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10. Business Cycles

The dominant paradigm for the analysis of business cycles takes full-employment equilibrium as the norm and attributes temporary and self-correcting deviations from this norm to exogenous shocks. There is, however, another way of thinking about business cycles to be found in the historical literature. This alternative paradigm takes the movement of an economy up and down through cycles as itself the norm and sees endogenous forces as driving the process.

For all their inevitability, the ups and downs of the business cycle prove difficult to predict in advance or even to interpret after the fact. A multitude of factors is seemingly involved. Some analysts place greater stock in real influences, some in monetary influences. Some find efficacy in policy intervention to maintain stability; others regard policy activism as one more source of disruption. Finally – and this distinction will constitute a theme in this chapter – some adhere to a frame of reference that takes full-employment equilibrium as the norm and attributes deviations from this norm to exogenous shocks, while others tell a story of endogenous processes driving cycles such that cycles themselves become the norm.

We begin the chapter by tracing the roots of the distinction between endogenous and exogenous theories of the business cycle to early thinkers on the subject. We then go on to examine the mid-20th century Keynesian consensus as to the power of policy to subdue the business cycle, and the subsequent pillorying of that consensus by events of the 1970s. That takes us to the new consensus that formed – among theorists if not policymakers – around the antithesis to Keynesianism which vested markets with primacy and derided the conceits of policy intervention. Through the decades since, the premise of market equilibrium has lain at the heart of increasingly sophisticated economic models based on shock induced fluctuations, and we outline the form of these models. The failure of this approach, however, to even contemplate a crisis on the order of the one that struck the U.S. in 2008 led to a search for alternatives in which finance plays a more integral role. The long-sidelined endogenous cycle theory of Hyman Minsky fits the bill, as we will explain. The Philippines serves as our case study for this chapter, offering a window on the interplay between endogenous credit cycles and exogenous shocks. We close by bridging the gap between the narratives of exogeneity and endogeneity by positing that an economy's vulnerability to or resilience against exogenous shocks is shaped by an endogenous cyclical process.

Early Thinking on Business Cycles

The recurring nature of booms and busts is apparent going at least as far back as the Roman Empire. Not until the mid-1800s, however, did observers draw a clear connection between the two as opposing phases of a cyclical process. Much intellectual effort had by that time been expended trying to explain the causes of crises and depressions as episodic events. A whole new way of thinking about the problem was encapsulated in a pithy assessment by Clement Juglar in 1862 that "the only cause of depression is prosperity".

The tension between the exogenous and endogenous views of the business cycle is deeply embedded in the history of economic thought. In this section we look to early exemplars, drawing the contrast between the seminal ideas of Mills (1868) and Pigou (1927) regarding what drives the business cycle. We then move forward through time to consider the opposing remedies proposed by John Maynard Keynes (1936) and the Austrian School as represented by Mises (1949). First though, we lay foundations by describing the features of the business cycle.

Features of the Business Cycle

As the first chart of this textbook established, volatility in GDP growth is a scourge from which no economy is immune. Yet on ocassion, relative calm can stretch on for a decade or more. This may then just as easily be followed by a flury of gyrations striking hard and fast one upon another. Sometimes, too, growth rates can catapult from from deeply negative to exuberantly positive, or do the opposite, while at other times movement follows gentle waves. In sum, both the frequency and the amplitude of ups and downs vary greatly.

The term "business cycle" should therefore not be construed to imply regularity, and indeed some economists prefer the term "business fluctuations" to avoid any such connotation. "Business fluctuations", however, suggests a lack of continuity between an upswing and the downturn that follows it whereas such continuity is the very focus of endogenous theories of the business cycle. To speak of "fluctuations" is then more in keeping with a notion of exogenous shocks as drivers. We will adhere to the term "cycle" because it invokes a continuum of phases and with that, is more amenable to the possibility of forecasting, an endeavor that occupies many in the economics profession.

The standard taxonomy of the business cycle identifies four phases: expansion or recovery; peak; contraction or recession; and trough. The expansion phase is characterized by high GDP growth and strong job creation but may give rise to accelerating inflation. Businesses are eager to borrow and creditors are happy to lend. At the peak of the cycle, an economy tends to overshoot its potential such that labor markets tighten, wages rise, and profits are squeezed. Debt loads increase to the point of unsustainability. Eventually, the run is exhausted and a downturn ensues, perhaps spurred by an exogenous trigger to which the economy has become vulnerable as an expansion depletes itself. The economy contracts (or in the case of a "growth recession" expands sluggishly relative to its potential), jobs are cut, businesses fail, and loans go into default. Then in the trough, bad debts are written off, excess inventories are liquidated at fire sale prices, and physical assets are put to new purpose. A trough that is extremely deep and long is known as a depression. The cleansing process that occurs in the trough lays the foundation for renewal.

Upsurges and downturns in the business cycle tend to be presaged by "leading indicators" and shadowed by "lagging indicators". Such indicators are useful for forecasting purposes. Box 10.1 explains.

Box 10.1: Business Cycle Indicators

Anyone entering into commitments involving future returns or obligations must act on the basis of predictions about where the economy is headed. The forecasting of business cycles rests on a variety of indicators, some moving together with real output, some ahead of it, and some behind it. GDP as the ultimate embodiment of economic activity takes a great deal of time to compile so coincident indicators that can be assembled in real time offer more ready insight into current conditions. Leading indicators tend to precede movements in GDP. But even lagging indicators have predictive power since within a cyclical process knowing where the economy has been reveals something about where it may be going.

Standard leading, coincident, and lagging indicators are shown in the table below.

Leading Indicators	Coincident Indicators	Lagging Indicators
expectations • consumer confidence • business sentiment economic activity • new business registration • construction permits • property transactions finance • stock market index • policy interest rate • exchange rates labor • average hours worked	economic activity • production • sales • exports and imports • electricity consumption • capacity utilitzation labor • employment	economic activity • inventories finance • debt level • loan rate of interest • consumer price index labor • unit labor costs

Survey responses about expectations make for good leading indicators since expectations guide action and thus tend to be self-fulfilling when broadly held. Consumer confidence and business sentiment are key expectations measures. New business registration, construction permits, and property transactions all signal major undertakings in the offing. Stock market valuations capture the beliefs of the investing public as to the discounted value of future earnings and, moreover, provide the foundation on which firms may raise capital. The interest rate targeted by policymakers reveals the government's stance on stimulating or restraining the credit flows that fuel future business activity. Exchange rate movements similarly impact businesses in ways that play out over time. In the labor realm, employers tend to adjust the hours of existing workers before undertaking more lasting moves to hire or fire.

Coincident indicators reflect current activity in the form of production, sales, and international trade. Measures of electricity consumption and capacity utilization offer immediate gauges of the state of economic affairs. Employment, too, is closely tied to current activity.

Lagging indicators signal that an economy has reached a late stage in an expansion or recession. As an expansion wears on, production ultimately outpaces sales and inventories begin to accumulate, while conversely late in a recession excess inventories at last begin to be drawn down. The late stage of expansion moreover brings rising debt levels, upward pressure on loan rates of interest, and accelerating inflation in consumer prices, whereas the opposite trends emerge late in a recession. Finally, labor markets tighten late in an expansion pushing up labor costs per unit of output, and they slacken late in a recession causing unit labor costs to fall. The panoply of forces that comes into play as an expansion runs its course has the effect of curbing growth. And vice versa, those forces that become manifest as a slowdown drags on pave the way for recovery.

A final observation about business cylces is worth noting. The investment component of GDP fluctuates much more sharply over the course of the cycle than the consumption component. Any compelling theory of the cycle must be able to account for this pattern.

Mills vs Pigou

Decisions to produce, and even more so decisions to invest, are forward looking. Well before any revenue is generated, costs must be incurred. This means that credit is essential to business enterprise. The close association between business and credit explains why business cycles were referred to historically as "credit cycles". Credit is underpinned by faith in the future, and that makes it inherently sensitive to subjective perceptions and shifting expectations.

By 1867, John Mills discerned a periodicity in Britain's business fluctuations over the preceding half century and interpreted this as due to a self-perpetuating cycle that rested on the interplay of credit and "mental mood". In Mills' words: "As credit is a thing of moral essence, the external character of each stage of its devolopement is traced to a parallel change of mental mood, and we find the whole subject embraced under the wider generalisation of a normal tendency of the human mind." (p. 17)

Mills's "tendency of the human mind" involves swings between the extremes of excitement and panic. In the excitement of the expansionary phase, easy credit fuels business start-ups and inflates profits. People assume that what is will always be, and confidence abounds. In time, however, credit and speculation begin to act upon each other. Prices are driven up. Investment becomes ever more reckless and goods are spilled onto the market faster than they can be absorbed. Eventually, prices must give way. This eats into profits. Financing then becomes more difficult to renew and the sale of goods more imperative. Panic begins to take root. Price declines escalate and loans go past due. Ultimately, businesses fail and banks go under. In the wake of a panic, owners of capital retrench and banks push to strengthen reserves. Lenders and borrowers are reticent to engage … until at last, time heals wounds and new opportunities come to be perceived. Risk taking is once again rewarded, and confidence regerminates. The cycle begins anew.

Mills did not find the remedy to ups and downs in averting panic. "Panics" he held, "do not destroy capital; they merely reveal the extent to which it has been previously destroyed by its betrayal into hopelessly unproductive works." (p. 18) Rather, his solution was aimed at the boom. "Is it a fatal necessity that credit must grow rank and rotten, and collapse in a spasm of terror?" (p. 38) Not necessarily. Mills believed that education was the key to forestalling the "liability to an ignorant speculative excitement, and a willingness to take immoral risks." (p. 39) Unfortunately, a century and a half on, humanity seems still not to have learned the lesson.

In contrast to Mills, Pigou (1927) looked to exogenous shocks for an explanation of the business cycle. He set forth three categories of shock: (i) real; (ii) monetary; and (iii) psychological. Sources of real shock run to harvests, technology, natural resource discoveries, labor disputes, tastes, and foreign demand. Impulses to any of these can reverberate across sectors of the economy with resources discharged from some activities reabsorbed only gradually elsewhere. Monetary shocks involve autonomous changes in the money supply, due, for example, to changes in government reliance on money creation to finance deficits. Pigou allows that monetary shocks can have real economic consequences, at least for a time, through their effect on interest rates and bank lending.

Psychological shocks pertain to errors of optimism and pessimism. Such errors can gain traction on a mass scale as business managers interact in "a quasi-hypnotic system of mutual suggestion" reinforced by the self-fulfilling nature of shared expectations. (p. 79) Booms founded on errors of optimism can, Pigou concurs with Mills, turn to busts as errors rebound to the opposite extreme. Indeed, in such circumstances an error of pessimism can be "born, not an infant, but a giant. For an industrial boom has necessarily been a period of strong emotional excitement, and an excited man passes from one form of excitement to another more readily than he passes to quiescence." (p. 85) For Pigou though, the error pendulum is not a perpetual motion machine. Friction brings an economy's gyrations to rest, unless and until some new outside force acts upon the system.

Austrians vs Keynesians

For the Austrian School of economists, the business cycle is explained by a single form of exogenous shock: government mismanagement of the money supply. The Austrian focus on government misdeed fits into a broader world view that extols free markets and individual liberty, as outlined in Box 10.2. As the story goes, governments in capitalist societies routinely succumb to political pressure to stimulate the economy with expansionary monetary policy that acts to increase bank reserves and thus reduce interest rates. In the words of Mises (1949), a "boom is built on the sands of banknotes and deposits. It must collapse." (p. 559)

An artificially low interest rate distorts investment decisions. For sound investment to be motivated, the interest rate must convey information on the value of products to be yielded in the future relative to the value of resources diverted from consumption in the present. It falls to the interest rate to prevent the entrepreneur "from embarking upon projects the execution of which would not agree with the limited amount of capital goods provided by the saving of the public." (p. 544) The government, by driving down the interest rate, encourages investment that will not ultimately prove viable. The saving of the public is not increased by such a policy; rather, a given amount of saving is simply misallocated into applications with gestation periods too long to be economically justified.

To keep the boom going, money and credit must expand at an accelerating rate. Eventually this becomes unsustainable. The bust that follows exposes the malinvestment that has taken place. But the harm extends further. For as outstanding debts are not repaid, banks retrench and even sound businesses find they are unable to obtain credit. Recovery is a slow process that must rely on accumulation of new capital. But Mises advises against resorting to renewed credit expansion which "would at best only interrupt, disturb, and prolong the curative process of the depression, if not bring about a new boom with all its inevitable consequences." (p. 576)

The Austrian prescription for government to withdraw and allow a slump to run its course competed contemporaneously during the Great Depression with Keynesian advocacy for an active role of government in managing aggregate demand. Keynesians feared not just the periodic cyclical slowdown as an economy readjusted to changes in circumstances, but an endemic weakness in spending from which there would be no automatic tendency to rebound. Idealogically, the Keynesians won out, at least for a time.

Box 10.2: The Austrian School of Thought

The Austrian School is known for championing the free market. The School's formative thinkers contributed to our understanding of market pricing as a mechanism for achieving efficiency in the allocation of resources. They extended the basic argument by applying the notion of marginal utility to money and interest rates with ramifications for explaining business cycles. But their argument for free markets does not rest merely on efficiency. The ultimate value of free markets in the Austrian paradigm lies in their providing the essential foundation for a free society.

Seminal contributors to the Austrian School, all linked to the University of Vienna, include Carl Menger (1840-1921), Eugen von Boehm-Bawerk (1851-1914), Ludwig von Mises (1881-1973), and Friedrich Hayek (1899-1992).

The Austrian perspective took hold in counterpoint to the rise of socialist ideology in the late 19th and early 20th centuries. The vision of socialism was to organize society for the good of all by vesting ownership of the means of production with the state. The Austrians, by contrast, exalted the individual in the spirit of classical liberalism.

Hayek's *Road to Serfdom*, published in 1944, stands as the great manifesto for a market economy. Markets, Hayek argued, coordinate the activity of individuals, enabling entrepreneurs "to adjust their activities to those of their fellows." (p.56) Private property "is the most important guaranty of freedom, not only for those who own property, but scarcely less for those who do not. It is only because the control of the means of production is divided among many people acting independently that nobody has complete power over us." (p. 115) Wage differentials are the "yardstick" by which people "judge what they ought to do." (p.139) And the rule of law, as opposed to the rule of men, ensures predictability of state action so that individuals are "able to use their knowledge effectively in making plans." (p. 83)

The primacy of markets does not preclude a role for government in the economy. Hayek favored state guarantees of basic sustenance and public assistance in the face of "those common hazards of life against which, because of their uncertainty few individuals can make adequate provision." (p.133)

But any more general pursuit of central planning can only lead to tyrrany in Hayek's reasoning. "[P]lanning leads to dictatorship because dictatorship is the most effective instrument of coercion and the enforcement of ideals and, as such, essential if central planning on a large scale is to be possible." (p. 79) Propaganda becomes imperative for mobilizing people to serve a socialist state. The full meaning of Hayek's invocation of "serfdom" in the title of his book becomes clear. "The skillful propagandist then has power to mold their minds in any direction he chooses, and even the most intelligent and independent of people cannot entirely escape that influence if they are long isolated from all other sources of information." (p169)

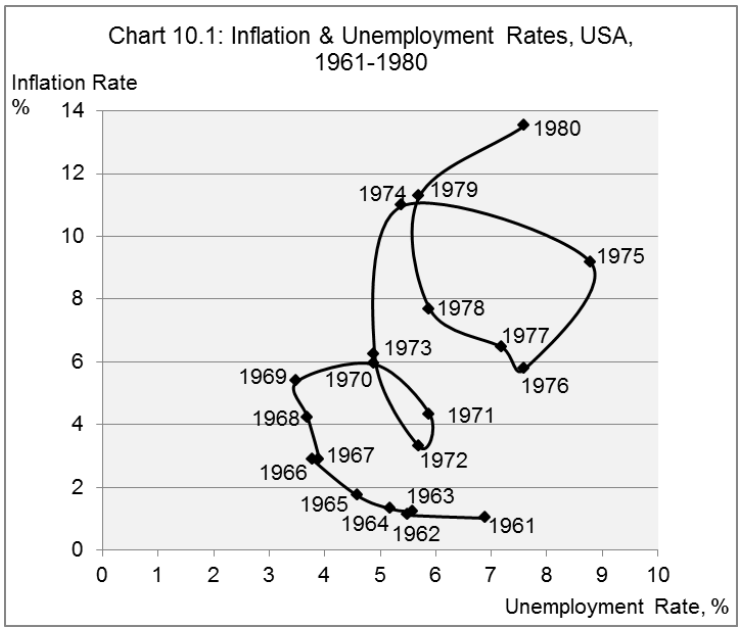
The Neoclassical Synthesis and Its Demise

A theory stands or falls by its ability to explain observed reality. Keynesian theory was validated in the 1940s when massive government spending to fight World War II pulled the U.S. and Europe out of their prolonged depression. The conflict between Keynesian and classical views was reconciled under the Neoclassical Synthesis which held that while markets would in principle bring about full employment, government spending and tax policies could expedite an otherwise potentially protracted process. As explained in this section, however, there was believed to be a tradeoff between reducing unemployment under Keynsian policies and ramping up inflation. Initially, experience seemed to verify the existence of such a tradeoff. Ultimately,

however, reality proved to be more complicated, and a new theory centered on the role of expectations in driving inflation was formulated to take its place.

The Phillips Curve

The argument for a tradeoff between inflation and unemployment is easily understood: as unemployment declines, competition among businesses to hire workers intensifies thus putting upward pressure on wages. The lower the unemployment rate, the more an increase in demand for workers is channeled into higher wages. Conversely, when unemployment is high and labor markets are slack, jobless workers can be absorbed at the prevailing wage without much pressure to pay more. Increases in wages, to whatever degree, tend to be passed on in the form of higher prices for goods and services. Hence low unemployment gives rise to inflation.



Graphically, the relationship between unemployment and inflation was expected to look exactly like the line plotted in Chart 10.1 for the period limited to 1961-1969. At the relatively high unemployment rate of about seven percent manifest in 1961, demand stimulus policies could achieve a reduction in joblessness with little impact on prices. With each further reduction in unemployment, however, the inflationary consequences were amplified. An arc relating unemployment and inflation in this fashion is known as the Phillips curve after the economist who mapped it out in 1958 using British data for the preceding century.

The U.S. experience in the 1960s represented a deliberate experiment in applying Keynesian demand management techniques to exploit the Phillips Curve relationship. Dissatisfied with unemployment rates holding in excess of five percent, President Kennedy in 1963 proposed a tax cut to stimulate spending. The tax cut was implemented in 1964 and by 1965, unemployment had dropped to 4.6 percent with inflation remaining below 2.0 percent. The exuberance of the moment was captured in a declaration by *Time* magazine that "We are all Keynesians now." The next few years under President Johnson saw big increases in government spending to support escalation of the war in Vietnam and an ambitious program to fight poverty. As predicted by economic theory, unemployment continued to drop while inflation shot up. Now the economy needed cooling down, so a tax increase was imposed. The result, however, was not to retrace the Phillips curve of the 1960s in reverse as had been anticipated. Rather, inflation remained high in 1970 and 1971 even as the unemployment rate climbed. Then just as inflation was finally being subdued, a cartel of oil producing nations imposed an embargo in 1973-74 which sent oil prices soaring and pushed inflation to new heights. Rising unemployment followed as higher energy costs crimped business activity, yet high inflation was initially sustained. A tax cut in 1975 helped bring about recovery. But a second oil price shock in 1979

reignited inflation, and by 1980 inflation approached an unprecedented 14 percent even as unemployment stood at 7.6 percent.

This combination of high inflation and high unemployment was dubbed "stagflation" (stagnation + inflation). It defied the logic of the Phillips curve that high unemployment should have a restraining effect on wage and price increases. A new theory of unemployment and inflation was called for.

The Natural Rate of Unemployment

Already by the late 1960s, skepticism about the government's ability to manage the economy and choose at will from a menu of inflation and unemployment options was building among economists of a more classical bent. Milton Friedman (1968) and Edmund Phelps (1967) argued that the unemployment rate would tend to a natural equilibrium level determined by market frictions associated with matching people to jobs. The actual rate of unemployment fluctuates, and government policy can work to push it below the natural rate for a time. Doing so comes at a cost, however, in terms of higher inflation that is difficult to shake.

According to Friedman and Phelps, the natural rate of unemployment is consistent with any rate of inflation as long as that rate is foreseen by market participants. Workers build the anticipated rate of inflation into their wage demands and employers build it into their cost projections. Equilibrium in the labor market may then be achieved on the basis of a real wage that is readily discernible to all as the difference between the nominal wage and inflation. Assuming expectations of inflation are based on past experience, any inflation rate that is sustained over a period of time will be fully anticipated and the labor market will function under such circumstances to arrive at the natural rate of unemployment.

Government policy can push the unemployment rate below its natural level only by engineering an inflation surprise. In the telling of Friedman and Phelps, a monetary stimulus drives down the rate of interest with businesses thus induced to take out loans and create new jobs. The economy is pushed to function above its sustainable potential. Before long, however, bottlenecks develop and prices are bid upward. For a time, this outcome is as the Phillips curve predicts. But workers come to realize the purchasing power of their wages has been eroded by inflation. They adjust their expectations of inflation and increase their wage demands to preserve the real value of their compensation. Employers respond by scaling back their hiring. The unemployment rate then returns to its natural level. The new inflation rate, however, has now become lodged in expectations. In order for those expectations to be realized, the government must continue its expansionary monetary policy. Should it instead seek to curtail inflation by tightening money growth, interest rates will rise and businesses will retrench. Unemployment will mount even as inflation maintains its momentum over some interim. The economy moves off its former Phillips curve, as the U.S. did in 1971 and 1975. Eventually, the slower money growth is translated into a lower rate of inflation, expectations adjust, and unemployment again returns to its natural rate.

An inflationary impetus once introduced by government tends to become entrenched. To sustain unemployment below its natural rate requires that inflation be accelerating. The natural rate of unemployment is therefore known also as the non-inflation-accelerating rate of unemployment, or NAIRU. Reining inflation back in once it has been unleashed causes unemployment to rise over the period of time required for expectations to readjust to lower

inflation. In the classical spirit, the conclusion is that government intervention does more to disrupt the market equilibrating mechanism than to improve upon it, and that the Phillips curve, insofar as it may be said to exist at all, is highly unstable.

Exogenous Shock Theories

The demise of the Phillips Curve as a menu of options and the Neoclassical Synthesis as the basis for policy choice among these options opened the way for a return to classical principles of market equilibrium centered on a natural rate of unemployment. The adaptive expectations of Friedman and Phelps that left economic agents forever a step behind in figuring out inflation were replaced by less inherently error-prone "rational expectations", to be discussed in this section.

Business cycle models built on rational expectations within a general equilibrium framework have evolved in stages over a period of decades. These models capture shocks as a stochastic process, and are known as dynamic stochastic general equilibrium (DSGE) models. A first generation of models exploited the classical dichotomy between the real economy and money to focus on real shocks as the drivers of cycles. A second generation incorporated money into the models with ramifications for the real economy. The limitations of these models were exposed by their failure to account for anything remotely resembling the financial crisis of 2008. This has inspired work on a third generation of models to overcome these limitations by, for example, recharacterizing the nature of equilibrium and its trajectory over time. We outline the structure of these three generations of models in turn.

Rational Expectations

Rational expectations theory assumes economic agents are able to predict the future as well as any economic model. This contrasts with the Friedman and Phelps assumption that workers systematically fail to predict an accelerating inflation and allow their real wages to slip behind even as the monetary authorities who institute the inflation and the economists who advise them comprehend what is to transpire. Rational expectations theory does not imply perfect foresight. This would be impossible in a world constantly buffeted by shocks. Rather, the idea is that people are able to assess the likelihood of the range of possible future outcomes without systematic bias.

Even so, as Lucas (1972) originally set forth the argument, agents have difficulty sorting out in the moment the mix of real and nominal influences that act on prices. Suppose an entrepreneur experiences an increase in demand for her product. This will induce her to raise her selling price and expand production. If the increase in demand is specific to her particular product, the higher price will be sustained relative to the prices of other products, and the entrepreneur will enjoy higher real returns as the reward for her effort. On the other hand, if the demand increase is driven by an expansion in the money supply that impacts all markets, the entrepreneur will find her higher nominal returns eaten away in real terms as the general price level rises. Realizing her increased activity is not supported by the marketplace, she will scale back production to its former level, although her higher output price will be sustained commensurate with higher prices in general. Lucas's model demonstrates how output and employment fluctuations can result even within a general equilibrium framework where all markets, including the labor market, clear, and thus unemployment does not exist, other than in a

voluntary sense. The aggregate fluctuations derive from agents misinterpreting general price shocks as being specific to their own markets. As with the story of Friedman and Phelps, then, agents are temporarily fooled.

The difference under rational expectations theory is that agents can only be fooled if a monetary stimulus comes as a surprise. But for it to come as a surprise, the stimulus cannot be predicated on the basis of economic conditions; it must be random. Yet if it is random, it cannot be undertaken purposefully to stabilize the economy, for if economic agents realize a money expansion is in play, they will neutralize any real impact by fully adjusting wages and prices without delay. The conclusion must be that monetary policy intervention is unjustifiable and that markets are best left to function on their own. Apropos of such market deference, the school of thought associated with a Lucas-type framework involving general equilibrium and rational expectations is known as New Classical Economics. In the narrow sense, this term applies to models in which only unforeseen monetary shocks can have an impact on real output. But the term is often applied more broadly to encompass real business cycle theory in which money is entirely absent.

Real Business Cycle Theory

Jumping off from Lucas, real business cycle theory incorporates rational expectations and assumes markets are always in equilibrium. In effect, Say's Law prevails: Supply creates its own demand. The theory further jettisons money. Business cycles are presumed to derive solely from supply-side shocks to productivity. Conceivable sources of such shocks include: advances in technology that while raising productivity in some activities are disruptive for others (think of word processors replacing typists or digital cameras driving film developers out of business); shifts in external trade or capital flows; changes in government fiscal, monetary, or regulatory policies; and revisions to broadly held expectations. Since the sources of shock are never treated explicitly in econometric modeling exercises, they are often referred to simply as technology shocks. Box 10.3 explains how such shocks are modeled.

Under real business cycle theory, shocks to productivity have ramifications for household labor supply. During periods of high productivity (and hence high remuneration) in market employment activities, households choose to supply a greater proportion of their time to paid work. Conversely, during periods of low productivity in market employment activities, they incline more toward non-market alternatives, for example, pursuing an education, taking on home repair projects, engaging in fitness and recreational activities, or spending time with family. The modeling exercise assumes households maximize utility over a long time horizon by substituting intertemporally between paid and non-paid activities. People work hard at paid jobs during some stages of life knowing they will be able to relax and attend to other aspects of living during other stages. The upshot for business cycles is that the effect of productivity shocks on output is amplified by a labor supply response: during periods of high productivity, more people choose to work more hours, and vice versa.

The production functions of firms and utility functions of households are at the core of the dynamic stochastic general equilibrium models of real business cycle theory. Production functions are typically specified for multiple sectors of the economy. Utility functions, in addition to framing household labor supply decisions, generate consumption and saving outcomes. The consequences of current choices are projected into the future through rules for capital construction and inventory management. The simplest models involve dozens of

equations while the most elaborate run to thousands. DSGE models built on real business cycle theory perform well to reproduce normal cyclical patterns of movement in key aggregates. In accordance with observation, the models yield paths for an economy in which investment is more volatile than GDP which is in turn more volatile than consumption. By design, however, real business cycle DSGE models fail to convey anything about the effects of monetary policy or the role of finance in the business cycle. For that we must turn to a second generation of work.

Box 10.3: Modeling Productivity Shocks

Trend growth in real output can be ascribed in part to increases in labor and capital inputs to production and in part to increases in the productivity of these inputs. Business cycles involve fluctuations around trend growth. In real business cycle theory, these fluctuations around trend are regarded as emanating from shocks to the productivity component of growth.

The process is formalized within a Solow (1957) growth model. Let output, Y, be related via a production function to inputs of labor, L, and capital, K, and a productivity factor, A. In a growth model, all variables are in turn functions of time, t. The Solow growth equation is thus given as:

$$Y(t) = A(t)L(t)^{\alpha}K(t)^{1-\alpha}.$$

The parameter α reflects the elasticity of output with respect to the labor input. This elasticity is defined as the percent change in output associated with a one percent change in labor input. The value of α must reasonably lie between zero and one. Constraining the elasticities of labor and capital to sum to one implies constant returns to scale. In other words, if both labor and capital increase by one percent, output will also increase by one percent.

A constant rate of trend productivity growth, *r*, implies A at time *t* may be expressed as an exponential function of A in the base year t =0:

$$A(t) = A(0)e^{rt}.$$

The foregoing relationships are theoretical in nature. The observed value of ouput in year t, call it $Y'(t)$, will deviate from the theoretical value, $Y(t)$, by some disturbance term, call it $u(t)$ and allow it to enter the Solow growth equation multiplicatively. Productivity is then thought of as being enhanced or diminished by a factor $u(t)$ which is treated as random and therefore unpredictable. Formally, the observed value of productivity, $A'(t)$, is given as:

$$A'(t) = A(0)e^{rt}u(t).$$

The disturbance term $u(t)$ captures the fluctuations of the business cycle relative to trend growth. To obtain values for $u(t)$ year by year, regression analysis is first used to estimate the model parameters α and r. Observed values of $L(t)$ and $K(t)$ are then entered into the Solow growth equation to obtain the theoretical value of trend output, $Y(t)$. Finally, $u(t)$ is inferred as the ratio $Y'(t)/Y(t)$.

The many equations of a DSGE model then trace the impact of productivity shocks on key macroeconomic variables such as employment, consumption, investment, trade, the price level, wages, profits, and so on.

New Keynesian Economics

New Keynesian models introduce money into the DSGE framework and, in Keynesian fashion, impose frictions in the movement of prices and wages. The result is that a money supply increase is transmitted first into real economic activity and only later into prices and wages. The price stickiness is achieved by assuming markets are not perfectly competitive. Firms have a degree of discretion in choosing price/quantity combinations, and in the face of a demand increase will react initially mainly by increasing output at given prices. Only later, as competition for labor and commodity inputs heats up, will wages and prices be adjusted.

Money further affects the economy through the interest rate acting on investment and saving. The relationship is complicated by the fact that investment decisions involve long-term commitments, hence not only current interest rates but expectations of future interest rates matter, as do expectations of future inflation.

Slow adjustment of prices and wages to productivity shocks means that economic outcomes can be less than optimal even within a general equilibrium framework. In particular, a negative productivity shock under sticky prices will mean that real output and employment bear the brunt of short-term adjustment. A monetary stimulus could in principle be used to offset such shocks and hold the economy to a stable course. DSGE modeling allows the effects of policy interventions along these lines to be assessed.

Proponents of DSGE modeling argue that their approach to macroeconomics is grounded in microeconomic foundations: households maximize utility and firms maximize profits; and rational expectations link current behavior to well-founded beliefs about the future. From these microeconomic premises, movements in aggregate magnitudes are derived. By contrast, traditional Keynesian economics lacks such foundations. Unemployment and the accumulation of excess inventories result from a failure of households and firms to adjust to changing market conditions. Why they fail, however, is not articulated from any first principles involving human motivation and rational choice.

Critics of DSGE models attack the assumption of no involuntary unemployment. The genuine hardship suffered by vast numbers of jobless people during recesssions defies the benign characterization of their state as a voluntary pursuit of non-employment activities. Critics further charge that the Keynesian black box of household and firm behavior is replaced in DSGE models with the black box of productivity shocks. That shocks have occurred is only indirectly inferred through their impact on output and prices. The nature of the shocks and the process by which they affect productivity are never spelled out. The weakness of the DSGE approach was laid bare by the financial crisis of 2008. Whereas the models could be successfully manipulated to reproduce the moderate ups and downs of normal business cycles, a financial crisis the likes of which had not been witnessed in the U.S. in more than half a century was beyond their capacity to explain.

Self-Fulfilling Expectations & Path Indeterminacy

Although New Keynesian DSGE models incorporate a degree of stickiness in prices and wages, such models fail to do justice to Keynes's vision of a world plagued by chronic unemployment. Motivated by the financial crisis of 2008, a modeling program truer to Keynes's spirit has since gained traction. The recent models incorporate two advances. First, labor markets are encumbered by significant costs on both the job search side and the employer recruitment

side. Given the tremendous differentiation that exists among both jobs and workers, much information gathering and processing is required to achieve an employment match. Second, both confidence and wealth are treated as important determinants of consumption and investment demand. Confidence interacts with wealth in a mutually reinforcing dynamic within which feelings of exuberance lead to higher asset prices and higher asset prices in turn lead to even greater exuberance. Then too, the spiral can work in the opposite direction. Either way, expectations are prone to self-fulfillment.

Within this milieu, there is no single well-defined level of full-employment equilibrium output. A high degree of unemployment can persist with no tendency for correction. Sagging confidence intertwines with low asset values and stagnant demand for output so as to mire the economy in a slump. Large number os workers can lose their jobs with too few new jobs being created to absorb them even as other workers retain their jobs at wages that do not clear the market.

In a class of DSGE models reviewed by Farmer (2015), changes in beliefs act as the shock that drives economic fluctuations. In a radical twist on previous models, a shock can shift an economy to a permanently altered growth trajectory. This breaks with the Classical tradition of an economy always tending back to a clearly articulated full-employment path. Growth may be limited within these models by sustained shortfalls in aggregate demand reminiscent of Keynes. Under imperfect functioning of labor markets, the economy will not move to a higher growth path unless confidence is revitalized. If more positive beliefs about the economy take hold, they will then be self-fulfilling. Self-fulfilling expectations and path indeterminacy provide a strong rationale for policy intervention. A stimulus that acts to boost confidence can be especially effective.

Models that allow for path indeterminacy seem particularly appealing for application to developing economies. Full-employment equilibrium does not, in this context, provide a very compelling benchmark against which to plot an economy's trajectory. Potential growth is more difficult to define, with growth rates in double digits known to occur for periods of years. Labor market imperfections must certainly account for even more of the story than in developed economies. And confidence may well have an even more powerful impact on outcomes.

Minsky's Endogenous Cycle Theory

Through several decades of evolution, DSGE models had by 2008 been fine tuned to replicate fairly closely the observed movement of macroeconomic variables in developed economies. But these models ultimately rely on vaguely articulated and unpredictable shocks from outside to keep fluctuations in motion. Formal models do not exist to fully endogenize the ups and downs of the business cycle. A story does exist, however, as laid out by Hyman Minsky (1986).

Minsky maintains that processes intrinsic to the nature of capitalist finance propogate instability. A financial system that is initially robust will transform itself into one that is fragile. Ultimately, the system will reach a crisis point. There will follow a protracted process of renewal to re-establish robustness, only for the cycle to repeat itself. We begin this section by defining Minsky's concepts of robust and fragile finance. We then lay out his argument for how the latter inevitably comes to dominate. We follow with an explanation of how government, in Minsky's

view, by forestalling crisis and expediting recovery, imparts an inflationary bias to the economy. Finally, we look at the U.S. crisis of 2008 as a "Minsky moment" of financial implosion.

Robust vs Fragile Finance

Financing the ownership of productive assets in a capitalist economy carries with it a fixed stream of future payment obligations juxtaposted against an uncertain stream of income receipts. Multiple layers of financial intermediation may separate the owners of productive assets from the ultimate providers of funds with each layer carrying its own conjoined streams of obligations and incomes. If debtors in substantial numbers are unable to meet their payment obligations due to unanticipated changes in economic conditions, financial markets will become distressed.

Minsky defines three categories of finance.

- Hedge finance: income > interest + principle obligations. The greater the share of equity finance, the more secure this relationship since equity involves only a residual claim after interest and principle payments to other creditors have been met.
- Speculative finance: income > interest obligations only. New debt must be acquired to make principle payments that come due.
- Ponzi finance: income < interest obligations. New borrowing or selling of assets is required to meet interest obligations.

The name Ponzi comes from Charles Ponzi who ran a scheme in Boston in 1920 whereby money from new investors was used to pay returns to existing investors, and of course to Mr. Ponzi himself. When the scheme eventually collapsed for lack of new investors, he was charged with fraud and sent to prison. As bad as this sounds, finance on Ponzi terms plays a vital role in a dynamic economy. Major new undertakings in the initial investment stage typically generate little to no income against financing obligations. Instead, they rely on continued infusions of money to pay existing creditors and proceed with development of the venture. Some endeavors may take years to generate sufficient income to produce a competitive return on capital, and some may ultimately fail altogether. Minsky notes that going too far in "lessening the possibility for disaster might very well take the spark of creativity out of the capitalist system." (p. 364)

Entities that depend on short-term borrowing to finance long-term asset positions are vulnerable to changing financial market conditions. When the time comes to roll over their debt, they may find themselves paying higher interest rates even as their revenue streams remain unchanged. Financial intermediaries routinely operate under such maturity mismatch conditions. Banks, for example, take in deposits payable on demand against which they make loans that don't payoff for years. Under such maturity mismatch, rising interest rates may push hedge units into the speculative category and speculative units into the Ponzi zone. Units operating in a Ponzi state will find their equity diminishing as they resort to liquidating assets to meet commitments, a situation that cannot long be sustained. Rising interest rates and tightening availability of credit can quickly threaten the viability of Ponzi and even speculative units. An economy that harbors widespread speculative and Ponzi finance is thus fragile in the face of shock. By contrast, an economy built on hedge finance is robust against shock as debts can reliably be repaid even if market conditions change.

Financial Instability Hypothesis

Minsky's "financial instability hypothesis" holds that a robust and prosperous economy dominated by long-term hedge finance will move inexorably toward speculative and Ponzi finance. There are profits to be made in this transition so that the process will for a while be validated by the market. In normal times, short-term interest rates are lower than long-term rates. This reflects the greater degree of unknown associated with the more distant future, particularly with regard to inflation. Firms that borrow short term at lower interest rates will thus be more profitable than those that borrow long term at higher interest rates. And firms that borrow on an interest-only basis and defer principle repayment will have an even greater cash flow advantage.

On an economy wide basis, a shift to shorter term borrowing will be a boon for growth. Rising profits will push up the value of productive assets. This will induce more capital goods production, which will create more jobs at better wages, which will in turn fuel spending on consumer goods, thus generating even more jobs and more spending. People will come to believe that the good times will never end. Faith in the prospect of capital gains will encourage the build up of ever more leverage, as speculative or even Ponzi finance seems to make perfect sense. There is simply no need to rely on current income to pay down debt when you can count on selling assets at a profit later on.

Financial regulation is aimed at preventing risky behavior from getting out of hand. But regulation is oriented toward established financial instruments and institutions. Innovative ways of getting around regulation will always be found. At the time of his writing in 1986, Minsky observed that the U.S. since 1965 had experienced four serious runs on financial markets or institutions, with each incident following on the heels of a boom fueled by a financial innovation. The global financial crisis of 2008 fits the pattern, as will be discussed. Many observers are concerned that China in the wake of the global crisis has seen worrisome proliferation of innovative financing activity that has greatly increased leverage in the economy. For a description of the kinds of innovation involved, see Box 10.4.

Minsky argues that a boom bears the seeds of its own demise. The financial structure becomes fragile. Inflation heats up and authorities respond by tightening credit. With this, interest rates rise. Borrowers with speculative positions cannot refinance on terms they can afford. Businesses fail, jobs are lost, and the economy goes into recession.

A cleansing process will then follow. Borrowers and lenders find themselves chastened all around by the shake-out of bad debtors. New financing proceeds on far more cautionary terms. The economy is restored to a state in which hedge finance predominates. It is once again robust against shock and primed for stable growth.

Box 10.4: Chinese Debt Shenanigans

In the wake of the global financial crisis and collapse in world trade, China kept its economy growing with a massive infusion of bank credit. In 2009 alone, bank loans outstanding nearly doubled. The next year, the authorities tightened and loans contracted by 17 percent. Once the debt explosion had been unleashed, however, businesses became dependent on it to sustain new levels of activity. As lending by banks tightened, other sources of credit emerged to fill the gap. Total new lending held roughly constant in 2010 by the official measure.

A major form of credit growth in 2010 was in bankers' acceptances which did not come under government mandated credit quotas. The share of this form of credit leapt from 4.4 percent in 2009 to 23 percent the next year. A bankers' acceptance is issued by a bank in exchange for a letter of credit which is typically obtained by an exporter from its foreign buyer. The letter of credit represents a promise to pay at a future date upon delivery of goods. The bankers' acceptance obtained by the exporter in exchange for the letter of credit is a negotiable instrument that can be converted to cash, at a discount relative to its face value, at any time. In the Chinese case, it appears that use of letters of credit and bankers' acceptances expanded very suddenly into purposes well beyond their traditional scope in trade finance.

Since 2010, other financial innovations have fueled extensive debt creation beyond the readily visible balance sheets of banks. "Entrusted loans" are made under the arrangement of banks, for a fee, directly from one company to another. Nonbank "trust companies" pool the funds of individuals or small businesses by sellling "wealth management products", often through banks, with the funds channeled into loans or other investments. The volume of these products has grown tremendously with most purchasers paying little attention to how their money is invested, taking solace in a belief that the Chinese government will not allow trust companies to fail.

Property developers with their vast borrowing requirements have come up with their own financing innovations. Units in residential complexes are often sold before construction even begins. Sometimes the sales take place with a promise by the developer to repurchase the units at a specified price that guarantees a hefty return. Or the developer may sell equity shares in the company and promise to repurchase the shares in the future. These arrangements are in fact thinly disguised debt. Companies can in essense be highly leveraged while obscuring this on their books.

Pundits began predicting collapse of the Chinese economy under a rising debt load as early as 2010. But debt and growth can propel a virtuous cycle for a long time. The precise moment at which it will end is hard to foresee. What Minsky tells us is that the end will certainly come.

Government Intervention Averts Disaster but Sows Inflation & Perpetuates Fragility

The widespread pain and economic loss associated with a shake-out of bad debtors creates the temptation for government to intervene. While government has the capacity to alleviate immediate suffering, Minsky argues that this comes at a cost of imparting inflation. Moreover, by validating risky financing maneuvers, government rescue efforts perpetuate underlying fragility and hasten the next run up to a crisis.

Governments make use of both fiscal and monetary measures to avert financial disaster and maintain economic stability. The standard view of fiscal stimulus is that increases in government spending and cuts in taxes boost aggregate demand to push an economy toward its potential. With his focus on finance, Minsky adds two elements to the picture. First, he emphasizes that debt carries with it payment commitments. When cash flows shrink in a recession, debtors become strained in meeting those commitments and debt default on a wide

scale can then loom. A fiscal stimulus helps to sustain cash flows and ensure that debt service payments continue to be made. Second, as government deficits mount, public debt instruments must be issued at an increased pace. These debt instruments offer a secure asset to fill the needs of financial institutions and other economic units for low risk holdings as faith in private debt is undermined and banks resist extending new loans.

Minsky's analysis of monetary policy similarly emphasizes the importance of finance in the economy. The quantity theory of money focuses narrowly on money's function as a medium of exchange in current transactions: $MV = PQ$ (recalling from Chapter 6, M is the money supply, V is velocity, P is the price level, and Q is aggregate real output). Quantity theorists treat money as exogenous and trace changes in the money supply through to changes in the price level and real output taking velocity as more or less constant. Minsky points out the importance of holding money as an asset when the value of other financial instruments becomes suspect. With reference to the quantity equation, the velocity of money falls as more money is held to bolster the security of portfolios rather than to support transactions. To meet the need for cash holdings, the central bank must stand ready to buy or accept as collateral assets that have become otherwise unmarketable. During times of financial distress, then, the central bank should provide infusions of liquidity. It must become the lender of last resort.

Through supportive fiscal and monetary actions, the government effectively validates debt that has become precarious and sustains the businesses that have incurred it. The economy is kept afloat, but on seas made prone to the roiling of future waves. Moreover, the policy response imparts an inflationary momentum. The central bank pumps liquidity into the economy to support spending during a time of weak aggregate demand and to satisfy the public's desire for cash balances. As confidence strengthens, however, spending recovers and portfolio preferences shift away from cash back toward riskier but more remunerative assets. The money that has been poured into deep coffers is then spent more freely. Minsky's concern is that recurring infusions of cash to rescue an economy from bouts of debt excess will propogate inflation and hasten the next setback. Absent the intervention of government, downturns would be deeper and unemployment more severe, but by the same token the restoration of healthy hedge finance would be more thoroughgoing and renewed growth of the economy would be more sustainable.

America's 2008 Minsky Moment

Minsky wrote his opus at a time when inflation in the U.S. was coming off double-digit levels. In the decades to follow, inflation would moderate even as government stabilization efforts would appear to be successful in subduing the business cycle. The illusion of the business cycle's demise was shattered, however, in 2008. Proclaimed a "Minsky moment", the crisis was fully in keeping with Minsky's narrative of prolonged periods of relative stability aided by government stabilization measures and regulatory oversight eventually giving way. For while government may be able to implement programs to keep the economy on track for quite some time, Minsky tells us that ....

> Such a restructuring will enjoy only transitory success. After an initial interval, the basic disequilibrating tendencies of capitalist finance will once again push the financial structure to the brink of fragility. When that occurs, a new era of reform will be needed. There is no possibility that we can ever set things right once and

> for all; instability, put to rest by one set of reforms will, after time, emerge in a new guise. (p. 370).

In hindsight, the fragility in U.S. finance seemed all too obvious. Home mortgage loans to sub-prime borrowers had burgeoned, with the loans then securitized and marketed as AAA rated products (as explained in Chapter 7). The poor quality of the underlying assets was not recognized by holders of the securities. On the back of abundant financing, home prices were bid up to such a level that rental returns fell far short of mortgage financing costs, or anyway would fall short once contracted increases in interest rates or balloon payments kicked in. Nevertheless, buyers remained obliviously confident that continued appreciation in home values would cover all contingencies. In sum, Ponzi finance had taken hold.

Even before the scheme collapsed, some foresaw the day of reckoning to come. In July of 2007, former Chairman and Chief Executive of Citigroup Charles Prince gave the following oft-quoted statement to the *Financial Times*:

> When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing.

Yet, while some may indeed have predicted collapse, some are always predicting collapse. It's the timing that is hard to get right. And as long as the music plays, there is money to be made and dancing to be done.

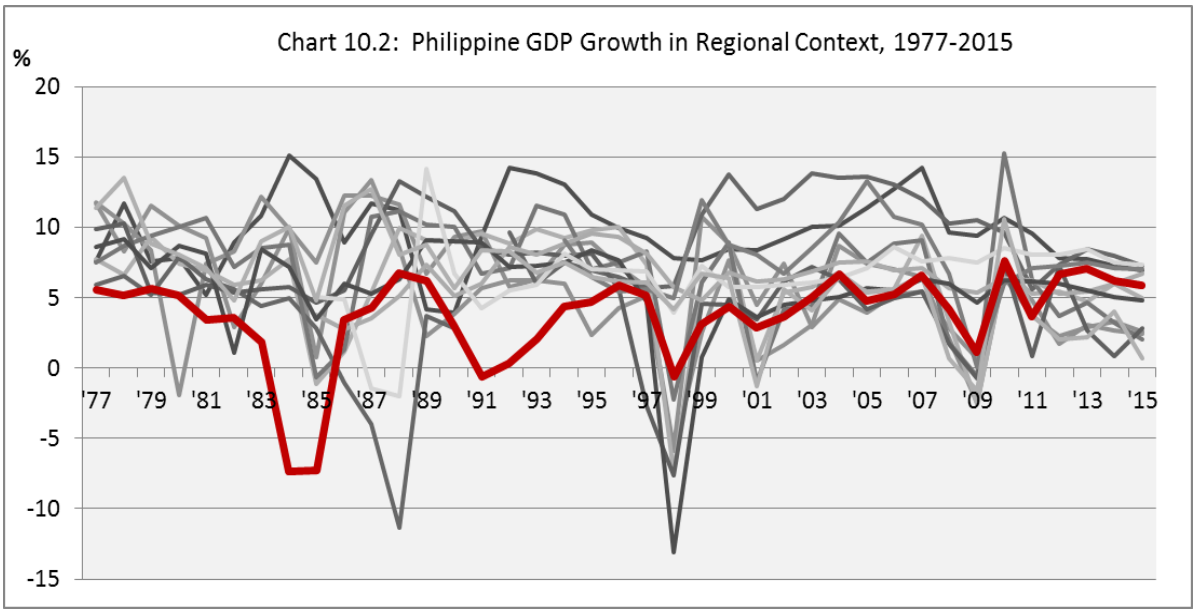
The Philippine Experience

The Philippines has suffered the worst two year contraction of any economy in our purview, while still faring better than most through crises that hit the region broadly. And it has enjoyed periods of solid expansion, even if these have not measured up to the most supercharged standards of the region. Chart 10.2 places Philippine GDP growth in the context of emerging East Asia. Stretches of healthy growth are seen to alternate with periods of setback through four cycles. The worst crisis occurred in 1984-85 with the economy contracting more than seven percent for two consecutive years. The next downturn in 1991 put the growth rate just barely into negative territory. In both these cases, the Philippines was hit in isolation from the rest of the region. Then came the Asian Financial Crisis, pulling the country into its vortex yet leaving it not as badly scathed as most of its neighbors. Similarly in 2009, the trade shock that followed the Global Financial Crisis took a relatively light toll on the Philippines.

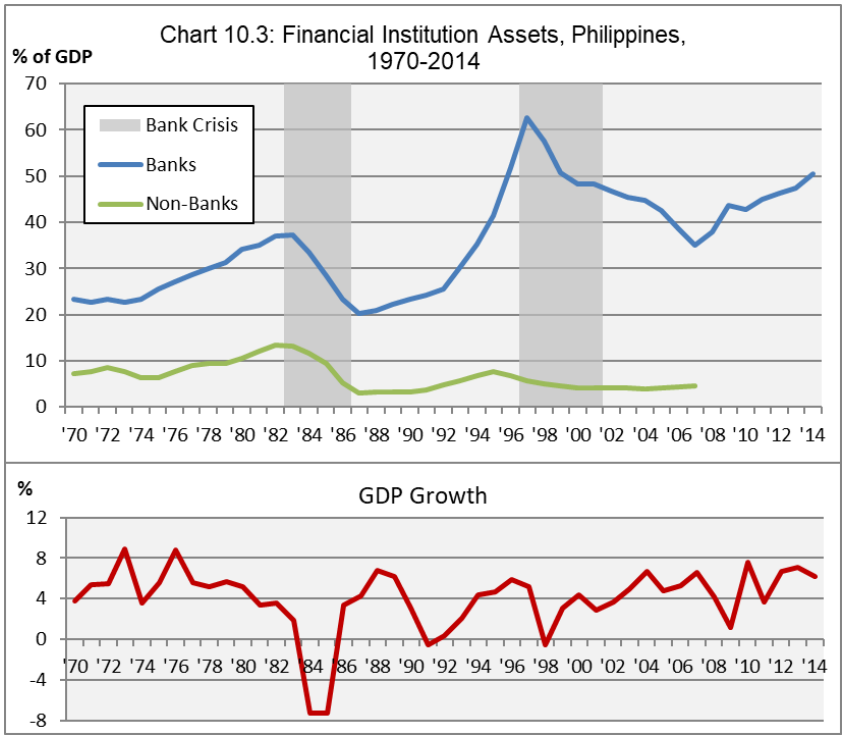
We consider each cycle in turn.

Minsky moment of the 1980s

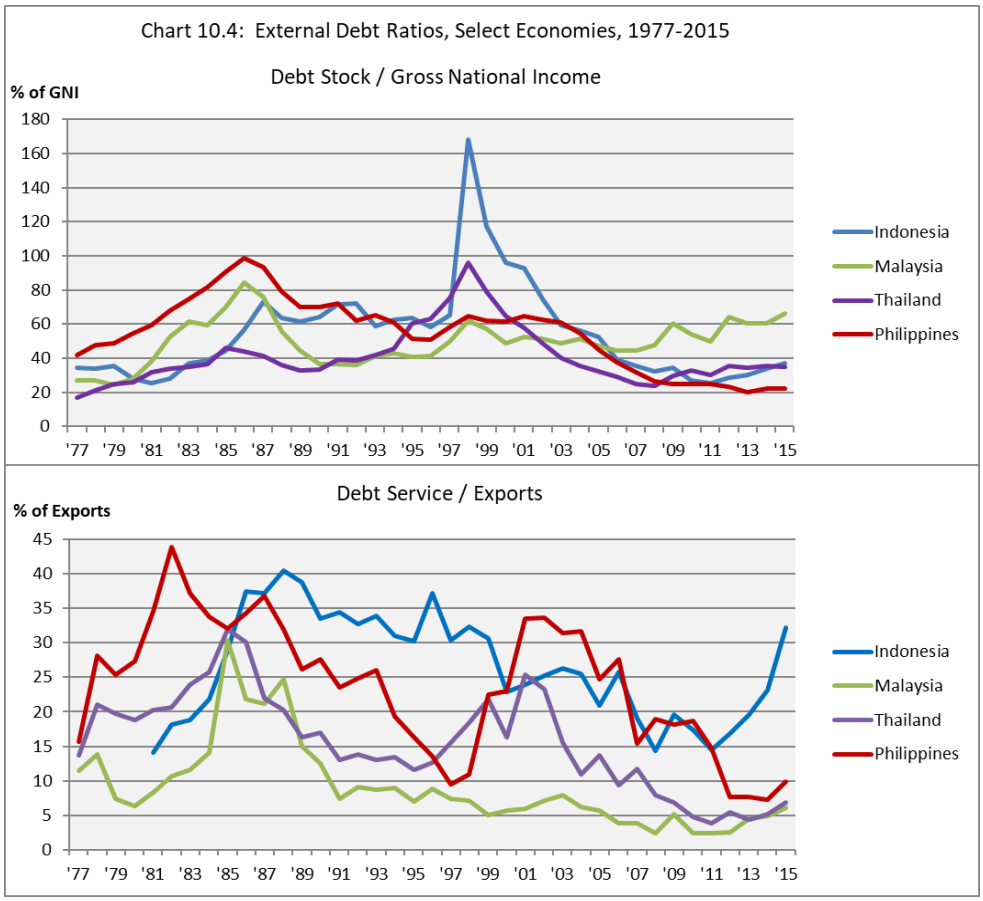
The crisis of 1984-85 was tied to the fall of Ferdinand Marcos who ruled the Philippines for two decades, the second of these under martial law. The trigger for the crisis is commonly pinned on the assassination of opposition figure Benigno Aquino Jr. on 21 August 1983 as he arrived in the country from overseas and deplaned. After a three year self-imposed exile in the U.S., Aquino was returning just as an anti-Marcos movement was beginning to coalesce and his assassination galvanized that movement. However, according to de Dios (1984, p. 16) and his colleagues at the University of the Philippines, the economy was by that time in such a state of fragility that "any major exogenous shock was bound to provoke a crisis." The Aquino assassination just happened to be that shock.



For indicators of the fragility of the Philippine economy, we take a cue from Minsky and look to the financial sector. Chart 10.3 reveals a steady run-up in the ratio of bank assets to GDP from 23 percent in 1974 to 37 percent in 1983. The ratio of non-bank financial assets to GDP also increased, but remained fairly low. Both ratios dropped sharply once the financial system went into crisis and lenders stopped extending new credit. The chokehold on lending contributed precipitously to the collapse of GDP, as visible in the lower panel of Chart 10.3.



The level of foreign currency debt provides another important indicator of fragility. Chart 10.4 shows the ratio of the stock of external debt to GNI in the upper panel and the ratio of external debt service to export revenues in the lower panel. Comparable figures are shown for Indonesia, Malaysia, and Thailand. Evidence of Philippine fragility is again apparent. The country's external debt-stock-to-GNI ratio had reached 81 percent by 1984 and then continued to rise as GNI (like GDP) fell. In 1986, the ratio topped out at nearly 100 percent, the highest observed for any of the four countries over a span of nearly four decades with the lone exception of Indonesia during the Asian Financial Crisis (Thailand at that time reaching close to the Philippine high water mark). The lower panel of the figure finds the ratio of debt service to exports also reaching extraordinarily high levels for the Philippines in the early 1980s, levels approached, again, only by Indonesia later on. At the peak, more than 40 percent of foreign exchange earnings generated by exports were needed just to service external debt.



How did the Philippines get into such a predicament? According to the University of the Philippines monograph, the main problem was "the concentration of power in the hands of the government, and the use of governmental functions to dispense economic privileges to some small factions in the private sector." The government ran large fiscal deficits, financed in part by foreign borrowing, and encouraged government financial institutions, also relying on foreign borrowing, to lend to ill-conceived projects. While the borrowing frenzy fueled spending that boosted the economy for a time, ultimately the misdirection of funds into activities that did not generate returns sufficient to cover debt servicing doomed the system to failure.

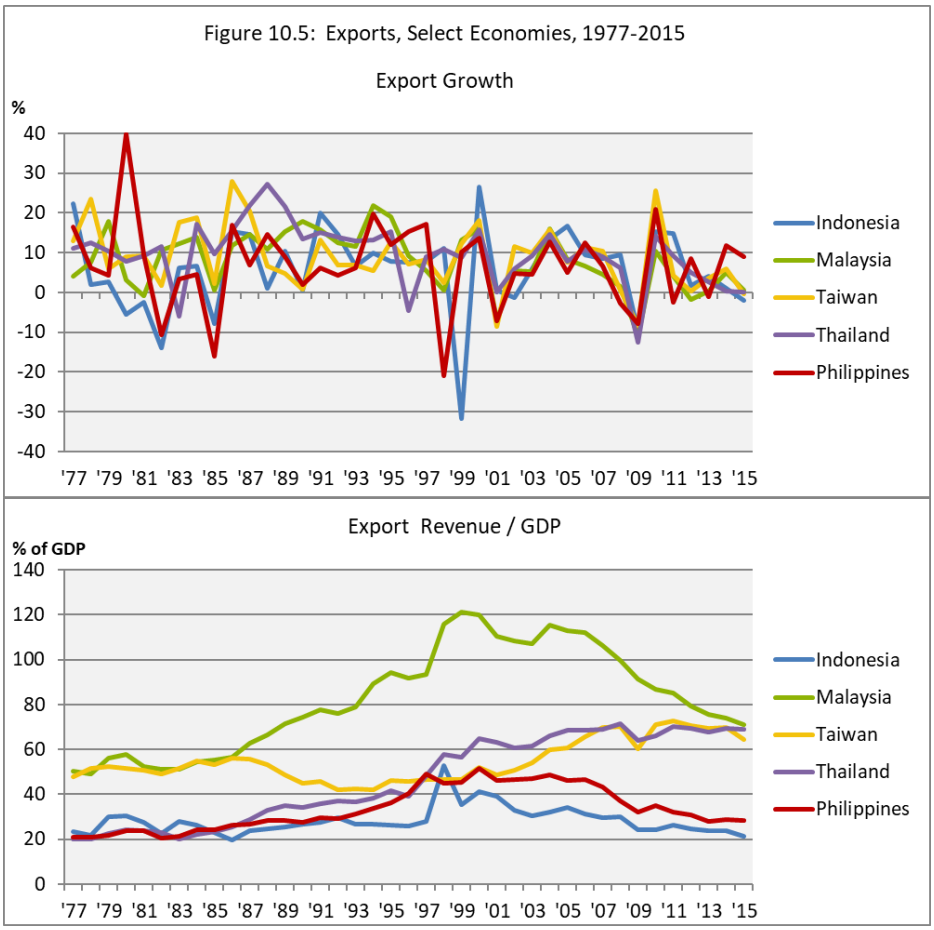
The story of the Philippines in the 1980s is in keeping with Mills and Minsky in putting financial overshoot and collapse at the heart of boom and bust cycles. Economic growth was propelled by mounting debt that passed the point of sustainability. Brought to a vulnerable state, the economy was struck down by such shock as happened to come along.

Later cycles

The next cycle, involving a contraction in 1991, is not a ready fit for a Minsky-type story. As shown in Charts 10.3 and 10.4, in the prelude to the contraction both domestic and foreign debt indicators were well below their peaks of the 1980s. In this instance, a simple shock-based theory in the contemporary mode serves well. The shocks were many and serious: major natural disasters including the eruption of Mt. Pinatubo, the most powerful volcanic explosion of the 20th century; multiple coup attempts againt the government of President Corazon Aquino; closure of U.S. military bases that had accounted for five percent of GDP; and disruptions to power supplies that caused widespread shortages of electricity. Per the standard contemporary paradigm, these shocks shifted the short run aggregate supply curve to the left moving the economy temporarily below its long-run equilibrium output level with a gradual recovery process following as capital and labor resources were absorbed back into full employment.

The Asian Financial Crisis brought the next exogenous shock in 1998.Compared to its neighbors, the Philippines got off lightly with GDP growth barely dipping negative. This gentle reckoning may seem surprising against the surge in bank lending that took place in the mid-1990s, the ratio of bank assets to GDP reaching a much higher peak than in the previous crisis (Chart 10.3). Actually, a bank crisis (defined by the World Bank as bank runs, losses, and liquidations) did follow, and stretched on for five years. The cause of the 1990s bank lending run-up carries echos of the 1980s. Tan (2002) describes a phenomenon of "behest loans": "propose a project with little or no collateral upon the behest of the President, pocket the loan proceeds and invest a small fraction for show." Yet the number of banks engaged in such folly was circumscribed. Much of the banking system remained on a strong footing, and a credible free press was effective in communicating this to the public so that widespread bank runs were avoided. Nor was reliance on external borrowing excessive, and in fact, the ratio of external debt service to exports dropped sharply in the mid-1990s (Chart 10.4). The minor contraction of 1998 thus represents a case of an external shock that the Philippines was well positioned to weather.

The shock of the Asian Financial Crisis was transmitted largely through reversals of earlier foreign capital inflows. By contrast, the shock of the Global Financial Crisis bore its impact largely through export market contraction. Export growth for five regional economies is shown in the top panel of Chart 10.5. All five were hit with a decline in exports on the order of ten percent in 2009. Yet the Philippines was able to sustain GDP growth at a positive 1.1 percent rate even as its neighbors fared much worse. The relative success of the Philippines may be explained in significant part by the country's low export-to-GDP ratio, shown in the bottom panel of Chart 10.5. Both the Philippines and Indonesia had ratios below 40 percent as opposed to ratios above 60 percent for Taiwan and Thailand and above 80 percent for Malaysia. One might be tempted to conclude that limited engagement in trade can shelter an economy against external shocks, and that is probably true. The downside, however, is slower trend growth as the advantages of trade are missed out on.



In interpreting the Philippine experience we have recognized a role for both exogenous shocks and endogenous vulnerability associated with the state of the financial system. A theory that focuses strictly on shocks within a paradigm of equilibrium may work well in some instances, as in the case of the Philippines' 1991 recession. In other instances, a paradigm that involves the financial system and its tendency for cyclical dynamics yields greater insight. That a political assassination, such as took place in the Philippines in 1983, could have precipitated the worst economic crisis in East Asia in 40 years strains credulity without recourse to the state of underlying financial conditions. Similarly, for understanding the Philippines' capacity to absorb the exogenous shocks of 1998 and 2008, recognition of the essential soundness of the financial system is instructive.

Interplay between Shocks and Fragility

An exogenous shock theory and an endogenous cycle theory of booms and busts need not be mutually exclusive. Indeed, Walter Bagehot (prounounced "badget") melded the two back in 1874:

> it is of great importance to point out that our industrial organization is liable not only to irregular external accidents, but likewise to regular internal changes; that these changes make our credit system much more delicate at some times than

> others; and that it is the recurrence of these periodical seasons of delicacy which has given rise to the notion that panics come according to a fixed rule; – that every ten years or so we must have one of them. (p. 125)

According to Bagehot, there is a tendency in a time of economic expansion to perceive great opportunity in all manner of ventures. For a while, such perception is reinforced as success comes easy. Credit is readily extended and a virtuous cycle takes hold as new investment stimulates employment and incomes which in turn creates fertile ground for new investment. However, again turning to Bagehot's words:

> people are most credulous when they are most happy; and when much money has just been made, when some people are really making it, when most people think they are making it, there is a happy opportunity for ingenious mendacity. (p. 160)

Excessive risk taking and heavy leverage make an economic system vulnerable to shock. When the shock hits, some borrowers will be unable to repay their loans. In turn, lenders will become more cautious. Employment and spending will contract, so that more businesses go under and more loans go bad. Society is then encumbered with a dearth of trust, and the economy stagnates. This malaise will have to run its course. In time, eyes will once again be opened to opportunity and new sprouts of activity will germinate. The cycle then begins anew.

Shocks are ongoing and ever present. What mainstream contemporary theory misses is that at certain times an economy is highly resilient to them while at others it is brought down. Bagehot saw exogenous and endogenous forces working in concert. That seems like a perspective worthy of resurrection.

Data Note

US inflation and unemployment rates shown in Chart 10.1 are from the Bureau of Labor Statistics.

Business cycles for a host of countries are tracked by The Conference Board, a non-profit business membership organization headquartered in New York City with offices worldwide. Since 1995, The Conference Board has been the official source of business cycle indicators for the United States, taking over this function from the U.S. government. In Asia, the Conference Board produces indicators for China, Japan, and Korea. The Organization for Economic Cooperation and Development produces leading and coincident (but not lagging) indicators for China, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The United Nations Statistical Commission is developing capacity among member countries to construct a database for business cycle indicators.

Figures on Chinese debt are from the "Monetary Policy Reports" of the People's Bank of China.

All data for the Philippines and comparison economies in Charts 10.2 to 10.5 are from the World Bank.

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A 2011 interview of former U.S. Treasury Secretary Lawrence Summers at the Institute for New Economic Thinking illustrates the recourse of modern economic policymakers to historic thinkers, Bagehot and Minsky included, in the wake of the 2008 financial crisis.

Besomi (2006) interprets the history of thought on business cycles along lines adopted in this chapter distinguishing between two views, one that holds equilibrium as the norm with fluctuations as aberrant and another that sees oscillations as the norm possessed of their own internal logic.

The Juglar quote from 1862 that "the only cause of depression is prosperity" is drawn from Schumpeter (1954, p. 1124). Schumpeter was himself in accord with this perspective. He regarded Juglar as "among the greatest economists of all times" (p. 1123), and took it as an "indictment" of "the vast majority of the economists" that "they treated cycles as a phenomenon that is superimposed upon the normal course of capitalist life and mostly as a pathological one; it never occurred to the majority to look to business cycles for material with which to build the fundamental theory of capitalist reality." (p. 1135)

In his 2007 memoir, Alan Greenspan provides a colorful insider account of U.S. events during 1960-1980 as depicted in Chart 10.1.

The concept of rational expectations originated with Muth (1961) and was launched into the macro modeling mainstream by Lucas (1972). The pioneering work in real business cycle DSGE modeling is Kydland and Prescott (1982). King and Rebelo (1999) provide an overview and assessment of real business cycle theory. The standard reference on New Keynesian DSGE

modeling is Woodford (2003). In cutting edge DSGE models, Farmer (2015) points to a key role for confidence. He refers to these models as "endogenous business cycle" models but means something different by this term than is meant in this chapter. His notion involves exogenous shocks being endogenously propogated, in contrast with standard models that require repeated shocks in the same direction to sustain a boom or a slump. Farmer's article provides a succinct outline of the structure of various classes of DSGE models.

The discussion of Chinese credit innovation draws on unpublished notes to clients from GaveKal Dragonomics and J Capital Research.

On the Philippines, a penetrating analysis of the causes of the crisis of 1984-85 was produced by the University of the Philippines School of Economics under the editorship of Emmanuel de Dios (1984). A good overview of the 1980s and 1990s is presented in Balisacan and Hill (2003). Tan (2002) provides an insightful analysis of the banking crisis of the early 2000s.

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