

## Oration 15: 2011 K.R. Narayanan Oration

Message from the President  
of the Republic of India



I am happy to learn that the Australia South Asia Research Centre (ASARC) at The Australian National University, is organising the 15th K.R. Narayanan Oration on the theme 'India and the Global Financial Crisis: What Have We Learnt' by Dr Duvvuri Subbarao, Governor, Reserve Bank of India, at the university in Canberra on 23 June 2011.

The Indian economy has posted robust growth in recent years. While several other economies of the world have contracted, India has continued to fare better than other countries because of its domestic demand and investor-friendly policies. There is growing interest the world over in the Indian economy and our developmental model. I have no doubt that the oration will go a long way towards addressing this interest, focusing

on the lessons learnt while tackling the challenges faced by the Indian economy and the opportunities shaping its growth and development in the years to come.

I wish the event all success.

Pratibha Patil  
New Delhi  
3 June 2011

# India and the Global Financial Crisis: What Have We Learnt?

Duvvuri Subbarao

Thank you for inviting me to deliver the 2011 K.R. Narayanan Oration. It is an honour to which I attach a lot of value.

## President Narayanan

Late President Narayanan was a distinguished diplomat, a reputed parliamentarian, a capable minister and, above all, an erudite scholar. Born at the very bottom of India's social pyramid, he rose to occupy the highest office in the country with no assets other than hard work, integrity and humility. 'A working President', as he described himself, he never allowed dogma to overwhelm his beliefs and convictions.

President Narayanan was in office from 1997 to 2002, a time when globalisation, as we are experiencing it in the current times, was taking root. At the banquet he hosted for visiting US President Bill Clinton in New Delhi in March 2000, President Narayanan remarked:

Mr President, we do recognise and welcome the fact that the world has been moving inevitably towards a one-world ... But, for us, globalisation does not mean the end of history and geography, and of the lively and exciting diversities of the world.

This was a thoughtful remark. As much as globalisation may be inevitable, history and geography need not be destiny. If we learn the lessons of experience, we will not repeat the same mistakes. This, indeed, is the topic

for my oration, and my tribute to late President Narayanan — to seek the lessons of the crisis that we have just gone through so that we can make this a better world of all of us.

## **Is This Time Different?**

By all accounts, the 2008–09 crisis has been the deepest financial crisis of our times. It has taken a devastating toll on global output and welfare. Arguably, the fundamental causes of all financial crises are the same — global imbalances, loose monetary policy and high levels of leverage driven by ‘irrational exuberance’. In that respect, this crisis has been no different.

Where this crisis has been different, however, is in its manifestation. Most recent crises had occurred in individual emerging economies or regions, and were, at their core, traditional retail banking or currency crises. The countries in trouble could be rescued by multilateral interventions; besides, the advanced countries provided a buffer for trade and financial support. In contrast, this crisis originated in the most advanced economy, the United States, and hit at the very core of the global financial system. With virtually no buffers to fall back on, the crisis rapidly engulfed the whole world. Much to their dismay, emerging market economies too were soon pulled into the whirlpool.

## **How was India Hit by the Crisis?**

India was no exception. We too were affected by the crisis. Output growth, which averaged 9.5 per cent per annum during the three-year period 2005–08, dropped to 6.8 per cent in the crisis year of 2008–09. Exports, which grew at 25 per cent during 2005–08, decelerated to 12.2 per cent in the crisis year (2008–09) and declined by 2.2 per cent in 2009–10. In the pre-crisis years, we had capital flows far in excess of our current account deficit. In contrast, during the crisis year, net capital flows were significantly short of the current account deficit and this put downward pressure on the rupee. The exchange rate depreciated from 39.37 per dollar in January 2008 to 51.23 per dollar in March 2009.

Notwithstanding our sound banking system and relatively robust financial markets, India felt the tremors of the tectonic shocks in the global financial system. The first round effects came through the finance channel by way

of the sudden stop and then reversal of capital flows consequent upon the global deleveraging process. This jolted our foreign exchange markets as well as our equity markets. Almost simultaneously, our credit markets came under pressure as corporates, finding that their external sources of funding had dried up, turned to domestic bank and non-bank sources for credit.

By far the most contagious route for crisis transmission was the confidence channel. For weeks after the Lehman collapse in mid-September 2008, everyday there was news of yet another storied institution crashing. In this global scenario of uncertainty, the lack of confidence in advanced country markets transmitted as hiccups to our markets too. The net result was that all our financial markets — equity, debt, money and foreign exchange markets — came under varying degrees of pressure. Finally, the transmission of the crisis through the real channel was quite straightforward as the global recession that followed the financial crash resulted in a sharp decline in export demand for our goods and services.

## **Why was India Hit by the Crisis?**

There was dismay in India that we too were affected by the crisis, and this dismay arose mainly on two counts. First, the exposure of our banks to toxic subprime assets was marginal and their off balance sheet activities were limited, and so, the argument went, we should not have been affected by a financial sector crisis that originated from these causes. Second, India's growth is driven by domestic demand and a drop in external demand, it was contended, should have caused no more than a small dent in output growth. Yet, the crisis hit us, and did so more ferociously than we thought possible. The reason for this is globalisation: India is more integrated into the global system than we tend to acknowledge. Let me illustrate that point with some broadbrush numbers.

India's two-way trade (merchandise exports plus imports), as a proportion of GDP, more than doubled over the past decade: from 19.6 per cent in 1998–99, the year of the Asian crisis, to 40.7 per cent in 2008–09. Note that global trade declined by 11 per cent in 2009 as a result of the crisis in contrast to a robust average growth of 8.6 per cent during the previous few years (2004–07). Such a sharp collapse in world trade had an impact on our export demand, demonstrating that our trade integration was quite deep.

If our trade integration was deep, our financial integration was even deeper. A measure of financial integration is the ratio of total external transactions (gross current account flows plus gross capital account flows) to GDP. This ratio had more than doubled from 44 per cent in 1998–99 to 112 per cent in 2008–09, evidencing the depth of India's financial integration. In sum, the reason India was affected by the crisis, despite mitigating factors, is its deepened trade and financial integration with the world.

## **Managing Globalisation**

What the experience of the crisis demonstrated clearly was the power of globalisation. Globalisation is a double-edged sword: it opens up incredible opportunities but also poses immense challenges. India surely benefited from opening up to the world but had also incurred costs on that count. The challenge for India, and indeed for all emerging market economies (EMEs), is really to minimise the costs and maximise the benefits of globalisation.

## **Lessons of Crisis**

A lot is being written about how this crisis has been too important to waste — how we should learn the lessons of the crisis and apply them in a Schumpeterian creative destruction mode. Some people have, however, questioned the wisdom of drawing lessons even before the crisis is fully behind us. When Zhou Enlai, former Chinese prime minister, was asked what he thought of the French Revolution, he said it was too early to say. Historians who take a long view may agree with Zhou Enlai but practical policymakers do not enjoy that luxury. So, let me use the opportunity of this platform to draw out eight big picture lessons of the crisis.

### **Lesson 1: In a globalising world, decoupling does not work**

The crisis challenged many of our beliefs, and among the casualties is the decoupling hypothesis. The decoupling hypothesis, which was intellectually fashionable before the crisis, held that, even if advanced economies went into a downturn, EMEs would not be affected because of their improved macroeconomic management, robust external reserves and healthy banking sectors. Yet, the crisis affected all EMEs, admittedly to different extents, bringing into question the validity of the decoupling hypothesis.

Some analysts argue against such an outright dismissal of the decoupling hypothesis and suggest a more nuanced evaluation. In fact, recent IMF (International Monetary Fund) research<sup>1</sup> illustrates that the transmission of distress from advanced economies to EMEs took place in three distinct phases. The first phase runs from the time early signs of the crisis appeared in mid-2007 until the Lehman collapse in September 2008. During this period, the growth performance of EMEs outshone that of advanced economies, indicating decoupling. The second phase, starting with the Lehman collapse until the first quarter of 2009, was one of ‘recoupling’ when advanced economies pulled EMEs into the downturn. The third phase started in the second quarter of 2009 when EMEs started recovering from the crisis ahead of advanced economies, suggesting a shift once again to decoupling.

So, have EMEs decoupled from the advanced economies? The answer has, necessarily, to be nuanced. A useful way to visualise decoupling in the wake of the crisis is to distinguish between ‘trend’ and ‘cycle’ decoupling. ‘Trend’ decoupling is reflected by the widening gap between the trend rates of growth of EMEs and of advanced economies. This is evidently owing to the growing weight of domestic factors, mainly consumption, in the EMEs’ growth process. However, given that there is still significant integration between the two groups of countries, cycles are still coupled. From a ‘lessons’ perspective, what this means is that EMEs should focus on strengthening domestic drivers of demand and instituting automatic stabilisers to buffer themselves against cyclical shocks from advanced economies.

## Lesson 2: Global imbalances need to be redressed for the sake of global stability

No crisis as complex as this has a simple or a single cause. In popular perception, the collapse of Lehman Brothers in mid-September 2008 will remain marked as the trigger of the crisis. At one level that may well be true. Indeed, I can visualise future textbooks in finance dividing the world into ‘before Lehman’ and ‘after Lehman’. But, if we probe deeper, we will learn that at the heart of the crisis were two root causes — the build-up of global imbalances and developments in financial markets over the last

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1 Ricardo Llaudes, Ferhan Salman and Mali Chivakul (2010), ‘The Impact of the Great Recession on Emerging Markets’, IMF Working Paper 237, October.

two decades. The received wisdom today is that these two root causes are interconnected, and that financial market developments were, in a sense, driven by global imbalances.

Global macro imbalances got built up because of the large savings and current account surpluses in China and much of Asia in the wake of the East Asian crisis a decade ago. These were mirrored by large increases in leveraged consumption and current account deficits in the US. In short, Asia produced and America consumed. Between the US consumption boom and the Asian savings glut, there is a raging debate on what was the cause and what was the effect. Regardless, the bottom line is that one was simply the mirror of the other and the two share a symbiotic relationship.

And how did these imbalances build up? The answer lies in globalisation — globalisation of trade, of labour and of finance. The world witnessed a phenomenal expansion in global trade over the last three decades; global trade as a proportion of global GDP increased from 34 per cent in 1980 to 51 per cent in 2007, just before the crisis hit.<sup>2</sup> Globalisation of finance was even more prolific, especially over the last decade. For the world taken together, the ratio of foreign assets and foreign liabilities to GDP rose from 133 per cent in 1994 to over 300 per cent in 2008.<sup>3</sup> The impact of the globalisation of labour was by far more striking. Emerging Asia added nearly 3 billion people to the world's pool of labour as it integrated with the rest of the world over the last two decades, thus hugely improving its comparative advantage. Together, the three dimensions of globalisation — trade, finance and labour — helped emerging Asia multiply by a factor its exports to the advanced economies. The result was large and persistent current account surpluses in the Asian economies and corresponding current account deficits in the importing advanced economies.

The chain of causation from these imbalances to the financial crisis is interesting, although not obvious. As Asia accumulated savings and simultaneously maintained competitive exchange rates, the savings turned into central bank reserves. Central banks, in turn, invested these savings not in any large, diversified portfolio, but in government bonds of the advanced economies. This, in turn, drove down risk-free real interest rates to historically low levels, triggering phenomenal credit expansion

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2 Calculations based on IMF Direction of Trade Statistics, June 2010.

3 Calculations based on IMF Balance of Payments Year Book, 2010.

and dropping of the guard on credit standards, erosion of credit quality and search for yield, all of which combined to brew the crisis to its explosive dimensions.

It is argued that, if the US Federal Reserve had refused to supply the incipient demand for liquidity in the late 1990s and early 2000s, higher interest rates could have prevented the borrowing boom and the follow on widespread deterioration of financial standards and the subsequent meltdown. But this also would have meant lower growth in the US and the rest of the world. The short point is that, even as macroeconomic imbalances should not be allowed to proliferate, it is necessary to balance the need for global economic growth against the disruptions that follow the unwinding of such imbalances.

So, where do we go from here? The G20 is now actively engaged in the challenging task of redressing structural imbalances in the global economy. At their Pittsburgh Summit in September 2009, the G20 leaders agreed on a 'Framework for Strong, Sustainable and Balanced Growth' and committed to a 'Mutual Assessment Process' (MAP) that is a peer review of each country's progress towards meeting the shared objectives underlying the framework. Recognising that global imbalances that had narrowed during the crisis started widening again in the exit phase, driven mainly by the uneven recovery around the world, the G20 resolved that promoting external sustainability should be the focus of the next stage of the MAP and entrusted this task to a Framework Working Group (FWG).

India is privileged in co-chairing, together with Canada, the FWG for managing the task of developing the indicative guidelines for assessing and addressing persistent global imbalances. The FWG has adopted a two-stage approach: a limited number of indicators will guide the initial assessment process, while a broader set — including qualitative ones — will be used in the second stage to inform an in-depth external sustainability assessment. The success of this initiative is critical for redressing the problem of global imbalances.

### **Lesson 3: Global problems require global coordination**

The crisis demonstrated the interconnectedness of the world through trade, finance and confidence channels. What originated as a bubble in the US housing sector soon snowballed into a crisis and radiated in two different ways: first, in a geographical sense, from the US to other

advanced economies and then to the rest of the world; and, second, in a sectoral sense, from housing to all productive sectors. Even as each country started dousing the fires on its own, it was soon realised that the effort was in vain and that global coordination is a necessary condition for managing a global crisis.

From that perspective, the London G20 Summit in April 2009 will go down in history as a clear turning point when the leaders of the world showed extraordinary determination and unity. Sure, there were differences, but they were debated and discussed and compromises were made without eroding the end goal — that is, to end the crisis. This resulted in an agreed package of measures having both domestic and international components, but all of them to be implemented in coordination and, indeed, in synchronisation where necessary. The entire range of crisis response measures — accommodative monetary stance, fiscal stimulus, debt and deposit guarantees, capital injection, asset purchases, currency swaps — all derived in varying degrees from the G20 package.

Now, as we exit from the crisis, there are concerns and apprehensions that the vaunted unity that the G20 had shown during the crisis is dissipating. But might it also be a tad unrealistic to expect the degree of unity shown in managing the crisis to also be shown in addressing ‘peacetime’ issues? The focus of the G20 now is to flesh out the agenda for economic and financial restructuring at national and international levels so that the world can prevent, or at any rate minimise, the probability of another crisis of the type we have gone through. Differences of opinion, when the agenda is so broad, are not only to be expected, but may in fact have a positive influence in determining what is collectively optimal.

The common thread running through the entire G20 agenda is the need for global cooperation in solving our most pressing problems of today. The crisis has taught us that no country can be an island and that economic and financial disruptions anywhere can cause ripples, if not waves, everywhere. The crisis also taught us that, given the deepening integration of countries into the global economic and financial system, uncoordinated responses will lead to worse outcomes for everyone.

The global problems we are facing today are complex and not amenable to easy solutions. Many of them require significant and often painful adjustments at the national level. Because short-term national interests conflict with globally optimal solutions, it is quite understandable that

there are differences of views within the G20. We must remember though, that in a world divided by nation-states, there is no natural constituency for the global economy. At the same time, the global crisis has shown that the global economy as an entity is more important than ever and that global coordination to solve global problems is critical.

#### Lesson 4: Price stability and macroeconomic stability do not guarantee financial stability

The years before the crisis were characterised by steady growth and low and stable inflation in advanced economies, and rapid growth and development in EMEs. The so-called ‘Great Moderation’ prompted a growing consensus around the view that the best practice in monetary policy framework is the pursuit of a single target (price stability) by means of a single instrument (short-term policy interest rate). The success of the Great Moderation fortified the argument that price stability is a necessary and (a nearly) sufficient condition for economic growth and for financial stability. Central bankers believed they had discovered the holy grail.

That sense of triumph was deflated by the unravelling of the crisis. As the global financial sector came to the brink of a collapse even in the midst of a period of extraordinary price stability, it became clear that price stability does not necessarily guarantee financial stability.

Indeed, the experience of the crisis has prompted an even stronger assertion — that there is a trade-off between price stability and financial stability, and that the more successful a central bank is with price stability, the more likely it is to imperil financial stability. The argument goes as follows. The extended period of steady growth and low and stable inflation during the Great Moderation lulled central banks into complacency. Only with the benefit of hindsight is it now clear that the prolonged period of price stability blindsided policymakers to the cancer of financial instability growing in the underbelly.

A dominant issue in the wake of the crisis has been the role of central banks in preventing asset price bubbles. The monetary stance of studied indifference to asset price inflation stemmed from the famous Greenspan orthodoxy, which can be summarised as follows. First, asset price bubbles are hard to identify on a real-time basis, and the fundamental factors that drive asset prices are not directly observable. A central bank should not, therefore, second-guess the market. Second, monetary policy is too blunt an instrument to counteract asset price booms. And third, central banks

can ‘clean up the mess’ after the bubble bursts. The surmise, therefore, was that the cost-benefit calculus of a more activist monetary stance of ‘leaning against the wind’ was clearly negative.

The crisis has dented the credibility of the Greenspan orthodoxy. The emerging view post-crisis is that preventing an asset price build-up should be within the remit of a central bank. Opinion is divided, however, on whether central banks should prevent asset bubbles through monetary policy action or through regulatory action. On one side, there is a purist view questioning the efficacy of resorting to monetary tightening to check speculative bubbles. Opposed to this is the argument that a necessary condition for speculative excesses is abundant liquidity, and that controlling liquidity, which is within the remit of monetary policy, should be the first line of defence against ‘irrational exuberance’.

No matter how this debate settles, a clear, if also disquieting, lesson of the crisis is that price stability and macroeconomic stability do not guarantee financial stability.

### **Lesson 5: Micro-prudential regulation and supervision need to be supplemented by macro-prudential oversight**

The crisis has clearly demonstrated that a collection of healthy financial institutions does not necessarily make a healthy financial sector. This is because there are complex interconnections in the financial sector across banks, other financial institutions, markets and geographies, and a problem in any part of the system can rapidly transmit through the system, cascade across layers and develop into a crisis. Systemic safety can also be jeopardised by procyclicality. As the crisis demonstrated, there is a strong collective tendency among financial entities to overexpose themselves to the same type of risk during an upturn and become overly risk averse during a downturn. Importantly, individual institutions and, indeed, micro-prudential oversight too, fail to take into account the spillover impact of the actions of the rest of the financial system on them. This raises the paradox of the fallacy of composition. What is good from an individual institution’s point of view can become disruptive, and even destructive, if all institutions act in a similar way.

That a bubble that started in the US housing sector snowballed into a major crisis is a vivid illustration of the risks arising from the interconnectedness of the global financial system and the risks of procyclicality. The lesson

clearly is that as much as micro-prudential supervision is necessary, it needs to be supplemented by macro-prudential oversight to prevent systemic risk building up.

Macro-prudential oversight requires both analytical sophistication and good judgement. Regulators need to be able to analyse the nature and extent of risk and be able to make informed judgement on when and what type of countercyclical buffers they must impose. Both type I and type II errors — imposing buffers too early out of excessive caution or delaying imposition of buffers until it is too late to avert an implosion — can be costly in macroeconomic terms.

### **Lesson 6: Capital controls are not only unavoidable, but advisable in certain circumstances**

As EMEs started recovering from the crisis earlier than advanced economies, they also began exiting from the crisis-driven accommodative monetary stance ahead of the advanced economies. This multi-speed recovery and consequent differential exit have triggered speculative capital flows into EMEs, resulting in currency appreciation unrelated to economic fundamentals. This poses complex policy management challenges. Currency appreciation erodes export competitiveness. Intervention in the forex market to prevent appreciation entails costs. If the resultant liquidity is left unsterilised, it could potentially fuel inflationary pressures. If the resultant liquidity is sterilised, it puts upward pressure on interest rates, which not only hurts competitiveness, but also, in a curious variation of the Dutch disease, encourages further flows.

Capital inflows far in excess of a country's absorptive capacity could pose problems other than currency appreciation. Speculative flows on the lookout for quick returns can potentially lead to asset price build-up. Also, in the current juncture, one of the driving forces behind hardening commodity prices in recent months is excess liquidity in the global system, which has possibly triggered financialisation of commodities.

Quite unsurprisingly, the old debate about whether capital controls are a legitimate policy option has resurfaced again. This is a debate that has traditionally frowned on moderation. Critics maintain that capital controls are distortionary, largely ineffective, difficult to implement, easy to evade and that they entail negative externalities. On the other hand, supporters of capital controls argue that controls preserve monetary policy

autonomy, save sterilisation costs and tilt the composition of foreign liabilities towards long-term maturities and ensure macroeconomic and financial stability.

The debate on capital controls resurfaced after the Asian crisis of the mid-1990s, especially as one of the root causes of the crisis was the open capital accounts of the East Asian economies. However, as the Asian economies recovered in quick order, regained their export competitiveness and started building up external reserves for self-insurance, the debate was not pursued to its logical conclusion, and the orthodoxy that capital controls are undesirable persisted.

The recent crisis has, however, been a clear turning point in the worldview on capital controls. Notably, the IMF put out a policy note<sup>4</sup> in February 2010 that reversed its long-held orthodoxy that capital controls are inadvisable always and everywhere. The note referred to certain ‘circumstances in which capital controls can be a legitimate component of the policy response to surges in capital flows’. The World Bank<sup>5</sup> and the Asian Development Bank’s *Outlook 2010* both echoed these views.

A useful way of assessing the capital account management of an EME is to draw a distinction between ‘strategic’ and ‘tactical’ controls. Strategic controls would involve defining a long-term policy indicating the inter se preference — or the hierarchy of preferences as it were — across different types of capital flows and the controls that will be deployed to operationalise that policy. Strategic controls give stakeholders a clear and predictable framework of rules to make informed choices and to manage risks, and they give policymakers sufficient levers to calibrate the flows; in essence, they define the boundaries of the playing field. Tactical controls, on the other hand, introduce barriers into the playing field itself. They are deployed opportunistically to stem a surge in inflows or outflows. By their very nature, tactical controls introduce a new element of uncertainty into the calculations of both domestic and foreign stakeholders.

India’s approach to capital account management is typically strategic. For example, we have an explicitly expressed preference for long-term over short-term flows and equity over debt flows, and we have used both price-based and quantity-based controls to operationalise this policy. We have,

4 Jonathan D. Ostry et al. (2010), ‘Capital Inflows: The Role of Controls’, IMF Staff Position Note, SPN/10/04, 19 February.

5 World Bank (2009), *Global Monitoring Report 2009: A Development Emergency*, Washington.

of course, periodically recalibrated elements of the strategy in pursuit of capital account liberalisation. An important lesson from India's experience is that, even with relatively large swings in capital flows during the crisis, the pressure to use tactical controls did not build up because the strategic controls provided automatic buffers.

Even as we debate what EMEs should or should not do to manage excess capital flows, we should remember that, to the extent that lumpy and volatile flows are a spillover from policy choices of advanced economies, managing capital flows should not be treated as an exclusive problem of emerging market economies. How this burden is to be shared raises both intellectual and practical challenges. The intellectual challenge is to build a better understanding of the forces driving capital flows, what type of policy instruments, including capital controls, work and in what situations. The practical challenge is the need to reach a shared understanding on a framework for cross-border spillovers of domestic policies in capital-originating countries, and the gamut of policy responses by capital-receiving countries.

### Lesson 7: Economics is not physics

A few months into the crisis, the Queen happened to be at the London School of Economics and asked a perfectly sensible question: 'how come none of the economists saw the crisis coming'. The Queen's question resonated with people around the world who felt that they had been let down by economics and economists. As economists saw their profession discredited and their reputations dented, the economic crisis soon turned into a crisis in economics.

What went wrong with economics? It now seems that by far the most egregious fault of economics, one that led it astray, has been to project it like an exact science. The charge is that economists suffered from 'physics envy', which led them to formulate elegant theories and models — using sophisticated mathematics with impressive quantitative finesse — deluding themselves and the world at large that their models had more exactitude than they actually did.

Admittedly, in a limited sense, there may be some parallels between economics and physics. But similarity in a few laws does not mean similarity in the basic nature of the academic discipline. The fundamental difference between physics and economics is that physics deals with the physical universe, which is governed by immutable laws, beyond the pale

of human behaviour. Economics, in contrast, is a social science whose laws are influenced by human behaviour. Simply put, I cannot change the mass of an electron no matter how I behave, but I can change the price of a derivative by my behaviour.

The laws of physics are universal in space and time. The laws of economics are very much a function of context. Going back to the earlier example, the mass of an electron does not change whether we are in the world of Newton or of Einstein. But, in the world of economics, how firms, households and governments behave is altered by the reigning economic ideology of the time. To give another example, there is nothing absolute, for example, about savings being equal to investment or supply equalling demand as maintained by classical economics, but there is something absolute about energy lost being equal to energy gained as enunciated by classical physics.

In natural sciences, progress is a two-way street. It can run from empirical findings to theory or the other way round. The famous Michelson–Morley experiment that found that the velocity of light is constant led to the theory of relativity — an example of progression from practice to theory. In the reverse direction, the ferocious search now under way for the Higgs Boson — the God particle — that has been predicted by quantum theory is an example of traversing from theory to practice. In economics, on the other hand, where the human dimension is paramount, the progression has necessarily to be one way, from empirical finding to theory. There is a joke that if something works in practice, economists run to see if it works in theory. Actually, I don't see the joke: that is indeed the way it should be.

Karl Popper, by far the most influential philosopher of science of the 20th century, propounded that a good theory is one that gives rise to falsifiable hypotheses. By this measure, Einstein's General Theory was a good theory, as it led to the hypothesis about the curvature of space under the force of gravity that, indeed, was verified by scientists from observations made during a solar eclipse from the West African islands of Sao Tome and Principe. Economics, on the other hand, cannot stand the scrutiny of the falsifiable hypothesis test, since empirical results in economics are a function of the context.

The short point is that economics cannot lay claim to the immutability, universality, precision and exactitude of physics. Take the recent financial crisis. It is not as if no one saw the pressures building up. There were a respectable number of economists who warned of the perilous consequences of the build-up of global imbalances, said that this was simply unsustainable and predicted a currency collapse. In the event, we did have the system imploding — not as a currency collapse, but as a meltdown of the financial system.

We will be better able to safeguard financial stability both at global and national levels if we remember that economics is a social science and real world outcomes are influenced at a fundamental level by human behaviour.

### **Lesson 8: Having a sense of economic history is important to prevent and resolve financial crises**

Let me finish with the last lesson, which is on a larger canvas: namely, that having a sense of economic history is important to prevent and to resolve financial crises. In their painstakingly researched book, *This Time is Different: Eight Centuries of Financial Folly*, Kenneth Rogoff and Carmen Reinhart argue that every time a crisis occurs and experts are confronted with the question of why they could not, based on past experience, see it coming, they would argue that past experience was no guide as circumstances had changed. Yet, this ‘this time is different’ argument does not hold. Reinhart and Rogoff put forward impressive evidence showing that over 800 years, all financial crises can be traced to the same fundamental causes as if we learnt nothing from one crisis to another. If only teaching in economics included the study of economic history, perhaps we could avoid repeating history, never mind as a farce or a tragedy.

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