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The Boom and the Slump: A Causal Account of the '90s/'00s and the '20s/'30s

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Economists and, it appears, much of the civilized world has some familiarity with the modern model of unemployment, more generally, the level of economic activity. It is understood that there is, leading from whatever the current starting point, some “natural” path of the unemployment rate having the essential property that inflation will speed up if aggregate effective demand overheats the economy, driving the unemployment rate under its natural path. That could be a result of a central bank move that lowered the real interest rate below the path of the natural interest rate; or to an unperceived shift up of the natural interest rate path that left market rates behind.

Many laymen, seeing the stunning surge of U.S. employment in the late 1990s and its reversal – plus a further slide – in the past three years, all this with no rise of inflation over the boom and little decline over its aftermath, inferred that this once-reigning model is a failure. But such an inference is not a knowledgeable assessment. Laymen may grasp that economic institutions and policies generally impact on “the” natural rate – the rate that every natural path (each from its particular starting point) approaches, which might better be called the medium-term natural rate. However, they know little of what the model has to say about how market forces and market mechanisms shape the current natural path, its possible detours and shifts. As one of the inventors of the early model and a developer of its advances, notably those of the last 15 years, I think I see the misunderstandings on which this impression of failure is based and the knowledge that needs to be conveyed for the public and general practitioners to be able to use the model.

This paper revisits and, at places, revises a trilogy of essays for the financial press over the past four years and another one on open-economy aspects, all aiming to explain how the modern non-monetary model of investment and economic activity works and how, theoretically, it can generate the kind of inflationless expansion and disinflationless contraction associated with the great investment boom of the late '90s.¹

The first section addresses the birth of the boom. After dispelling some major misunderstandings of the modern theory, I lay out in simple terms the mechanism by which new expectations of productivity gains in the future impact on the levels of various investing and the level of economic activity in the present. Call it a theory of “rational” investment booms, which can serve as a benchmark for analyzing the unfolding of booms when, as always, the future is in fact quite uncertain and “rational expectations” are not well-defined. After that, the plot thickens.

The next section looks at the mechanism by which the boom ended and at its aftermath. It begins by asking how – and why – such a boom would end if, somehow, everything could go and actually went as expected. At center stage here is the realized productivity increases whose newfound expectation had sparked the boom.

The rest of this section is about the aftermath: It is plausible that the downturn has overshoot the medium-term natural rate level and, if so, one wants to know why. No doubt, things didn't go as exactly as expected and the errors likely caused some over-investment. The discussion casts a critical eye on the “Austrian” thesis, widely accepted in financial circles, that after over-investment the economy suffers a bout of sub-normal activity. The Austrians, it is argued, needed to posit an open economy with a global capital market.

The third section points to the possibility in an open economy (which the U.S. is) that a further mechanism from future prospects to present activity operates through the real exchange rate. It also comes back to the nagging question about the aftermath of the boom's end. Unless there has been a marked worsening of the

¹ The three are from *The Wall Street Journal* of April 7, 2000, June 3, 2003 and January 5, 2004; the other, with Gylfi Zoega, appeared in *The Financial Times*, July 31, 2002.

medium-term natural unemployment rate level, we have to infer that the downturn over-shot that medium-term destination. What caused it, then? The second-draft answer is the depletion of the stock of customers and associated strengthening of the dollar, both caused in turn by the investment surge during the boom.

The subsequent section looks back at the historic experience of the U.S. economy in the '20s and '30s, which in several respects has an uncanny resemblance to the recent experience. Sure enough, the realizations of extraordinary productivity gains were present in the problematic and incomplete recovery of the '30s, which suggests the possibility that return to the medium-term natural rate (if it has not deteriorate from other causes) may be a rather long slog.

The last section reacts to a recent commentary that I have not discussed before. Has macroeconomics been diminished by its performance – or non-performance – over the years of the boom and slump? In the minds of some reflective and seasoned observers, the run of extraordinary forecasting errors since the onset of the boom signals a profound failure of macroeconomics. I will argue for a less extreme conclusion.

UNDERSTANDING THE MODEL

Several misunderstandings of the model arose or became evident in the boom years.² One of them was over the nature of the natural unemployment rate. Most laymen understood the natural rate to be a constant – like the speed of light – and equal to 6%. When they saw the actual unemployment rate sink to 4% while the inflation rate was drifting down, not up, they rejected the model.

But the model's inventors in the latter half of the '60s, Milton Friedman and myself, never saw the natural rate as a constant. By its nature it is not tied to monetary decisions – to the supply and demand for money and the expected inflation rate; yet it certainly is tied to market decisions. The natural unemployment rate is itself a market variable, one determined by nonmonetary forces acting through nonmonetary

² This section draws heavily on “Low Unemployment, Low Inflation: What Gives?” *Wall Street Journal*, May 8, 2000.

economic mechanisms. (The same is true of the natural rate of (real) interest, a companion concept introduced by Knut Wicksell a century ago.) Experts agree that the natural rate has seen wide swings. The natural rate is estimated to have stood around 4.5% in the mid-1950s, climbed to 5% or so by 1970, surged to perhaps 6.5% in the mid-1980s, and gradually resumed a secular decline that had been masked by employment-damaging shocks in the 1970s and early 1980s.

Critics also charge the model with a basic theoretical error: It is not the employment rate but monetary policy that affects inflation, they say.

The model doesn't say otherwise. In modern models of both inflation and employment, the natural rate is one component and monetary policy is another. A function of such models is to explain how a central bank's monetary policy not only drives price levels, but has transient employment effects too. If monetary policy shifts toward higher inflation, the imperfectly informed market adjusts prices with a delay, which deflects some of the impact of the policy change to employment and drives it above its natural path. This spike in jobs is not the cause of the increased inflation, nor is the latter the cause of the spike in jobs.³

Supply-siders complain that the model instills fear of low unemployment, causing the central bank to stifle growth. They contend that the central bank should fix an inflation target; with such a target clearly in its sights, inflation would not get far when unemployment falls. But even with an inflation target it makes sense that the central bank should pay attention to the gap between the actual unemployment rate and its estimated natural path. That gap gives the bank a better idea of the magnitude of any current excess liquidity and thus the degree to which policy must be tightened if it is to hit such a target. If central banks should heed the euro, as many supply-siders urge, why not also mind that gap?

Finally, some think the model omits supply shocks. A supply shock that lowers the natural unemployment rate, they suggest, works to decrease both inflation and

³ In some versions of the model the spike could be viewed as the proximate effect of the unexpected spurt of inflation and the ultimate effect of the monetary policy shift.

the actual unemployment rate. In ignoring supply shocks, they conclude, the model often gets the direction of the inflation rate wrong. But, again, the model says is that the inflation rate will fall if unemployment is held above its natural path; such a gap can occur through a rise in the actual unemployment rate (via a contraction of demand) or a fall of the natural rate (via a good supply shock).

Model meets boom. The task now is not to rebut yet more false charges but to explain how unemployment could fall so low without raising the inflation rate. The test is to find the sort of non-monetary forces and the non-monetary mechanism that could bring about an extraordinary dip of the natural rate path from around 5 ½% in 1995-1996 at the threshold of the boom down to 4% over most of 1999-2000 and then back up – reaching its original level or a higher one by 2003. One way to do that, clearly, is to posit a temporary structural shift, one that kicks in at the start and is canceled at the employment peak in late 2000. The other way, which is proposed here, is to posit a permanent structural shift, such as a technological advance, that causes the natural rate path to detour to a lower unemployment rate, then return to the original natural rate path – very approximately, at any rate.

Needless to say, such a detour of the natural rate path cannot be attributed to higher effective demand result from higher consumer and investment spending. While the velocity of money can cause higher prices and a transient rise in jobs, it cannot budge the natural rate. The game is to locate the permanent structural shifts, newly experienced or newly foreseen, that boosted employment before taking some of the gain or all of it or more than all of it away.

The estimated effects of compositional shifts within the labor force need to be taken into account, of course. A study Gylfi Zoega and I conducted looks at the composition of the labor force in terms of four education categories. The change in the relative size of the high-school dropout group (from 15% in 1989 to 10% in 1999) and other changes on up the education ladder markedly decreased the weighted average of the unemployment rates within the individual groups. This composition effect might alone have reduced the

natural level of the average unemployment rate by a quarter-point in the latter half of the 1990s. A study by Lawrence Katz and Alan Krueger calculates the compositional effect on the unemployment rate of the declining supply of the young in the labor force, of the increase in the prison population and of the increase in temporary help. These compositional shifts may have reduced the natural rate in the latter half of the 1990s by another quarter-point. But the effect of all these compositional changes, even if not offset by other compositional effects in the opposite direction, would leave two-thirds of the decline between 1996 and 2000 of the average unemployment rate to be explained in other ways. Furthermore, if these compositional changes are permanent, their effects are permanent; yet the boom was apparently temporary.

In any case, there is far more to the boom than composition effects on the labor force. Compositional explanations would be needed had the jobless rate of workers within each age and education group not fallen steeply during the boom years. In fact, though, unemployment rates within education groups began a steep descent in 1996. The dropouts' unemployment rate slid from 9% early that year to 6½% in 1999. Real wage rates of low and median earners showed fat year-to-year gains starting in 1997. This sort of expansion could not have been a demographic phenomenon. It must have been some kind of boom.

A clue to the causes of the expansion is the signs of an investment boom. Business investing in new equipment and structures rose by nearly one-third, to 13.7% of GDP in 1999, from 10.8% in 1995. Other data indicate more investing in the training and recruiting of new employees. There is also evidence in the shaving of markups during the boom that firms were attempting to acquire more customers and new markets. The pick up in firms' valuations of these business assets led to more jobs (trivially so in the case of recruiting and training new employees): In construction, better real prices boosted labor demand. Many industries foresaw sufficiently better profits ahead – in some cases, far ahead – to accelerate costly hiring. Expansionist firms drove down industry markups, which boosted sales, employment and real wages.

What prompted these asset revaluations? One development that is brought up by a large number of observers is the big productivity speedup in the business sector that became visible at mid-decade. From 1973-95, the growth rate of nonfarm productivity remained slow, between 1.4 % and 1.6%. From 1995 onward, the mean annual growth rate was 2.6%; it shot up to 4% in late 1999 and early 2000. Since the expected future productivity growth rate is an offset to the interest rate in calculating the cost of capital for investment, a big cut in the net cost of capital resulted in some industries.⁴ It has been estimated that a one-point rise in the growth rate, if built into expectations of future productivity growth, might serve to lower the natural rate by half a point. This influence, then, might account for a reduction of the natural rate from the hypothetical 5% in pre-boom 1995-1996 to 4 ½%.

Recent studies of historical data over a long span, however, now suggest that the force of expected productivity growth may be considerably weaker than first estimated back in the 1990s. As argued in a paper by me and Hian Teck Hoon, the shuddering, eye-popping slow-down experienced with the quick end of the “economic miracle” on the western European continent in the 1970s and Japan in the 1980s provided pretty persuasive evidence that expected future growth rate of productivity growth does matter. Yet one-point changes may make significantly less difference for the natural unemployment rate than recently believed.⁵

The other development, the one on which I place my emphasis, is newly acquired expectations of a one-time upshift in the path of productivity, and hence of profits on business assets, down the road – a lift of the trend path coming on top of any steepening of that path. Although we economists cannot directly observe shifts in managers’ expectations of profits at some future date, stock-market indicators such as share prices and market capitalization measures may reflect those valuations. Statistically, since 1960 these measures have been big influences on unemployment

⁴ The point was first argued by Christopher Pissarides in his 1990 book and within a purely non-monetary setting in its 2nd edition.

⁵ This paragraph is new and reflects the findings from a study of UK time-series by Timothy Hatton. My main theme was the second development (in the next paragraph), though, so I am not unhappy if the first development is now viewed as less strong than before.

two to four years later. Gauged by that pattern, the stock-market rise between 1995 and spring 2000 cut the natural rate by between a half point (taking the rate from the previously estimated 4 ½% to 4%) and a full point (taking it to 3 ½%).

The fallacy of a “new economy”. The above two expectations are pinned on the prospective success of products and methods created by the new economy. Behind this achievement is good political economy: rewards to successful innovators, markets open to startups, the discipline of share-owner value and the rise of venture capital.

The new economy mystique has no plausible explanation for the fall of the natural rate. The new-economy tenet that globalization keeps a lid on the price level, so much lower unemployment has become possible, is an error. What has contained mark-ups is the real exchange rate appreciation induced by the investment boom – and investment booms come and go. So too are the ideas that new information technologies take us to perfect markets that banish unemployment, and the idea that such a new economy will eliminate business fluctuations.

The new economy has been a test of the modern model. It confirms that the real forces of enterprise and finance—not money and banking—are the ultimate drivers of unemployment. It has contracted the natural rate through venerable market mechanisms, not any new rules. As this new economy goes from prospect to realization, these same mechanisms will work in reverse to send the natural rate back to some non-boom level. That is, until the good old economy creates the next wave of promising innovation.

HOW BOOMS END (IDEALLY OR IN PRACTICE)

The towering investment boom of 1996-2000 was a huge lift – and not just for wages, profits and employment.⁶ There may never been a time in U.S. history when innovative activity was more engaging and working life more rewarding. The task now is not to create

⁶ This section draws heavily on “False Hopes for the Economy – and False Fears,” *Wall Street Journal*, June 3, 2003

artificially a replacement boom by assorted stimulants, which would be hard at best to do anyway. It is to maintain and, where possible, improve the vitality and creativity of the economy so that high performance is the norm rather than the exception.

The public, though, is not in a frame of mind for talk of fundamental reform. The loss of the boom has left people feeling uneasy. They know that after the 1920s boom came the Great Depression. Some know that the 1950s boom was followed by the 1960s boom. (With time-outs, the great boom of the last century ran 30 years – despite deflation!) There is a cacophony of opinion on the economy's prospects and recent policy interventions. Conflicts among theories that were dormant have broken out in the open. We cannot get to the deep issues until we dispel the more unlikely of the Cassandra scenarios and the Pollyanna theories that plague present discourse.

False hopes. The most mindless optimism speaks ritually of “the recession” from which we can expect “the recovery” – in labor, product and capital markets. What recession? Standard interpretations of the usual charts estimate that in 1995-96 the U.S. economy was at or close to its long-run normal state – with monetary disturbances in abeyance and no big non-monetary disturbances either. (The core inflation rate was steady, averaging the same rate as in 1993-94.) Of course, what is normal is always evolving, sometimes shifting sharply. Yet, impressively, the period's unemployment rate, 5.5%, the share of GDP going to labor, 65.8%, and stock-market wealth relative to the GDP, about 115%, were on the whole not far from their levels in two other pretty normal periods, 1987-88 and 1971. In the next four years the economy boomed, posting records in all these respects and others. Since 2000 it has fallen back: in spring 2003, with the economy appearing finally to have hit bottom or nearly so, labor's share was back to its 1995-96 level, the stock market back to its 1997 level and the unemployment rate, at 6.1%, back to its 1994 level. So the economy finally got back – more or less, give or take – to a rough normalcy. It was the boom that was abnormal.

Now, in March 2004, the abnormalities look more durable and serious than they did on the basis of data up

to May 2003. The unemployment rate popped up to 6.4% in June 2003. And it has been calculated that if the unemployment rate – normally, unemployment taken as a ratio to the actual measured labor force – were instead taken as a ratio to the labor force that *would* prevail right now had the participation rate of working-age adults *not fallen* since June 2003 as droves of workers left the labor force in discouragement at the poor prospects of finding soon a job, this redefined rate of unemployment would now (in March 2004) be 6.3%. So, on this closer examination, the true unemployment rate appears to be nearly a full point above what we thought the natural rate was in 1995-1996, which was what we might reasonably have supposed the natural rate is still. I hesitate to call this present state a slump: But *if* the medium-term natural rate is still somewhere between 5% and 5½%, we have to call this state a small though temporary slump. In short, it is noteworthy that the economy found its footing – and righted itself within range of what I suppose the medium-term natural rate to be – but, to be more precise, it landed in a mild slump, either a slump that is temporary, as I prefer to think, or a slump that is permanent for reasons not identified (though there are always candidates).

Of course, the whole notion of normalcy (conditional on present institutions, policy settings, world conditions, etc.) is utterly foreign to some. They take the view, many of them perhaps unconsciously, that there is no normal state to which the economy tends to return – even given current institutions, tax rates and welfare rules, and entrepreneurs' spirits. The normal level of employment, they say, is a statistical artifact that moves up if the government takes any of the straightforward measures to raise the level of economic activity – if the central bank (the Fed) gives support with low interest rates and ample liquidity or the Congress does by spending more money. Behind that view is the “aggregate demand” fallacy: the government can deliver high employment simply by stimulating a high level of aggregate “effective demand” – by easier money or bigger budgetary deficits. A. W. Phillips sensed the mistake here, arguing in 1958 that a pumped-up employment level typically brings a higher rate of inflation (which he illustrated with his famous curve). Milton Friedman and I corrected Phillips, explaining in 1968 that, to keep on doing the trick, the rate of

inflation would have to be driven higher and higher – until the payments system broke down or the policy was halted. Unemployment cannot be kept forever below its “natural” path, along which the rate of inflation is neither rising nor falling. In natural rate thinking, a tax cut may boost employment through effects on incentives to work (as supply-side economics preaches), the cost of labor and the cost of capital – not through effective demand.

Among these same economists, the ones who think always and fundamentally in terms of aggregate effective demand, there is often an egregious overconfidence that a depression – a long, though temporary, slump – cannot happen, now that proper monetary policy is understood. This Pollyanna belief suffers from two errors. To see the first error we have to acknowledge that correct natural rate thinking has a role for aggregate effective demand. (“It’s a question of who is the master, that’s all.”) For actual employment to home in on the natural employment path, market mechanisms have to drive demand up or down, as needed, to tailor it to the GDP producible at natural employment. But economists don’t know accurately where the natural rate is; so how can the market? The gyrations of the dollar show the markets struggling with uncertainty.⁷

The other error is not to grasp that bad things can happen and may already have happened to the medium-term natural unemployment rate. If CEOs, seeing more difficulties or risks for profits ahead, shift to more austere capital budgets for the acquisition of expanded business assets, the natural rate will go up. There can be structural slumps – with or without disinflation, temporary or permanent.

There is a third way by which things can go sour. Non-monetary forces operating through non-monetary mechanisms could build up over the boom years and

⁷ In the *Journal* piece on which this section is based adds that “[i]f the natural rate is, say, 5.5%, its mid-1990s norm, the fall of unemployment to the natural level would seem to require that exports get back to the share of GDP they had in 1995-96. That would appear to require the dollar to fall to its mid-1990s level – about \$1.35 to the euro.” The last sentence was a mistake. The stock of customers is what must be restored. The further real depreciation, which is theoretically inevitable, will only invite firms to raise markups further, which will actually contract employment, taken alone.

continue for a time even after the fuel propelling the boom is spent; as a result, the economy doesn't just subside back to its starting unemployment rate – the downturn glides past that point, a sort of over-shoot. Let us examine one of the widespread interpretations of such an over-shoot.⁸

Has over-investment forced overshoot? Economists on Wall Street appear to agree that the economy's downturn has significantly overshoot the medium-term natural rate; and they have apparently agreed on a story about how that happened. They say that the investment boom, with its extra purchases of capital goods (and extra jobs to make them), caused the U.S. capital stock to get "ahead of itself," with the result that capital-goods spending (and capital-goods output of domestic industries) will for years be *below* its normal path – to give wear & tear and obsolescence the chance to work off some of the excess capital (rather than maintain it or add to it) and to permit the economy to grow into the rest. If that story is right, employment will also stay for years below *its* normal path. A transient slump after the boom.

But, first, what if only a rather small part of 1990s investment is proved to be over-investment? No slump should be expected to develop following an investment boom inspired by new expectations of some outside future productivity gain *if* those expectations prove correct – a sort of rational boom. Then the capital stock surges toward a higher trend path that is justified by the subsequent surge of productivity to a higher trend-path. The latter serves to restore the capital-output ratio and causes annual investment to subside to its new normal path – not fall *below* its new normal path and not forcing a slump. In this tale of rational boom, there *is no slump* after the boom, only the gentle unwinding of the boom.

The present-day preoccupation with the over-investments and other excesses in the boom phase has its ancestry in the articulation of an "Austrian" cycle theory by the Austrian economist Ludwig von Mises in the 1920s. In the theory, every boom in the gathering

⁸ This paragraph was added to the original mainly to clarify the direction of the discussion. I am assuming for the sake of argument that there has been overshoot, not a permanent drop of the natural rate well below its 1995-1996 level, which is taken to be about 5½ %, give or take a quarter point.

euphoria brings “over-investment” and, for that, society must pay the price of a temporary slump to counterbalance the boom; and that is why, for Austrians, booms are unwelcome. Yet, when it comes to just why the misjudged creation of extra capital should lead to a temporary slump, Mises and his mostly Austrians successors offered no real argument, just assertion. Imagine a sudden addition of capital was heaped on the world. The growth rate of the capital stock would have to drop. But, for that, it would be more than enough that gross investment not increase as a ratio to the (increased) capital stock; it wouldn't require a decrease of investment or of jobs. Indeed, one of my three structuralist-type models says world markets would react to the addition of capital with a sharp drop of interest rates, a jump of capital goods prices skyward, and an immediate lift of real wages and jobs! The saving point for the Austrian contention is that if the over-investment is concentrated in the U.S., the U.S. alone cannot achieve the full drop in interest rates required because it is just one part of the world economy. Of course, that won't wash if over-investment was not much less important in Europe and Asia.

We might consider the related fear that, with the capital stock pushed far higher last decade than will be justified by productivity gains this decade, expected rates of return on business assets must have fallen, so the rates of interest required for unemployment to attain and stay at its natural rate must have fallen similarly. The worry is that, if a recession were to arise, the economy would be faced with the need for interest rates of close to zero, even below zero. Should that come to pass, vast parts of the financial system would go under, unable to provide a return competitive with that on good old cash. Then disinflation would pick up and lead to deflation, intensifying the problem.

But the present overhang of 1990s over-investment appears far too small to have caused a decline in rates of return large enough to put us close to that interest-rate trap. From 1996 to 2000, the extra investment going on was 2 percent of GDP. So the increase in the capital stock in those 5 years was about 10% of annual GDP. That would likely have boosted the capital-GDP ratio by about 5% – from, 2.0, say, to 2.1. Hardly enough to push us to the edge of the interest-rate trap. Besides, while we never want to get too close to the trap, fear that the

risk of falling into it has greatly increased seems over-blown. Medium- and long-term interest rates today are like those in the 1950s.

Nevertheless, to return to the Austrian theory, I have the sense that it does have some facts on its side. The fact is that the 10-year rate on the US Treasury inflation-protected bond remains below 2% -- and often well below that. That is a great deal lower than the range in which that rate fluctuated in the pre-boom period of 1995-1996. That indicates that there *is* an over-hang of capital from the boom years. The only issue is whether it is the primary force behind the mild slump – the overshooting past a presumed medium-term natural rate still as low as 5 ½% or lower.

The strong productivity gains of late. The question of the day is what the information revolution and that part of the globalization process that it is stimulating means for jobs now. Since the boom ended, the result is not just that the extra jobs created in the capital-goods sector are gone. It is that the newly installed software embodying the new information technologies seems to have opened a Pandora's box of cost savings that are now destroying old jobs in the consumer good sector – in the securities, airline and communications industries.

Mistakes have been made on productivity by several economists. I will venture to say this: It has been a terrible mistake to see productivity increases as creating jobs. Distinctions are required. *New expectations* of *future* productivity increases are a strong job creator. The left was dead wrong in arguing that dynamism spells wide joblessness. *Actual* increases are different. An unanticipated economy-wide increase could be, to a half-decent approximation, neutral for employment and for the balance between wages and nonwage incomes.

The lesson of rational booms is that realization of a long-anticipated productivity gain – hence one long reflected in the value CEOs put on a customer, an employee, an office, so it has largely generated already the extra investments that the gain justified – brings a cut in investment activity, causing employment to decline. (The reason is that the productivity gain generally raises the cost of acquiring more of each business asset – a reduction of Tobin's Q ratio.) The

gain represents an increase in the cost of keeping employees off production to train new employees; so that is the time to stop hiring, so jobs decrease and output increases. Such *long-anticipated* gains are why booms *end*, not how they are created.

Maybe we are in for a challenging period of anticipated productivity increases. Sorry to report that the 1930s recorded exceptional productivity gains, a finding I will take up again in the section after next. Yet this gloomy outlook is not the only tenable one. Recall that current *expectations* of future productivity gains not already anticipated in past investing serve to *boost* current investment activity, which generally lowers the natural rate. The decade could yet see a revival in expectations for future productivity growth. A real fear is that CEOs, for whatever reasons, have turned sour on the prospective returns to investment or have hiked the uncertainty premium in what they see to be their cost of capital. If they have, the causes of the loss of confidence must be identified and addressed. Another real fear is that our economic institutions and government policies still tilt toward old capital, entrenched managers and CEO pay still not geared to results. We must guard against European corporatism and old-fashioned cronyism.

The real hope is that the enterprising spirit is so strong here that, even if the system is not tuned up for best results, there will continue to be enough upstart entrepreneurs and established ones that will hit upon ideas for new products and methods worth developing and trying to market. With just our accustomed dynamism we can look forward to normal times, with their ups and downs.

THE DOLLAR, CUSTOMERS AND JOBS

Since mid-2000 the dollar is down more than a quarter against the euro and the market value, called market capitalization, of all U.S. stocks is down about a third.⁹

⁹ This section draws heavily, with a revision at the end, on Phelps and Zoega, "Portents of a darkening outlook," *Financial Times*, July 31, 2002. The percentage declines cited in the first sentence have been updated (with no attempt at exactness).

But what these declines signify for the medium-term level of economic activity – jobs and GDP – is far from agreed.

Radicals say foreign-exchange and stock markets are sideshows of clueless investors with, fortunately, no effect on output and jobs. Stock analysts speak of the “real economy” as if real exchange rates and real share prices were not really a part of the real economy.

In our view, the two markets give valuable signals (maybe as good as we have) of U.S. economic activity activity a year or two ahead. True, markets lost their moorings in 1999. But so did CEOs who forecast 15 per cent earnings growth 5 years out. Both CEOs and markets operate in an economy whose structure they do not fully know, so they can badly misgauge future returns to investments. Yet it does not appear to us that markets are unconnected to CEOs and CEOs to markets.

Monetary economists say the two markets matter but pull in opposing ways: A fall of real share prices lowers economic activity by lowering “effective demand” but a weaker real exchange rate stimulates that demand, boosting activity. Crude monetarism holds that the real exchange rate will drop just enough to offset the drop in shares, returning employment to some fixed preternatural level – as if there was any such thing. Keynesians warn of a net deficiency of effective demand and ensuing disinflation as if the Greenspan Fed could not or would not create more money to close a deficiency and prevent disinflation and as if money wage rates would be just as helpless to adjust. Sounds like 1947.

In our framework, both a weaker real exchange rate and weaker real share prices are signs of worsening business prospects, hence omens of reduced investing in business assets and reduced GDP and jobs. The driving forces behind big swings in a nation’s economic activity are non-monetary fundamentals – world real interest rates, workers’ wealth and entitlements, tax rates, expectations for technical advances and thus productivity growth, confidence in the political climate, investor trust, etc. They are mostly expectational, speculative, unobservable, unmeasurable. Yet, their net thrust is reflected (whether too much or too little) in real exchange rates

and real share prices – meaning nominal rates and prices adjusted for price levels. Usually these forces are pretty well registered in the markets before they have had much of their effect on output and jobs.

Exchange rates and share prices are causes too. A weaker real exchange rate, in hindering overseas competitors and thus inviting higher markups, contracts output and jobs supplied. Weaker share prices, by impeding investment financing, also contract output and jobs supplied.

Either way, as causes or effects, the strength of the real exchange rate and of the real share-price level are theory-grounded predictors of where present forces are taking an economy one or two years ahead – absent a shift in the winds. A weak real exchange rate, like a weak stock market, spells weak activity ahead.

The evidence. These views have been tested before on time series evidence. We found in a May 1992 paper that when a country's real exchange rate is strengthening its firms' markups are declining and when its markups are being shaved its unemployment rate is shrinking. This supports our framework's implication that a weak real exchange rate bodes weak activity.

We found in a April 2000 study a pretty stable relationship between the strength of stock markets (adjusted for price level and labor productivity) and jobs since 1960 – not only in the U.S. but also in most G7 countries, Holland, Belgium and Spain. If real share prices move higher and stay there, employment rises too – not all the way to the predicted value in a few years' time or even in the right direction every year, but it tends to get there. Is this effect of the stock market on output and jobs the result of its Keynesian stimulus to “effective demand”? Not if the unKeynesian effect of real exchange rates is a guide.

The acid test is to look across countries to see how their employment levels relate to the strength of their real exchange rate and of their stock market. If our framework is right, economies with a strong real exchange rate and strong share-price levels will, on average, have strong employment.

Stock market data depict a powerful, positive relationship between stocks and jobs. For us, it is the upward-sloping “supply curve” implied by our framework. (The figure records for each large OECD economy the employment level as a ratio to the labor force in 2002, using the latest month available, and the strength of the stock market as measured by stock market capitalization as a ratio to the GDP in 2001.)

To estimate real exchange rates we use the prices of Big Mac burgers put out yearly by The Economist. We measure a country’s real exchange rate by its Big Mac price converted to U.S. dollars and expressed as a ratio to the average dollar price of Big Macs in the euro zone. A strengthening, or appreciation, of its real exchange rate means a rise in this measured rate.

These data show clearly a positive and quite powerful relationship between the real exchange rate and economic activity. A higher Big Mac price, a *higher* employment level. The upward slope of this “supply curve” is precisely what our framework implies. Prospects sparking more investment and jobs cause a stronger real exchange rate and a stronger exchange rate creates jobs.

The implications. Our perspective, in differing from the monetary perspectives, has contrasting messages about a downturn like the recent one. In our view, when the driving forces slacken, economic activity is hit from two sides. Business asset values and real share prices sink, discouraging investment activity of nearly all kinds, which drives down employment. (Real wages drop but not by enough to forestall a fall of employment.) Unless prospects worsen equally abroad, the real exchange rate will weaken too, which adds to the contraction.

We conclude that the boom is over. The slide of the dollar that has already taken place will do nothing to offset the decline of share prices. The slide does augur higher exports, provided overseas economies stay strong; and it augurs higher profits, as firms jack up mark-ups. But the weakening of the dollar, taken alone, spells a *lower* GDP. The Keynesian tenet that a weaker currency lifts economic activity appears not to be

borne out as an empirical matter, not just as a theoretical matter.

Another conclusion might seem to be implied. Neither the dollar nor stocks is down to mid-1990s levels. So the medium-term future level of activity signaled by the two markets is somewhere between the pre-boom level of 1996, when the unemployment rate was 5.5 per cent, and the peak reached in 2000, when the rate was 4 per cent. This suggests somewhat better times ahead.

Thoughtful readers of the above analysis, however, may sense that there is another factor that needs to be brought in. The customer-market analysis rests on the notion of stickiness in the stock of customers, which permits the real exchange rate to diverge for a long time from so-called purchasing power parity. Yet the above analysis appears to go so far as to assume that the 4-year boom and the 4-year lapse back to normalcy occurred over so short a period of time that the customer stock could be taken as virtually unchanged throughout the period. In fact, though, the time span of dollar strength was long enough for the U.S. to have lost an appreciable part of its customer stock.

Customer losses contributed to over-shoot. Once an important depletion of the stock of customers at U.S. suppliers is taken into account, our model no longer suggests that the economy should have decompressed to a presumed-to-be unchanged medium-term natural unemployment rate level, thus to the natural rate that prevailed in the pre-boom mid-1990s, which we take to have been around 5 ½%. And the model no longer suggests that the markets ought now promptly to correct their thinking and send the economy quickly back to the medium-term natural rate. With the significant depletion of U.S. firms' customer stock we may have the missing link that helps to answer the nagging question to which the "over-investment" argument did not seem a full explanation: Why did the unemployment rate, especially if recalculated to allow for the exodus of discouraged workers, swell to a level well above any plausible assumption about the medium-term natural rate (to a level now around 6.3% on the corrected measure, as will be recalled from the discussion of the previous section)? The added explanation is that the U.S. *lost customers*

during the years when the dollar was so strong, owing to strong investment demand, and any such customer loss, taken alone, causes employment to be cut back; once investment had fallen back to its pre-boom level, the new paucity of customers dictated that employers continue to cut back – employment had farther to fall.

The customer stock becomes a factor helping us to understand why, absent favorable shocks, it will take a while for the U.S. economy to work its way back to the medium-term natural rate, assuming that that rate is appreciably lower than whatever that rate happens to be now. It will take time for the customer stock to be rebuilt to the level needed to support activity required for attainment of the natural rate.

So, yes, better times do lie ahead. But the reason is not necessarily that the markets went wrong and now have the possibility to put the economy back to where it should be in a single stroke. The reason I am giving is that the U.S. economy lost customers when the boom was making the dollar strong and normal prosperity cannot return until U.S. firms are willing and able to get those customers back – if nothing else comes to the rescue.¹⁰ But don't break out the champagne. There are other forces operating that may be pressing down on the level of economic activity, forces that might continue to do so. We need to think more carefully about the recent gains in productivity and related matters of outsourcing and trade.

LESSONS FROM THE '20s AND '30s

Booms are not all alike.¹¹ Nor slumps. The institutions and the shocks are never exactly the same. Yet the late '90s boom, its unwinding and slide into an outright

¹⁰ The preceding section has been added and also the paragraph immediately before it. Unfortunately, the loss of customers theoretically causes a reduction of mark-ups and real exchange rate depreciation, while the data to be explained show a stronger dollar than existed in 1996. The strength of the dollar is too great to be explained along my theoretical lines. Ditto the astonishingly low long-term interest rates. It may be that overseas currency pegs are keeping those currencies cheap and our interest rates low.

¹¹ This section draws heavily on my piece, titled "Crash. Bang. Wallop," *Wall Street Journal*, January 5, 2004.

slump from 2000 to mid-2003, and the recent harbingers of some revival have some striking parallels to the boom of the roaring '20s, the deep decline into the early '30s and, then, a striking though partial rebound. I see the primary causes of the two experiences to be analogous driving forces and shared mechanisms – in both cases non-monetary in nature. I incline to expect that the rest of the present decade will tend, barring new shocks, to resemble the rest of the '30s – a limited recovery with investment and employment below historical norms.

Causes aside, both experiences began with an investment boom, then a downturn in investment while consumption held up pretty well. Economic activity closely tracked investment: Employment and hours worked were elevated from 1925 to 1929 (unemployment at 3.2% in the odd years), then plunged till 1933 (hours worked falling 25%); they were again elevated from 1997 to 2000 (unemployment reaching 3.9%), then fell until mid-2003 (hours worked by about 8%).

Each boom was caused by the advent of a new general-purpose technology – commercially available electric power in the '20s, the information and communication technologies in the '90s. By mid-decade there were high and rising expectations of profits to be earned in the decade ahead from applications and extensions of the new technology. In the boom years these expectations fueled a wave of preparatory investing – much of it in infrastructure and employee training. The force of the expectations may be roughly gauged by the take-off of share prices. Take the S&P Composite stock price index adjusted for inflation – the “real S&P.” From pre-boom 1924 it rose 20% by 1925 and 104% by 1928; from pre-boom 1996 level it rose 30% by 1997 and 98% by 1998.

The basic mechanisms are simple, though not widely understood: New visions of future profits raise the values (per unit) that entrepreneurs and CEOs put on new investments in business assets – in job-ready employees, new customers, and plant and equipment – without raising (not soon at any rate) the cost of acquiring them; this prompts stepped-up investing in such assets. In addition, increases in these asset values sooner or later lead to a sympathetic rise in share prices, despite errors and distortions; and that raises both firms' financial power and financiers' power to fund new

projects and new firms. These developments in turn have labor-demand effects pulling up wages, hours and employment (in suitable models). Of course, decreased profit expectations operate in reverse.

Entrepreneurs, financiers and investors had to be deeply uncertain, however, over exactly where profits from the developments of the new general technology would emerge and how large they would be. With profit expectations resting more than usually on guesswork, business asset values and their reflection in share prices could easily lurch up – or down. (Markets may have been spooked by the slow rise of profits, which they did not understand would zoom later, when expected productivity gains were achieved.) When asset values weakened in mid-1929, climaxed by the October market crash, investing of all kinds was cut back. The resulting decline in output and employment led to an unexpected decline in profits and hence a further decline of asset values and share prices, thus also of investment. And so on in a vicious circle. The real S&P bottomed in 1932 – some 14% below its pre-boom 1924 level.

The markets' unnerving in 2000 and subsequent climb-down were broadly parallel, with the real S&P bottoming (October 2002) in 1996 territory.

The saga of the “recovery,” which began in 1933, is overdue for reexamination and is of special interest now in view of the recent rebound of stocks and jobs. Of course, recovery from the Depression never meant regaining the record investment and employment levels of the boom, since they rested on expectations of an extraordinary lift in productivity and profit ahead, not on expectations that might recur from decade to decade. But it could reasonably have been believed in 1933 that the economy would tend to recover at least to pre-boom investment and employment levels, which presumably were sustainable. The stock market seemed to be a believer. In 1933, a year after its low, the real S&P regained and passed its pre-boom 1924 level. In 1934 the real S&P average passed the 1925 level; in 1935 it reached the 1926 level. The latter level held up for the rest of the decade! These data are notable since the “unsustainable” share prices of the '20s boom were Exhibit A in the charge that the stock market was no way to run an economy. It is true that the market in late 1928 and early 1929 probed heights later proved too

high to be justified. But one might as well say the market in 1925 set prices too low.

This soar of share prices might be thought to have galvanized the economy onto a course of rapid recovery toward normal activity. But, after four years of rebound, hours worked in 1937 was still some 17% below its pre-boom 1924 level and unemployment, at 14.3%, was way above the 5% level of 1924 and 1920. (Stripping away those in WPA work would not lower it much.) There is a lesson in this for the present day, in which the recovery in the stock market and recovery of the economy are taken to be virtually the same thing. The '30s showed that recovery of real share prices is not sufficient for recovery of jobs.

What explains how in 1937, with seemingly great share prices for five years, employment was still depressed? Was it policy errors? Market mistakes? Or mostly something else? Part of the explanation is that it took four years to employment to hit bottom, so it should not be surprising that, even if share prices were indeed favorable, some of the recovery would still lay ahead as late as 1937. But most of the huge shortfall has deeper reasons.

Recovery from the Depression faced stiff headwinds from the cost-savings and spin-off innovations made possible by the '20s investments in the new general technology. The '30s, after all, marked the rise of the great industrial laboratories that so impressed Schumpeter.

For one thing, the surge of productivity reduced the incentive to invest. What ultimately determines the rate at which firms invest in new employees, new customers, etc. is the value (per unit) put on such a business asset taken as a *ratio* to the *cost* of acquiring the asset (per unit). For some important assets this cost is a matter of labor productivity: if the latter increases, the cost increases proportionally. (If the sole business asset were the job-ready employee, the cost of an extra one would be proportional to the productivity of an hour of employee time diverted to training a new recruit.) This cost was not an unimportant detail, since productivity improved at a record clip during the Depression. By the

mid-'30s the cumulative increase of real labor productivity was challenging the cumulative increase of the real S&P. In 1935, when the real S&P had grown 33% above its 1924 level, labor productivity had grown about 14%; in 1938, when the real S&P was 37% above (coming off its temporary highs in 1936 and 1937), productivity had grown 28%.

In my interpretation, these productivity gains had already been largely reflected in the real S&P levels reached in the mid-'30s, so the realizations of these gains (especially in the second half of the decade) did not for the most part prompt a further rise of the stock market and of asset values; hence the gains operated to lower the ratio of value to cost on many or most assets. The gains thus whittled away the incentive to invest in new employees, new customers etc. The ratio of real share prices to productivity, while a propellant early in the recovery, rapidly ran out of force by decade's end, when the recovery had far to go.

Furthermore, the productivity surge raised the investment rates that were required just to stand in the same place. A cascade of new products and methods meant a wave of obsolescence and thus dislocation of employees. The layoff rate ran about 3.5% per month on average in every year but two in the decade, a high rate by historical standards. Hence, hiring and asset accumulation generally would have to be higher than in the '20s if employment was not to fall.

Finally, the stock market, leaving aside the ebullience of 1937 and 1938, was flat from 1935 to 1940. (Correspondingly, investment per capita and the unemployment rate were flat from 1936 to 1939.) Clearly there was no new vision of yet another breakthrough period to inspire it to dash ahead. But, more than that, something must have gone wrong that blocked the entirety of the normal trend growth of share prices. It could be that share prices got ahead of themselves by 1935 and had to cool down. A good reason for the flattening, however, is that the tensions in Europe were beginning to cast dark shadows on most stock markets and the U.S. was not an exception.

Parallels. The technological developments and overseas tensions that slowed and limited the '30s recovery have clear parallels in the economy's present situation. The 350,000 employees sent into the jobless pool every week is a significant hurdle on the way to getting unemployment back to the pre-boom rate of 1995-96 (about 5 ½%), let alone the 5% level envisaged by some. Although the real S&P 500 climbed 19% between 1996 and 3rd quarter 2002, productivity climbed 13.5%, offsetting most of the stimulus from the former. It is only in the past year that share prices have spurted way ahead. But with hourly productivity now rising at 4% yearly, the real values put on business assets – and their reflection, real share prices – must now rise at 4% just to keep investment incentives from slipping. Finally, these times do not lack international tensions.

Obviously we cannot be sure that these several influences will be the decisive forces in the years ahead. But if they are, investment and employment levels will be below historical norms for the decade – unless new policies come to the rescue.

IS 'MACRO' DIMINISHED? OR RENEWED?

Among seasoned observers, one of the uppermost impressions of the recent experience is the sorry record of forecasting errors that has accompanied the roller-coaster of the powerful boom and its end. A recent dispatch tells the story of huge errors in revenue forecasting that began seven years ago and of the job declines following hard on predictions of job growth.¹² It was unnecessary to say explicitly that these errors were born of a powerful boom that no one predicted and an eventual downturn that hardly any economists warned of and few seemed prepared for. An economist, Lloyd Etheredge, remarked that "it's the kind of breakdown and unresponsiveness that makes everyone look bad."¹³ In the same spirit, Samuel Brittan writes that economics is not a predictive science and, for that matter, no

¹² David Milbank, "White House Forecasts Often Miss the Mark," Washington Post, February 24, 2004. It gives an account of the large errors in forecasting tax revenues from the boom years, when fiscal revenue hugely exceeded forecasts, to the downturn, when tax revenues fell vastly short.

¹³ Letter to Policy Sciences Center members, March 5, 2004.

cumulative progress in economics has occurred in several decades.¹⁴ I draw a less extreme conclusion.

By way of preface I would agree that these are serious charges. The sort of failure charged here, if real, would be more serious than the 1970s breakdown of the Keynes-Phillips paradigm, since that failure left open an exit to the Friedman-Phelps natural rate paradigm, later fortified with a New Keynesian element; it would also be more serious than the 1980s breakdown of the fixed-natural-rate model then used by practitioners and teachers, since that failure left open for development the variable-natural-rate models of the latter half of the 1980s and the 1990s; in contrast, the new alleged failure comes when we have no fallback paradigm – one that is not already invalidated – to which to go to.

In response I would say, to begin, that the complaint expressed by Etheredge may spring from the present-day tradition in macroeconomics ascribes magic powers to the market with the implied result that, in a sense, all the action is in the disturbance terms. If the economy experiences a run of extraordinarily outsized disturbance terms, one or more huge fluctuations will result and the roots of these are themselves not explained and are not even of apparent interest.

I have usually been disposed to a richer and looser approach in which some of the disturbance terms (or components of them) have name tags, such as “expectations of internet revolution.” I prefer a macroeconomics that gives an historical interpretation at least to the big waves in economic activity, such as the two historic booms/slumps studied in this paper.

But, of course, a macroeconomist who does not happen to be steeped in the information technology industry would not have been able to predict the gradual arrival, perhaps centered around 1996, of heady expectations of industrial revolution soon to emerge. It is naïve of commentators to complain of the inability of macroeconomists to foretell the development of such investment booms. It is the essence of capitalism, after all, that the future is seen by entrepreneurs and

¹⁴ Samuel Brittan, “The Not So Noble Nobel Prize,” *Financial Times*, December 19, 2004.

financiers through a nearly opaque glass and not with the aid of a model on which they can place absolute confidence. So it is surprising that, in the modern age, anyone would look to economics to foresee fundamentally new technologies, paradigm shifts, changes in consumer interests, and so forth.

What macroeconomists can do, at least to a degree (and do it better than non-macroeconomists could), is to point out some possible consequences to anticipate and prepare for once a new boom gets underway. I confess I am a little pleased I had the good sense to comment in the 2000 essay, as an after-thought, that people should brace themselves for the eventual end of the boom. There was no empirical experience of a permanent boom and the possibility of one seemed remote. Yet all the talk about a “new economy” implied permanency.

Does this sort of macroeconomics represent any progress over the understanding of Spiethoff and Cassell, or Robertson and Keynes, or Schumpeter and Pigou? Or is there no progress, as Brittan concludes? That question is mainly for others to answer, but I can testify that I use many conceptual tools that I did not have early in my career and I understand several market mechanisms that I had not imagined back then. There are occasional steps forward; unfortunately, there is also the occasional step backwards.

Barring pretty bad luck, the future will see a wave of new developments bringing into economic modeling the visions and models of entrepreneurs, the beliefs and models of financiers, and the exotic behavior of speculators. With such a vastly more sophisticated model of the enterprise economy, there will still be plenty of forecast errors but sooner or later such errors may be generally smaller, since the world will have come to understand itself much better and be badly surprised by itself much less often.

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