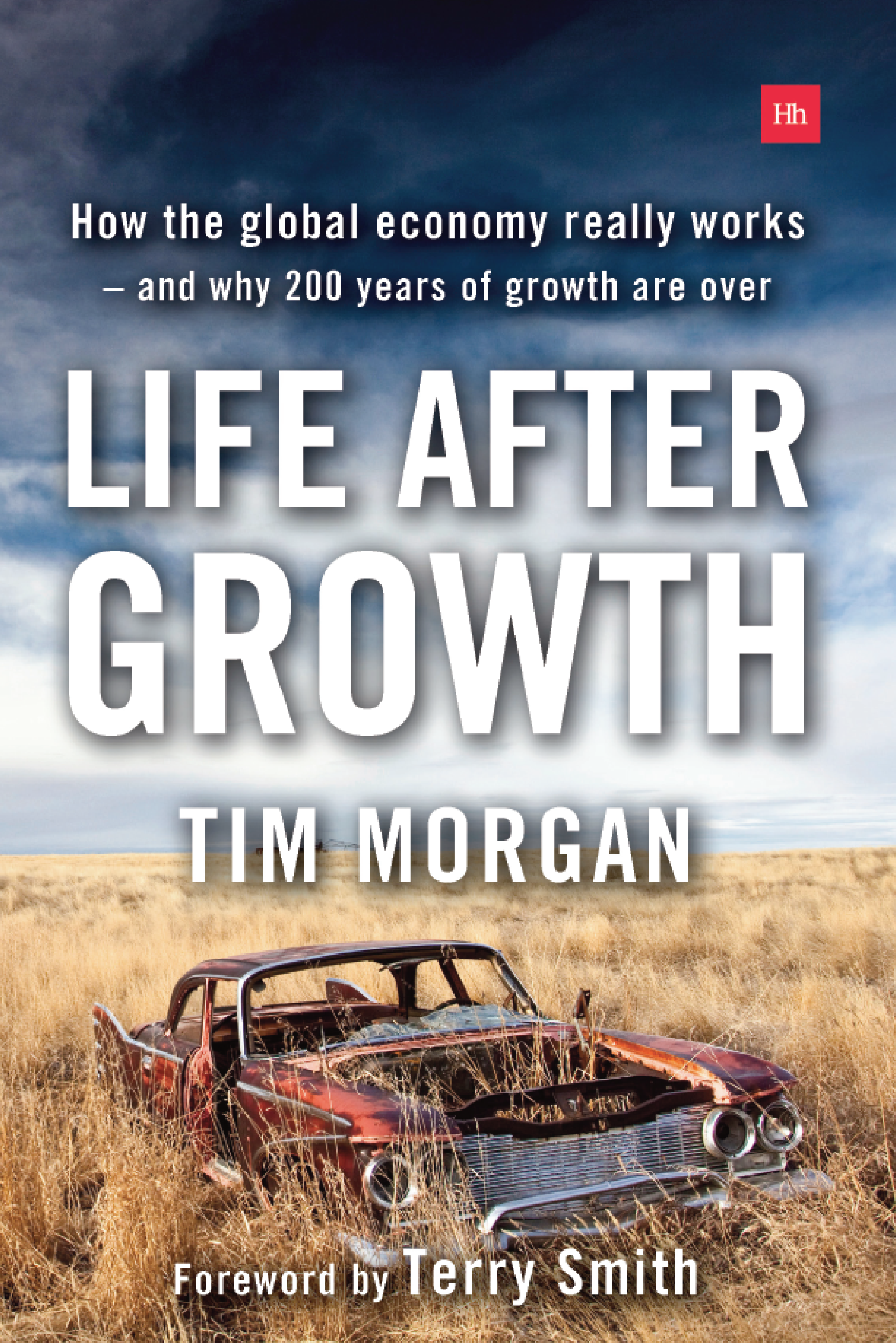
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How the global economy really works
– and why 200 years of growth are over
LIFE AFTER
GROWTH
TIM MORGAN
Foreword by Terry Smith

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LIFE AFTER GROWTH

HOW THE GLOBAL ECONOMY REALLY WORKS – AND WHY 200 YEARS OF GROWTH ARE OVER

TIM MORGAN

Hh

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For Eileen Morgan, with love and gratitude

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FOREWORD BY TERRY SMITH

I'M PLEASED TO HAVE BEEN asked to contribute the foreword to my colleague Dr Tim Morgan's book *Life After Growth*.

The fact that I have worked with Tim for much of the last 20 years across three different firms demonstrates that I hold him and his work in high regard. When I first met Tim and asked him to join UBS Phillips & Drew where I was head of research, he was an oil analyst, and the first analyst of that sector that I and many investors had encountered who could demystify it from what he called the 'Black Gold syndrome'. A lesson I learnt early on is that when Tim has something to say which is related to energy analysis, as this book is, it is wise to take notice.

In particular, his work is not one-dimensional, unlike that of many other so-called analysts and commentators. Just days before I wrote this foreword I was presenting at a breakfast briefing in London. In the session which followed my talk, a member of the audience whom I knew waxed lyrical about the boost which the British economy would receive from the exploitation of shale gas, a theme I have heard many times. I asked him if he thought the cost of extraction of shale gas had any bearing on its economic impact. In so doing, I was drawing on the concept of Energy Return on Energy Invested ('EROEI') which Tim has pioneered. To say that the concept went over his head would be an understatement. Too often people seem to take the view that an energy source is 'good' irrespective of its cost in terms of the energy required to generate it. Tim Morgan makes no such mistake.

This book brings together much of Tim's work from recent years but 'Part IV: Life After Growth' is new material. In reading it I was particularly struck by 'Chapter 13: Value Destruction – The Financial Economy'. It touches a chord. We seem to have conveniently forgotten the necessity for creative destruction in a market economy. The result is that we have 'zombie' consumers, companies, banks and even countries which are bust by any reasonable definition but are kept alive by the financial equivalent of life support. This approach to our problems can only end badly – it has been destruction tested in Japan over the past two decades with disastrous results.

As Tim himself points out, his work has often attracted hostility and rejection from commentators. Apart from the one-dimensional approach of many of the commentators who just wish to assume that, for example, any new energy source is good, Tim also faces the natural desire of many human beings to avoid bad news. All too often the response of commentators reminds me of the outburst by Colonel Nathan R. Jessup, portrayed by Jack Nicholson in the movie *A Few Good Men*. Whilst being cross-examined on the witness stand, Jessup is provoked by the lawyer's (Tom Cruise) repeated questioning about whether he ordered a "code red" – an illegal disciplinary action that resulted in a marine's death. To Cruise's statement, "I want the truth", he replies: "You can't handle the truth". Most people find the world which Tim's analysis points to utterly terrifying. Sadly, of course, their ostrich-like rejection of his work may condemn them to an even bleaker future because of the failure to recognise the problems and take appropriate action.

Dr Tim Morgan will at least have the satisfaction of knowing that he tried to raise the level of the debate. If I had one wish it would be that commentators, and policy makers, take his work as seriously as it deserves to be taken.

Terry Smith
July 2013

CONTENTS

LIST OF FIGURES

LIST OF TABLES

PART I

THE END OF AN ERA

CHAPTER 1

AN ECONOMY THAT HAS RUN OUT OF ROAD

THE CORNER THAT IS NEVER TURNED

IN 2008, AS THE GLOBAL BANKING system teetered on the brink of collapse, economic and business affairs dominated the media and the public debate in a way that was unprecedented, certainly since the crises of the 1970s and possibly since the grim days of the 1930s.

Five years on, the sense of immediate crisis has faded, and the general public seems to accept that the global economy is making a recovery, albeit a painfully slow one, from the most severe downturn of the post-1945 era. Governments around the world have fostered this reassuring sense of gradual recovery.

The reality, however, is that very little has changed, and many of the changes that have happened have been for the worse. The global economy has hardly grown at all since the dark days of the banking crisis and, far from the Western countries starting to emulate the successes of the emerging nations, the reverse may be happening, with economic growth in China, for instance, slowing markedly.

By far the most obvious problem is that the global economy is awash with debt. Reserve ratios (which measure the amount of shock-absorbing capital that banks can use to accommodate losses) remain painfully slender, and now governments themselves are so indebted that most could not repeat the banking rescues of 2008. Debts published by governments around the world hide the vastly larger forward commitments represented by future welfare promises.

For all the talk of 'austerity' in government, ordinary people are bearing the brunt of the longest recession in living memory. Taking Britain simply as an example, wages may have risen by 10% between 2007 and 2012, but the official measure of inflation increased by 17% over the same period, whilst the overall price of such essentials as food, power and fuel rose by 33%, leaving most people very much worse off.

If we look beyond official assurances of 'business as usual', governments are at a loss to understand why their policies cannot restore satisfactory levels of growth. In past downturns, it was accepted that the economy could be stimulated by a combination of fiscal deficits and low interest rates, both of which put money into people's pockets and thus boost demand for goods and services.

This time around, these tried-and-tested policies have been deployed on a truly heroic scale, but have failed to restore growth to the economy. In a situation not far short of desperation, governments have resorted instead to so-called 'unconventional' policy measures, most notably quantitative easing (QE) which, whatever its advocates claim, is tantamount to the printing of money. Even QE (which, incidentally, would have frightened earlier generations of economists, central bankers and finance ministers out of their wits) has not restored brisk growth to the economy.

If you are aware of the fundamental weaknesses of a global economy which, to put it simply, is stumbling on rather than striding forward, you might well wonder why the collective knowledge of our leaders and their professional advisors has not delivered a return to growth.

Not so long ago, remember, it seemed to many that we had cracked the mysteries of economics, that the debate between free-marketeers and state interventionists was over, and that we could look forward to something akin to perpetual expansion. The financial crisis then revealed that this so-called 'great moderation' was, in reality, nothing more than the biggest borrowing binge in history.

As well as leaving the world mired in debts, this systemic shock has shown that, far from uncovering all of the secrets of economic management, we seem to know even less than we thought we did about how the economy really works.

IN SEARCH OF THE REAL ECONOMY

Throughout the period of borrowing excess and the aftermath of slump, stagnation and unaffordable debts, I have been developing and refining a radically different way of looking at the economy, and this book is the product of many years of such research. I have not done this alone, and I acknowledge my debt to the many people who have provided both encouragement for my efforts and contributions to my knowledge. In particular, Terry Smith and other colleagues at Tullett Prebon have allowed me enormous latitude in pursuing the kind of 'pure' research that is seldom countenanced at commercial organisations.

My most striking conclusion is that, contrary to accepted wisdom, the economy is not primarily a matter of money at all. Rather, our economic system is fundamentally a function of *surplus energy*. In pre-agricultural times, there was no energy surplus, and consequently no society and no economy. The development of farming created the first energy surplus, liberating a small minority of the population to undertake other tasks. But it was the discovery, through the heat-engine, of the ability to tap the vast energy resources contained in fossil fuels that really ushered in an era of unprecedented growth and material prosperity.

In parallel with these developments in the 'real' economy of energy, labour and resources, we developed a monetary system whose essential purpose was to 'tokenise' the real economy into a convenient form. The real nature of money is that it forms a *claim* on the products of the real economy.

Moreover, the monetary system soon developed a strong future or *anticipatory* element, which is typified by the way in which expectations for the future dominate activities such as lending, borrowing, investment and insurance. Fundamentally, debt is a claim on future money but, since money is itself a claim on the real economy, and hence on energy, debt really amounts to a claim on the energy economy of the future.

Engaging in the creation of anticipatory claims requires that we assume some knowledge of what the economy of the future is going to be like. Our collective forward assumption has long been 'more of the same', meaning that we create claims on a future economy that we think will be characterised by growth of roughly the same magnitude that we have long taken for granted in the past.

My research has taken me far beyond the token or claim economy of money and debt and into the workings of the real economy of energy itself. The most important part of this real economy is the relationship between the energy that we produce and the energy that is consumed in the extraction process. Here, my conclusions are very disturbing, because they show that the energy surplus that powers our economy is now in severe and seemingly relentless decline.

Put very straightforwardly, more and more energy is being absorbed in the extraction of energy, leaving an ever-diminishing surplus for us to use. You can picture this very simply by imagining an economy that produced 100 barrels of oil a decade ago, but now produces 110 barrels. This might seem positive, until it is added that the energy-equivalent of 20 barrels was consumed in the extraction process ten years ago, but the equivalent of 50 barrels is used today. In other words, whilst total output has increased (from 100 to 110 barrels), the net amount of available energy has decreased sharply, from 80 barrels (100 minus 20) to 60 barrels (110 minus 50).

Over-simplified though this is, it is a reasonable illustration of what has happened. What it means is that the real economy of energy surpluses is in sharp decline.

THE END OF CHEAP ENERGY AND THE DEATH OF WEALTH

Let me stress that *this is an observation, not a prediction*. Energy returns have been declining for a long time, and I believe that growth in the real economy ceased quite some years ago. Properly understood, the debt crisis which emerged in 2008 was tangible evidence of a process that had long been underway.

This poses many problems, but two are of paramount importance. First, of course, we are going to have to adapt our society to exist on a basis of far less useable (surplus) energy than we have become accustomed to. Such adaption is not impossible, but it is going to stack up to the greatest challenge that we have faced in a very, very long time.

Second, the financial 'shadow' economy of money and debt has continued to expand, opening up a huge gap between, on the one hand, the economic claims incorporated in the financial system and, on the other, the actual potential of the real economy. This, fundamentally, is what the accumulation of gigantic debts really amounts to. What it means is that the financial and the real economies can be reconciled only if financial claims (meaning both debt and money) are destroyed on a truly enormous scale.

After a brief overview, this book explains how the real economy works before examining the functioning of the financial economy. It concludes with an investigation of the challenges posed both by the ending of growth and by the need to reconcile excessive monetary claims with an economy that simply isn't going to grow in the way that our financial system routinely assumes.

This may seem depressing stuff, and I was not surprised when, in response to earlier research publications, one highly-respected newspaper labelled me "Dr Gloom"[1] whilst another called me "Terrifying Tim".[2] As you will discover, the situation is far from hopeless, and adaption is certainly possible. But this process is going to be hugely disruptive, and it is going to change our world out of all recognition.

As ever, forewarned is forearmed.

ENDNOTES

[1] *Financial Times*, 28 November 2011, **ftalphaville.ft.com/2011/11/28/767601/why-we-should-lift-the-tax-burden-on-working-people**

[2] *The Economist*, 24 January 2013, **www.economist.com/blogs/buttonwood/2013/01/energy-and-growth**