 'Yes, I'm fine, thanks. Filing for bankruptcy tomorrow.' Such a response wouldn't make sense. There is a natural tendency to care about the future.

There is a sense too in which individual prosperity is curtailed in the presence of social calamity. That things are going well for me personally is of little consolation if my family, my friends and my community are all in dire straits. My prosperity and the prosperity of those around me are intertwined. Sometimes inextricably.

Writ large, this shared concern translates itself into a vision of human progress. Prosperity speaks of the elimination of hunger and homelessness, an end to poverty and injustice, hopes for a secure and peaceful world. And this vision is important not just for

altruistic reasons but often too as reassurance that our own lives are meaningful. It brings with it a comforting sense that things are getting better on the whole – rather than worse – if not always for us then at least for those who come after us. A better society for our children. A fairer world. A place where those less fortunate will one day thrive. If I cannot believe this prospect is possible, then what can I believe? What sense can I make of my own life?

Prosperity in this sense is a shared vision. Echoes of it inhabit our daily rituals. Deliberations about it inform the political and social world. Hope for it lies at the heart of our lives.

So far so good. But how is this prospect to be attained? Without some realistic way of translating hope into reality, prosperity remains an illusion. The existence of a credible and robust mechanism for achieving prosperity matters. And this is more than just a question of the machinery of doing well. The legitimacy of the means to live well is part of the glue that keeps society together. Collective meaning is extinguished when hope is lost. Morality itself is threatened. Getting the mechanism right is vital.

One of the key messages of this book is that we're failing in that task. Our technologies, our economy and our social aspirations are all mis-aligned with any meaningful expression of prosperity. The vision of social progress that drives us – based on the continual expansion of material wants – is fundamentally untenable. And this failing is not a simple falling short from utopian ideals. It is much more basic. In pursuit of the good life today, we are systematically eroding the basis for well-being tomorrow. We stand in real danger of losing any prospect of a shared and lasting prosperity.

But this book isn't a rant against the failings of modernity. Nor is it a lament on the inevitability of the human condition. There are undoubtedly some immutable constraints on our prospects for a lasting prosperity. The existence of ecological limits to human activity maybe one of these. Aspects of human nature may turn out

to be another. Taking heed of these constraints is central to the spirit of this investigation.

The overriding aim of this book is to seek viable responses to the biggest dilemma of our times: reconciling our aspirations for the good life with the constraints of a finite planet. The analysis in the following pages is focused on finding a credible vision of what it means for human society to flourish in the context of ecological limits.

Prosperity as growth

At the heart of the book lies a very simple question. What can prosperity possibly look like in a finite world, with limited resources and a population expected to exceed 9 billion people within decades?[3] Do we have a decent vision of prosperity for such a world? Is this vision credible in the face of the available evidence about ecological limits? How do we go about turning vision into reality?

The prevailing response to these questions is to cast prosperity in economic terms and to call for continuing economic growth as the means to deliver it. Higher incomes mean increased choices, richer lives, an improved quality of life for those who benefit from them. That at least is the conventional wisdom.

This formula is cashed out (almost literally) as an increase in the gross domestic product (GDP) per capita. The GDP is broadly speaking a measure of 'economic activity' in a nation or region.[4] As we shall see later, there are good grounds to question whether such a crude measure is really sufficient. But for now it's a fair reflection of what is meant, in broad terms, by rising income. A rising per capita GDP, in this view, is equivalent to increasing prosperity.[5]

This is undoubtedly one of the reasons why GDP growth has been the single most important policy goal across the world for most of the last century. Such a response clearly still has an appealing logic for the world's poorest nations. A meaningful approach to

prosperity must certainly address the plight of the 1 billion people across the world who are living on less than $1 a day – half the price of a small cappuccino in Starbucks.[6]

But does the same logic really hold for the richer nations, where subsistence needs are largely met and further proliferation of consumer goods adds little to material comfort? How is it that with so much stuff already we still hunger for more? Might it not be better to halt the relentless pursuit of growth in the advanced economies and concentrate instead on sharing out the available resources more equitably?

In a world of finite resources, constrained by strict environmental limits, still characterized by 'islands of prosperity' within 'oceans of poverty',[7] are ever-increasing incomes for the already-rich really a legitimate focus for our continued hopes and expectations? Or is there perhaps some other path towards a more sustainable, a more equitable form of prosperity?

We'll come back time and again to this question and explore it from a variety of different perspectives. But it's worth making quite clear here that to many economists the very idea of prosperity without growth is a complete anathema. Growth in the GDP is taken for granted. Reams and reams have been written about what it's based on, who's best at making it happen and what to do when it stops happening. Far less is written about why we might want it in the first place.

But the relentless quest for more that lurks within the conventional view of prosperity is not without some claim to intellectual foundation. In short, the reasoning goes something like this. The GDP counts the economic value of goods and services exchanged on the market. If we're spending our money on more and more commodities it's because we value them. We wouldn't value them if they weren't at the same time improving our lives. Hence a continually increasing per capita GDP is a reasonable proxy for a rising prosperity.

But this conclusion is odd precisely because prosperity isn't obviously synonymous with income or wealth. Rising prosperity isn't self-evidently the same thing as economic growth. More isn't necessarily better. Until quite recently, prosperity was not cast specifically in terms of money at all; it was simply the opposite of adversity or affliction.[8] The concept of economic prosperity – and the elision of rising prosperity with economic growth – is a modern construction. And it's a construction that has already come under considerable criticism.

Amongst the charges against it is that growth has delivered its benefits, at best, unequally. A fifth of the world's population earns just 2 per cent of global income. The richest 20 per cent by contrast earn 74 per cent of the world's income. Huge disparities – real differences in prosperity by anyone's standards – characterize the difference between rich and poor. Such disparities are unacceptable from a humanitarian point of view. They also generate rising social tensions: real hardships in the most disadvantaged communities which have a spill-over effect on society as a whole.[9]

Even within the advanced economies, inequality is higher than it was 20 years ago. While the rich got richer, middle-class incomes in western countries were stagnant in real terms long before the current recession. Far from raising the living standard for those who most needed it, growth let much of the world's population down over the last 50 years. Wealth trickled up to the lucky few.

Fairness (or the lack of it) is only one of the reasons to question the conventional formula for achieving prosperity. Another is the growing recognition that, beyond a certain point at least, continued pursuit of economic growth doesn't appear to advance and may even impede human happiness. Talk of a growing 'social recession' in advanced economies has accompanied the relative economic success of the last decade.[10]

Finally, and perhaps most obviously, any credible vision of prosperity has to address the question of limits. This is particularly true

of a vision based on growth. How – and for how long – is continued growth possible without coming up against the ecological limits of a finite planet?

The question of limits

Concern over limits is as old as the hills. But its recent history can be thought of as having three distinct phases. Late in the 18th century, the Parson Thomas Robert Malthus raised it in his enormously influential *Essay on Population*. In the 1970s, it was raised again in a different form in the Club of Rome's *Limits to Growth* report. The third phase is the one we find ourselves in now: concerns over climate change and 'peak oil'[11] compete for attention with fears of economic collapse.

Raising the spectre of Malthus is dangerous, of course. He's roundly condemned for all sorts of reasons. Some of them – such as his jaundiced view of poverty and fierce opposition to the Poor Laws – quite valid. It was Malthus, after all, who gave economics the reputation for being a 'dismal science'. So it might as well be said upfront that Malthus was wrong. At least in so far as the particulars of his claims.[12]

His argument (massively condensed) was that growth in population always runs faster than growth in the resources available to feed and shelter people. So sooner or later the population expands beyond the 'means of subsistence' and some people – the poorest inevitably – will suffer.

That he failed to see (and even defended) the structural inequalities that kept people locked into poverty is one of Malthus' failings. But he was also wrong about the maths. The global population is now more than six times the size it was in Malthus' day. And this is partly because the means of subsistence expanded considerably faster than population did – completely counter to Malthus' premise. The global economy is 68 times bigger than it was in 1800.[13]

He missed completely the longer term implications of the massive technological changes already taking place around him. Nor could he have foreseen that with development would come a considerable slowing down of the rate of population increase. Today, increasing affluence is driving resource throughput faster than population growth is.[14] The means of subsistence more than kept pace with people's propensity to reproduce, largely because of the easy availability of cheap fossil fuels. And yet the massive increases in resource use associated with a global economy almost 70 times bigger than the one in his day, might still have given Parson Malthus pause for thought. How could such increases possibly continue?

That was the question asked by a group of scientists commissioned by the Club of Rome in the 1970s to explore the question of ecological limits. Donella and Dennis Meadows and their colleagues looked at exponential growth in resource use, population and economic activity since the industrial revolution and asked themselves a very simple question. How could these kinds of curves (Figure 1.1(a)) possibly continue in the way conventional economic projections supposed they would?

They knew that natural ecosystems obeyed very different kinds of curve (Figure 1.1(b)). Could it be that the massive advances in human progress were after all nothing more than the steep early growth associated with the left hand side of a bell-shaped curve? And that inevitably, just like any other ecosystem that exceeds its resource base, we were heading for collapse?

The Meadows argued that resource scarcities would push prices up and slow down the possibilities for future growth. Eventually, if material throughput wasn't curtailed, the resource base itself would collapse and with it the potential for continued economic activity – at least, at anything like the scale anticipated by the optimists.

Collecting together as much data as they could find on resource extraction rates and available reserves, they set themselves the task

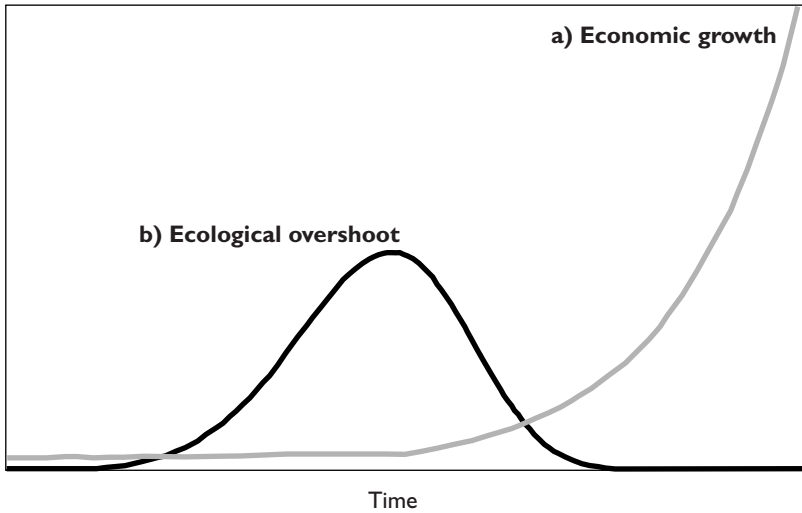

Figure 1.1 Growth curves for economic and ecological systems
Source: Author

of figuring out when the turning points would arrive – the points at which real scarcity might begin to bite.

As it turned out, and as they themselves were later to admit, they also got it wrong. But not by anything like as much as Malthus got it wrong. Back in the 1970s, the Meadows expected to see significant resource scarcities before the new Millennium. That didn't happen. Remember this was almost 40 years ago when basic data on natural resources were even scarcer than they are today. But the prospect of scarcity wasn't far behind their expectations.[15]

Most significantly, the peak oil debate had already emerged as a fiercely contentious issue by the year 2000. The 'peak-ists' argued that the peak in oil production was only a matter of years away, possibly already on us. Their opponents pointed to the massive reserves still lying in the tar sands and oil shales. Getting the oil out

might be costly and environmentally damaging, but absolute scarcity was still a long way away, claimed the optimists.

Meanwhile the price of oil rose steadily. Oil price hikes had already shown they have the potential to destabilize the global economy and threaten basic securities. In July 2008 oil prices reached $147 a barrel (Figure 1.2). Though they fell sharply in the following months, the threat of peak oil hasn't gone away. The rising trend had returned by early 2009.

Even the International Energy Agency (IEA) now suggests that the 'peak' could arrive as early as 2020. Other commentators believe it could be even sooner. Oil will not disappear beyond that peak. But it will be scarcer and more costly to extract. The era of cheap oil would to all intents and purposes be gone and the economics of energy would be irrevocably altered as a result.[16]

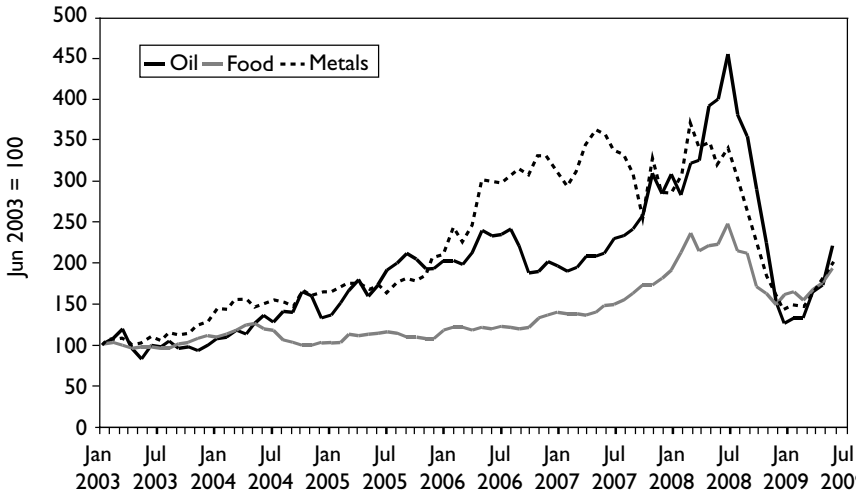

Figure 1.2 Global commodity prices: January 2003–July 2009[17]

Source: Drawn by the author from data in note 17.

Oil is not the only commodity for which resource scarcity will be an issue within decades. Food prices also rose sharply in the year to July 2008, sparking riots on the streets in some countries. Beyond the spike, the underlying trend appears to be rising once again (Figure 1.2). Productive land, as Malthus himself recognized, is the ultimate resource when it comes to basic subsistence. Conflicts over land use, particularly related to the use of land for growing bio-fuels, were certainly one of the factors pushing food prices up through 2008. No-one imagines these conflicts will become easier over time.

The trend in mineral prices has been rising too. This isn't surprising. Demand is growing and even at current extraction rates, a number of important minerals measure their time to exhaustion in decades rather than centuries. As extraction rates increase, the horizon of scarcity shortens.

If the whole world consumed resources at only half the rate the US does, for example, copper, tin, silver, chromium, zinc and a number of other 'strategic minerals' would be depleted in less than four decades. If everyone consumed at the same rate the US does today, the time horizon would be less than 20 years. Some rare earth metals will be exhausted in a decade even at current global consumption rates.[18]

All kinds of factors were at play during the commodity price 'bubble' of 2008. Some of them were just about short-term policy. Everyone agrees that it's difficult to glean much about real scarcity from short-run price fluctuations. This fact is seized on by optimists wanting to downplay the question of resource scarcity. But it's also worrying that commodity prices are just too volatile to offer reliable information about imminent scarcity. The threat of scarcity was enough to send them rocketing. They were equally prone to collapse in the face of recession. Through both peak and trough, the underlying physical resource base moved inexorably towards exhaustion. The market is just too self-obsessed to measure this.

As an economist commented to me in the middle of the credit crisis: 'we didn't get the recession that many economists, looking at the commodity bubble, thought we'd get, the one driven by high resource prices'. But one thing is for sure: that recession is coming. Sooner or later. And when that happens, the price impact will be no less shocking than it was during 2008. Its impact on the economy will be devastating.

This third phase of the limits debate is different from the last two. Resource scarcity – the problem of 'sources' in the language of environmental economists – is only part of the concern. The debate is driven even more strongly by the problem of 'sinks' – the capacity of the planet to 'assimilate' the environmental impacts of economic activity. 'Even before we run out of oil,' explains ecologist Bill McKibben, 'we're running out of planet.'[19]

Climate change is one of these sink problems. It's brought about by the accumulation of greenhouse gases in the atmosphere – accelerated by human activities, especially the burning of fossil fuels. The ability of the climate to assimilate these emissions without incurring 'dangerous' climate change is fast running out.

Brought to the world's attention in the late 1980s by climate scientist James Hansen and others, climate change has risen up the political agenda inexorably over the last two decades. Its visibility was given a massive boost by the influential Stern Review published in 2006. A former World Bank economist, Nicholas Stern was asked to lead a review of the economics of climate change for the UK Treasury. The review concluded that a small early hit on GDP (perhaps as low as 1 per cent of GDP) would allow us to avoid a much bigger hit (perhaps as high as 20 per cent of GDP) later on.[20]

It's telling that it took an economist commissioned by a government treasury to alert the world to things climate scientists – most notably the Intergovernmental Panel on Climate Change (IPCC) – had been saying for years. This is partly a testament to the power of economists in the policy world. But the impact of the Stern report

was also due to the seductive nature of its message. Climate change can be fixed, it said, and we'll barely notice the difference. Economic growth can go on more or less as usual.

We'll have occasion to look at that message a bit more closely in what follows. The history of climate policy certainly suggests some caution in believing things will be that easy. The Kyoto Protocol committed the advanced economies to greenhouse gas emission reductions equivalent to about 5 per cent over 1990 levels by 2010. But things haven't worked out that well. Globally, emissions have risen by 40 per cent since 1990.

In the meantime, the science itself has moved on. The Stern Review took as its target the task of stabilizing carbon emissions in the atmosphere at 550 parts per million (ppm).[21] Most scientists – and Stern himself – now accept that that target won't prevent dangerous anthropogenic climate change. The IPCC's Fourth Assessment Report argues that a 450 ppm target will be needed if climate change is to be restricted to an average global temperature increase of 2°C.[22] Achieving that target could mean reducing global emissions by up to 85 per cent over 1990 levels by 2050.[23]

Two articles published in the journal *Nature* in April 2009 challenge even that conclusion. The authors argue that what matters is the total greenhouse gas budget we allow ourselves over the period to 2050. Global atmospheric concentrations are already at 435 ppm. And if we want a 75 per cent chance of staying below 2°C, the global economy can only afford to emit a total of 1 thousand billion tonnes of carbon dioxide (CO_2) between the year 2000 and the year 2050. Crucially, they show that by 2008 we had already used up a third of this budget. Staying within the budget is going to be more demanding even than existing 450 ppm stabilization scenarios suggest.[24]

The message from all this is a profoundly uncomfortable one. Dangerous climate change is a matter of decades away. And we're

using up the climate 'slack' too quickly. It may take decades to transform our energy systems. And we have barely started on that task. As the science improves it becomes clearer that a warming world may pose the gravest threat to survival we face. Though it came late to the party, the climate may just turn out to be the mother of all limits.

Beyond the limits

This brief sketch of ecological limits does no justice at all to the accumulating wealth of understanding about resource scarcity or climate change. It hasn't even touched on questions of rapid deforestation, historically unprecedented biodiversity loss, the collapse of fish stocks, water scarcity or the pollution of soil and water supplies. Interested readers must go elsewhere for detailed discussions of these issues.[25]

In a sense, the details are not the point. Nobody seriously disagrees with the assessment of impacts. It's now widely acknowledged, for example, that an estimated 60 per cent of the world's ecosystem services have been degraded or over-used since the mid-20th century.[26]

During the same period of time the global economy has grown more than 5 times. If it continues to grow at the same rate, it will be 80 times bigger in 2100 than it was in 1950.[27] This extraordinary ramping up of global economic activity has no historical precedent. It's totally at odds with our scientific knowledge of the finite resource base and the fragile ecology on which we depend for survival.

A world in which things simply go on as usual is already inconceivable. But what about a world in which an estimated 9 billion people all achieve the level of affluence expected in the OECD nations?[28] Such an economy would need to be 15 times the size of today's economy (75 times what it was in 1950) by 2050 and 40

times bigger than today's economy (200 times bigger than in 1950) by the end of the century.[29] What on earth does such an economy look like? What does it run on? Does it really offer a credible vision for a shared and lasting prosperity?

For the most part, we avoid the stark reality of these numbers. The default assumption is that – financial crises aside – growth will continue indefinitely. Not just for the poorest countries, where a better quality of life is undeniably needed, but even for the richest nations where the cornucopia of material wealth adds little to happiness and is beginning to threaten the foundations of our well-being.

The reasons for this collective blindness are (as we shall see in more detail later) easy enough to find. The modern economy is structurally reliant on economic growth for its stability. When growth falters – as it did dramatically during the latter stages of 2008 – politicians panic. Businesses struggle to survive. People lose their jobs and sometimes their homes. A spiral of recession looms. Questioning growth is deemed to be the act of lunatics, idealists and revolutionaries.

But question it we must. The idea of a non-growing economy may be an anathema to an economist. But the idea of a continually growing economy is an anathema to an ecologist. No subsystem of a finite system can grow indefinitely, in physical terms. Economists have to be able to answer the question of how a continually growing economic system can fit within a finite ecological system.

The only possible response to this challenge is to suggest – as economists do – that growth in dollars is 'decoupled' from growth in physical throughputs and environmental impacts. But as we shall see more clearly in what follows, this hasn't so far achieved what's needed. There are no prospects for it doing so in the immediate future. And the sheer scale of decoupling required to meet the limits set out here (and to stay within them while the economy keeps on growing in perpetuity) staggers the imagination.

In short, we have no alternative but to question growth. The myth of growth has failed us. It has failed the 1 billion people who still attempt to live on half the price of a cup of coffee each day. It has failed the fragile ecological systems on which we depend for survival. It has failed, spectacularly, in its own terms, to provide economic stability and secure people's livelihoods.

Of course, if the current economic crisis really does indicate (as some predict) the end of an era of easy growth, at least for the advanced nations, then the concerns of this book are doubly relevant. Prosperity without growth is a very useful trick to have up your sleeve when the economy is faltering.

The uncomfortable reality is that we find ourselves faced with the imminent end of the era of cheap oil, the prospect of steadily rising commodity prices, the degradation of air, water and soil, conflicts over land use, resource use, water use, forestry and fishing rights, and the momentous challenge of stabilizing the global climate. And we face these tasks with an economy that is fundamentally broken, in desperate need of renewal.

In these circumstances, a return to business as usual is not an option. Prosperity for the few founded on ecological destruction and persistent social injustice is no foundation for a civilized society. Economic recovery is vital. Protecting people's jobs – and creating new ones – is absolutely essential. But we also stand in urgent need of a renewed sense of shared prosperity. A deeper commitment to justice in a finite world.

Delivering these goals may seem an unfamiliar or even incongruous task to policy in the modern age. The role of government has been framed so narrowly by material aims and hollowed out by a misguided vision of unbounded consumer freedoms. The concept of governance itself stands in urgent need of renewal.

But the economic crisis presents us with a unique opportunity to invest in change. To sweep away the short-term thinking that has plagued society for decades. To replace it with considered policy

capable of addressing the enormous challenge of delivering a lasting prosperity.

For at the end of the day prosperity goes beyond material pleasures. It transcends material concerns. It resides in the quality of our lives and in the health and happiness of our families. It is present in the strength of our relationships and our trust in the community. It is evidenced by our satisfaction at work and our sense of shared meaning and purpose. It hangs on our potential to participate fully in the life of society.

Prosperity consists in our ability to flourish as human beings – within the ecological limits of a finite planet. The challenge for our society is to create the conditions under which this is possible. It is the most urgent task of our times.