A Keynesian Theory of the Long Run—With a Little Help From Marx

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Abstract
This essay, drawn from my forthcoming book Raising Keynes, lays out a long-run model in which real outcomes are determined by aggregate demand, goods supply, and labor supply. The model is designed to provide a framework for answering questions such as whether high wages are good for employment. The help from Marx to which the title refers is in formulating labor supply as endogenous, dictated by the creation and re-creation of reserve armies, and the wage rate as governed in part by an exogenously determined conventional (or target) wage. The model serves as a theoretical basis for analyzing the vagaries of the Phillips curve over the last six decades; it allows us to separate movements along the Phillips curve due to shifts in aggregate demand from supply-side changes, modelled here as changes in the price of energy and the conventional wage.

June, 2016
There are two propositions in the classical system which can be tentatively discarded. One is the population doctrine, the proposition that the supply of labour is infinitely elastic at a certain real wage, that wage being determined by what the labouring classes of the country regard as their minimum standard of living with sufficient firmness to influence their conduct in reproduction. This doctrine may still have relevance to large poverty-stricken areas of the world of to-day. It is one of the doctrines that may perhaps be regarded as valid in relation to certain circumstances although not universally valid. I am interested now particularly in the economies of the United States, Great Britain, Western Europe and other advanced countries. In this context we may regard the size of the population not, as in the old classical system, as a dependent but as an independent variable. To put the matter otherwise, changes in it may be regarded as exogenous changes. (Roy Harrod, 1948, pp 19-20.)

Are high wages good for employment? Does higher employment lead to more inflation? What causes the price level to rise? Answers require a framework for assessing the long-run relationship between prices and wages and the real economy. I build on my joint work with Amit Bhaduri of a quarter of a century ago (Marglin and Bhaduri, 1990; Bhaduri and Marglin, 1990). That work incorporated the key insight of John Maynard Keynes: aggregate demand matters. (Not, I hasten to add, instead of supply, but along with supply.) As for many others situating their work in the tradition of Roy Harrod and Joan Robinson, our starting point was that aggregate demand matters not only in the short run, but over periods of many years, even decades.

The central innovation of this joint work was to question the conventional wisdom of left-leaning political economy that higher wages are always good for employment and output. Higher wages, Bhaduri and I argued, may decrease aggregate demand through a negative impact on investment demand. Here, I expand the model and the argument by focusing on the differences in the relationship between wages and employment under different adjustment regimes. The expanded model allows us to examine supply and demand shocks under different dynamic assumptions, and to test the idea that aggregate demand matters against data on employment and inflation. I also offer an argument about how different types of investment respond to profitability and capacity utilization, an argument intended to clarify the impact of wages on aggregate demand via the impact on investment rather than on consumption.

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1 This essay was prepared for the annual meeting of the History of Economics Society, Duke University, June 17, 2016, and for a seminar at the University of Paris-XIII, June 24, 2016. It draws on my forthcoming book, Raising Keynes: A General Theory for the 21st Century, especially Chapters XX-XXI.
From a mainstream point of view, the entire tradition in which Bhaduri and I situated our work was conceived in error. The process of consolidating the Keynesian revolution had made a role for aggregate demand contingent on one form or another of market imperfection or friction, and the resulting sand in the wheels was supposed to operate in the short term, not over the long run. By the late 1960s, when the neoclassical counter-revolution had begun in earnest, the Keynesians had already abandoned the long run to the neoclassicals. Robert Solow’s 1956 essay, “A Contribution to the Theory of Growth,” was widely understood to have demonstrated the irrelevance of aggregate demand, even though the “demonstration,” as Solow himself recognized (p 91), is simply an assumption.

Milton Friedman (1968) and Edmund Phelps (1968) delivered the knock-out punch—or so it was believed. A positive relationship between employment and inflation, enshrined in the Phillips curve (after A W Phillips, 1958), was understood by Keynesians to reflect the operation of aggregate demand. The counter-revolutionaries dismissed the Phillips curve as the result of misperceptions that would necessarily disappear as agents developed more sophistication about the economy. The implication was that demand cannot matter in the long run. Indeed, Friedman and Phelps predicted that periods of high inflation would not be accompanied by higher economic activity. In the long run there is no Phillips curve (A W Phillips, , no trade-off between economic activity and price stability. In this perspective raising money wages is necessarily an exercise in futility: higher wages can mean only higher inflation, with no impact on employment and output. The classical dichotomy with a vengeance!

And the data do appear to bear out the prediction of no relationship between employment and inflation, at least not a simple one. Figure 1 plots the data over more than half a century. Analyzing

![Employment vs Inflation, 1956 to 2011](image)

these data economists have if anything, a negative relationship between real economic activity and inflation. Cross sectional studies by Stanley Fischer (1993), Robert Barro (1996), and others have found a significant negative correlation between growth and inflation, but their results are dominated by high inflation rates, where negative supply side effects plausibly dominate. More striking are the findings of Moshin Khan and Abdelhak Senhadji (2001), who separate poor and rich countries and find that for the
rich countries the threshold above which inflation is associated with lower GDP growth is only 1-3 percent per year. Other researchers, to be sure, have taken issue with these results, but nobody to my knowledge has found the strong, positive relationship between inflation and growth that the Phillips curve suggests.

None of this should surprise us. Once it has been determined that demand does not matter in the long run, it makes sense to treat all observations symmetrically and look for supply-side effects.

Appearances notwithstanding, macroeconomists learned from the impact of rising oil prices in the 1970s to sort out supply shocks from demand shocks and thus to make sense of the data in terms of a Phillips curve along which movements reflect demand shocks but which is itself moved by supply shocks (see, among others, Robert Gordon, 1984, 2013).

The difference between the present effort and the work of Gordon and others is that here the Phillips curve is situated in a theoretical model that belies the standard mainstream view that demand is irrelevant in the long run. An additional virtue is simplicity.

My approach to sorting out the randomness in Figure 1 is to filter the data in two ways. Not only are demand and supply shocks separated from one another, but wage shocks are separated from price shocks. This done, there were, I shall argue, two periods in which wage pressure exerted a strong influence on the positive Phillips-curve relationship: in the late 1960s and early 1970s upward pressure on wages displaced the relationship between employment and inflation upwards, and in the mid-1990s downward pressure on wages displaced the relationship downwards. This suggests that high(er) wages exert a negative influence on the economy, but, in line with the central hypothesis put forward by Bhaduri and me 25 years ago, this result is contextual. Both instances of wage pressure took place under conditions of high employment, and, presumably, high investment demand—precisely the conditions under which Bhaduri and I argued that higher wages would not improve aggregate outcomes. This leaves open the possibility that under conditions of slack, such as have characterized global capitalism since the financial crisis that inaugurated the Great Recession, the impact of higher wages would be very different from 20 or 40 years ago. Higher wages would indeed stimulate the economy.

Background

The relationship between wages, prices, and employment, specifically whether higher wages promote higher employment, has long been controversial. The question did not begin or end with Keynes, but the General Theory provided a framework in which it became possible to analyze the impact of the wage rate on aggregate demand. There is some irony here: in the main, the General Theory argues that the real wage rate is determined endogenously, a thermometer of economic conditions rather than a thermostat.²

² In discussing the (im)possibility of curing unemployment by reducing money wages, Keynes observes “The transfer from wage-earners to other factors is likely to diminish the propensity to consume” (General Theory, p 262). This
Despite Keynes's own relative neglect of the issue, the potential that redistribution from profits and other forms of property income to wages had for stimulating aggregate demand became identified with the *General Theory*. With good reason: even though Keynes paid little attention to this issue, his framework was key. The macroeconomics of redistribution was indeed one of the ideas that made Keynes a figure lionized by the social-democratic left and despised by the right. On the left, it seemed like a no-brainer. As long as the economy is operating at less than full employment, income redistribution amounts to a free lunch as far as aggregate demand was concerned: shifting income from rich people with low propensities to consume to poor people with higher consumption propensities would add to aggregate demand. On the right, redistribution was anathema, a threat not only to the free market, but to social order and morality.

Among economists the idea that redistribution could stimulate the economy came under attack from two sides. On the one hand, Friedman’s permanent-income hypothesis (1957) and Franco Modigliani’s life-cycle hypothesis (Modigliani and Brumberg, 1954; Ando and Modigliani, 1963) challenged the idea that the propensity to consume is a function of income. And with the rise of supply-side economics, aggregate demand was relegated to being at best a short-run phenomenon of frictions and market imperfections, a fate for which Keynes’s followers, especially in the United States, had helped to pave the way.

There was a minority view: the left Keynesians who took inspiration from Joan Robinson and Michał Kalecki continued to argue that aggregate demand was a problem that ran much deeper than frictions and imperfections, and Robinson in particular devoted much effort to building long-run models in which outcomes depend on aggregate demand (Robinson 1966 [1956], 1962). The distributional issue remained central in these models.

Bob Rowthorn (1982) formalized the argument that redistributing income from rich to poor would increase aggregate demand because the propensity to consume declines with income. A novel aspect of Rowthorn’s argument was that higher consumption demand would be self-reinforcing through its effects on investment demand. Higher consumption demand implies higher employment, higher capacity utilization implies a higher rate of profit, and a higher rate of profit implies higher investment demand.

Bhaduri and I challenged Rowthorn’s logic, in particular, the impact of the wage rate on investment. We argued that the two factors that together determine the profit rate, namely, the share of profits in GDP and the rate of capacity utilization, should be treated separately because each has a distinct impact on investment demand. The profit share reflects the prospects for making money from new capacity, whereas the rate of capacity utilization reflects the likelihood of selling additional goods. When the influence of the profit share is important, the negative impact of higher wages on the profit share may

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recognition of class-based differences in the propensity to consume is presumably the basis for his subsequent argument that an increase in overall consumption demand can be engineered by a deliberate policy of redistribution. Keynes saw no immediate need for such a policy but argued that it might be necessary in a generation or two in order to counteract the effect of investment satiation (*General Theory*, pp 325-326; 374-377).
outweigh the positive impact on capacity utilization. The ensuing reduction in investment demand may then outweigh the positive impact of higher wages on consumption demand. Our conclusion was that growth can be stimulated by higher wages under some circumstances, and by higher profits—lower wages—under others.

The intention was to change the debate about the impact of the wage rate on growth from a theoretical one to an empirical one. Judging from the voluminous literature that has appeared in the past quarter century, we succeeded.

Nonetheless I have come to view our work as deficient, particularly in our focus on comparative statics and our corresponding neglect of dynamics. The version of our argument that appeared in the *Cambridge Journal of Economics* ends with the observation

> The recognition that quantities (capacity utilization) and prices (the real wage) may adjust simultaneously in a more general dynamic model raises a deeper conceptual issue regarding the interpretation of the IS-curve itself. It can be treated either as the locus of stationary capacity utilization... as has been implicitly assumed in our... analysis, or as the locus of stationary price level... Ultimately it boils down to one of the most important unsettled questions of modern macroeconomics: does excess demand for commodities lead primarily to quantity or to price adjustment? We cannot pretend to have an answer; but dynamic analysis cannot be undertaken without addressing this important, and as yet unsettled, question. (p 390)

I make no claim to be able to answer definitively the question of how prices and quantities adjust out of equilibrium. But the data on employment and inflation shed light on dynamics, especially if we separate wage and price adjustment rather than combining the two in the level of the mark-up.

There is another problem with the analysis Bhaduri and I offered in 1990: we lumped all investment together, implicitly assuming that investment takes place solely to expand capacity, an assumption that goes back to Roy Harrod (1939, 1948). Output-enhancing investment, capital widening in an older jargon, is important, but it is not the only kind of investment. In addition to enhancing output, investment takes place in order to cut costs, by substituting capital for labor, energy, or other inputs—capital deepening for short.

Capital-deepening investment has a different logic from output-enhancing investment. In particular, a very different relationship to wages and profits. For output-enhancing investment, the lower the real wage, the better: lower real wages mean, *ceteris paribus*, higher profits. By contrast cost-cutting investment, specifically labor-saving investment, ought to respond positively to higher wages: the higher the real wage, the greater the savings in labor costs from a given investment.

The differential impact between capital-widening and capital-deepening investment is particularly important because the salience of the two types of investment is likely to differ markedly over the cycle. Over the past six years, for example, there has been considerable excess capacity, and consequently relatively little demand for output-enhancing investment. It follows that the lion’s share of investment since 2008 has been for the purpose of cutting costs. A recession thus enhances the case for wage-led growth; wage-led growth becomes more attractive since high wages not only stimulate consumption
demand directly, high wages also will stimulate investment demand. If capacity utilization is at 90 percent, there may be little interest in output-enhancing investment, but cutting costs on 90 percent of maximum output is only 10 percent less worthwhile than cutting costs on 100 percent of the maximum.

When—I suppose I should say if—bust is replaced by boom, output-enhancing investment will again come into its own. Even if the attractiveness of cost-cutting investment remains strong, output-enhancing investment will certainly become more important than under recession conditions, whether or not it takes center stage. In boom situations, the positive relationship between low wages and investment profitability bolsters the argument for profit-led growth.

A third difference from the earlier work with Bhaduri is that our earlier work followed a well established line of argument that goes back to Michał Kalecki’s work in the 1930s (Kalecki, 1971): prices are determined by a mark-up over costs. Apart from this modification of Keynes’s approach in the *General Theory*, we followed Keynes (and Kalecki) in suppressing the labor-supply schedule. Here I separate price determination from wage determination, so that there is a separate goods-supply schedule and a separate labor-supply schedule, along with an aggregate-demand schedule. The capitalist economy is assumed to be perfectly competitive in the sense that no agent has market power. Besides market power, real-world features such as frictions are notable for their absence in the model. The point, evidently, is not to provide a faithful description of the world as it is. Rather, I take perfect competition as the norm for the reason I believe Keynes made this assumption: to forestall the argument that my results would not hold in the absence of one imperfection or another because it is only imperfections that make aggregate demand matter at all.

**Unlimited Supplies of Labor: The Road Not Taken**

Aggregate demand is thus one of three elements that determine economic outcomes. Any long-run model which features aggregate demand must inevitably challenge the long-standing mainstream consensus according to which the short run is handed over to a sand-in-the-wheels Keynes while the long run remains the province of neoclassical orthodoxy. It can’t be otherwise if we maintain the assumption of a fixed labor force, fixed not once and for all, but fixed by population growth. For in such a world we must contend with a natural rate of growth.

Harrod put the natural rate in tension with the warranted rate, the rate warranted by agents’ collective saving and investment desires. For almost two decades from the time Harrod published his first essay on dynamics in 1939, this tension dominated the debate on growth. Until Solow (1956) resolved it by banishing aggregate demand and with it the warranted rate. But if the intention is to show how aggregate demand affects real magnitudes, Solow does not offer an acceptable path forward.

Joan Robinson provides the basis of an alternative resolution. Robinson argues that labor-force growth does not imply a minimum rate of growth:

Capitalist industry does not employ the whole work force in any country. Domestic service, paid or unpaid, jobbing work and small-scale trade, and, in most countries, agriculture, hold a
Here I expand on Robinson’s idea that the non-capitalist sectors of the economy form a sink for redundant labor: the idea of a natural rate of growth is replaced by assuming that the labor force is endogenous, continually renewed by the creation and re-creation of Karl Marx’s “reserve army.”

Capitalism thus operates in a world of unlimited supplies of labor. This assumption connects this model both to W Arthur Lewis’s seminal 1955 paper, and, in an odd way, to Harrod’s pioneering attempt to apply Keynes’s conceptual framework to a growing economy. It might not have surprised Harrod or Lewis that China has been able to sustain a remarkable rate of growth by virtue, among other things, of its huge agricultural sector from which to draw labor for industry. But neither thought the model applicable to advanced capitalism. Lewis confined the argument to the poor “developing” world, and Harrod explicitly rejected the argument once this particular pool of labor is exhausted. As the epigraph to this essay notes, Harrod entertained “the proposition that the supply of labour is infinitely elastic at a certain real wage” (1948, p 19), but taking the “certain real wage” to be literally a subsistence wage, discarded this hypothesis as irrelevant to the rich countries. For the rich countries, Harrod argued, it is more appropriate to take the labor supply as exogenously given. Harrod’s choice has become the standard assumption about labor supply in growth models. In this respect, the present model is the road not taken.

The idea of unlimited supplies of labor is counterintuitive because we normally focus on the supply of labor to an entire economy and society closed to immigration. In such a setting it is natural to think of labor supply in terms of population, and to think of population as given by the net reproduction rate. The facts tell a different story. With the exception of Japan, labor supplies in the rich countries have been augmented by immigration for the better part of a century, and in the US from the first permanent European settlement. Innumerable battalions of the reserve army live outside the country until they are mobilized as wage labor.

Moreover, there is no analytic reason to focus on the entire economy. Indeed it is tendentious to argue that any single model can explain all economic behavior in all settings; and in practice growth models implicitly assume that production is guided by profit maximization and that labor is a commodity, wage labor. In short, the focus of the present inquiry, like the focus of virtually all growth economics, is the behavior of a capitalist economy. What is novel is to take seriously the fact that the capitalist sector is always embedded in a larger economic formation, which includes other sectors that follow a logic different from the logic of capitalism.

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3 That may be coming to an end soon. Even China, which only a few years ago was the poster child for a labor-surplus economy, is now approaching the time when the supply of workers from its hinterland will be exhausted (Fang Cai and Meiyan Wang, 2011). The participation rate of women in the paid labor force in China differs from the male participation rate by about the same amount as in the European Union, so is not likely to rise significantly (World Bank, 2016), and China is unlikely to be willing or able to tap the reserves of foreign workers.
In particular we can distinguish a “family enterprise” sector in which production is oriented towards the market but most if not all of the labor is supplied by family members who are not paid wages. The family farm is the most important case in point, and this is the sector that Lewis and other theorists of unlimited supplies of labor had in mind. But it is not the only source of labor supply for the capitalist sector. We can also distinguish a “household” sector in which not only is wage labor minimal but production is for the immediate satisfaction of wants and needs, unmediated by the market. Food is prepared, clothes washed, children driven to football or piano practice—mostly by women—with nary a dollar, euro, pound, or yen changing hands.

Both these sectors have historically been important constituents of the internal reserve army. At the beginning of the last century the agricultural sector, mostly family farms, contained some 40 percent of the labor force in the US. By midcentury, 40 percent had fallen to 10 percent, and by 1970 to less than 5 percent. Agriculture’s share of the labor force is currently less than 2 percent. Most of what is now the rich capitalist world lagged behind. As late as 1960 some 30 percent of the labor force in Japan and Italy and close to 25 percent of the French labor force were engaged in agriculture. But these countries are now more or less where the US is; in none of them is the figure above 5 percent today. (Bureau of Labor Statistics, 2005, p 30).

The household sector similarly provided a steady stream of recruits to the capitalist sector; women didn’t necessarily leave the kitchen altogether to join the ranks of the paid labor force; most added paid labor to their domestic duties. Female participation rates have risen in the US from 35 percent in 1950 to 60 percent, declining slightly since the beginning of the recession in 2008. Today, women’s and men’s participation rates differ by only 10 percentage points.

These internal recruits have complemented the external reserve army, the immigrant population that has served as a reliable if politically contentious source of labor, especially for those jobs that native populations have been reluctant to fill at going rates of pay. The time pattern of immigration into the United States is especially revealing. After an abrupt fall in the wake of World War I, a decline which lasted for almost half a century, immigration picked up around 1970, just as domestic agriculture dried up as a source of labor—see  Figure 2 below.
Figure 3 shows the impact of the reserve army on the paid labor force in the US. Whereas the native born population grew at an annual rate of 1.3 percent over the 20th century, paid private employment outside agriculture was able to grow half again as fast, at a rate of more than 2 percent.

![Figure 3](image)

Data: US Department of Commerce, Bureau of the Census

The important point is that the reserve army is not a fixed body of men and women, the battalion of workers made redundant by progress in technique (or in our own day outsourcing of whole sectors of the economy). Rather the reserve army is a source of labor that is constituted and reconstituted in terms of the needs of the capitalist economy: as one source of labor, domestic agriculture, dried up, other spigots were opened. In practical terms, labor supply is unlimited, not only in the poor countries, but in the rich countries as well.⁴

What then determines the wage? The classical economists—Smith, Ricardo, and Marx—were on the right track in emphasizing subsistence as the determinant of wages though they have been misunderstood by later generations who took subsistence to mean a minimal standard of living that would ensure the reproduction of the labor force. (This presumably was Harrod’s understanding of the term and for him a reason to reject the whole idea of an unlimited labor supply.) Neither Smith nor Ricardo nor Marx conceived of subsistence solely in biological terms. For all three, there were historical, cultural, and institutional dimensions that entered the determination of real wages. Marx, not surprisingly, emphasized class power, but this emphasis did not preclude a recognition that class power

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⁴ Figure 3 understates the contribution of the reserve army to the labor force. The correct comparison with the growth of the paid labor force is not the growth of the native born population; at any given time the native born population includes children of immigrants, whom we might consider second-generation members of the reserve army. More appropriate than the growth of the native born population as a standard of reference for growth in the paid labor force would be a hypothetical population based on the initial population at time zero and the hypothetical fertility of this population extrapolated over time.
is situated in a matrix of culture and history. Workers are better able to press their claims to the extent that public opinion is on their side. Subsistence, in short, is a social norm:

[The worker’s] natural wants, such as food, clothing, fuel, and housing, vary according to the climatic and other physical conditions of his country. On the other hand, the number and extent of his so-called necessary wants, as also the modes of satisfying them, are themselves the product of historical development, and depend therefore to a great extent on the degree of civilisation of a country, more particularly on the conditions under which, and consequently on the habits and degree of comfort in which, the class of free labourers has been formed. In contradistinction therefore to the case of other commodities, there enters into the determination of the value of labour-power a historical and moral element. (Karl Marx, 1957 [1867], p 171, emphasis added)

To summarize: the long-run theory of labor supply proposed here reverses the mainstream relationship between the supply of labor and the real wage that has been deployed until now. Instead of an exogenous labor supply and an endogenous real wage, as the mainstream (and, indeed, my version of Keynes’s short-run model) would have it, I here posit an endogenous labor supply and an exogenous real wage. To avoid confusion, I shall label this wage not a subsistence wage but a conventional wage, conventional referring to both the customary elements and the contractual elements that enter into wage determination. In a dynamic setting the conventional wage is perhaps better understood as a target wage, the wage that the working class aims for in order to achieve norms of consumption conventionally conceived and understood if not unanimously agreed upon.

None of this is to say that productivity is irrelevant to wage determination. Productivity determines the size of the pie that the contending parties struggle over. Nineteenth century British output had to be of a certain size before workers could obtain a share large enough to permit them to buy refined white bread rather than the coarse grains to which the lower classes had accommodated themselves in earlier times; twentieth century American production had to be of a certain size before workers could successfully struggle for a share large enough to include an automobile as part of the wage packet. But a productive technology did not guarantee that either the nineteenth-century British pie or the twentieth-century American pie would be sliced in a way that would allow workers to achieve their aims. For this to happen, certain community standards—social norms—were essential.

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5 Arthur Pigou, who for Keynes epitomized the failings of the mainstream to understand the nature of unemployment under capitalism, endorsed the idea of a conventional wage and the key role of public opinion in determining its level: “Public opinion in a modern civilised State builds up for itself a rough estimate of what constitutes a reasonable living wage” (Pigou 1933, p 255). This, for Pigou, was one reason why the real wage might persist at a level higher than the market-clearing wage, resulting in persistent unemployment.

The decline of unions is itself a consequence, at least in part, of the shift in public opinion against the working class. Richard Freeman and James Medoff (1984) argued that workers themselves were more likely to organize in unions to the extent the public had a favorable image of unions (cited in Surowiecki, 2011)
These community standards underlie, for example, the very idea of a legal minimum wage—and the erosion of community underlies the erosion of the minimum wage in the US over the last five decades. Nor is it just the minimum that is at issue. The last half century has also witnessed an ever-widening gap between workers in the middle of the wage distribution and the richest 1 percent of the income distribution, which includes both top managers and large stockholders. There is no longer even the pretense that we are all in it together, that the United States is a community when it comes to matters economic.

Not only is productivity relevant to wage determination, so are rates of price increases or decreases. Workers, as Keynes insists, may bargain in money terms, but they are bargaining about real wages, so that inflation or deflation play an important role in determining what bargains are struck.

Unemployment also matters. The ability of workers to achieve their ambitions in the sphere of wages, or to hold onto a level of wages already achieved, depends on the state of the labor market. In the short period, in which wage claims are made (and contested), unemployment is a fact of life and may be the dominant fact, even if the labor force is endogenous in the long run.

Making the unemployment rate one among other determinants of changes in wages (rather than the sole determinant) resolves another problem. The idea that wages respond to unemployment, and unemployment alone, provides a tolerably good account of wage behavior during the Great Depression, but not since. Until the Depression bottoms out in 1933, changes in money wages are closely correlated with the unemployment rate, as Table 1 shows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Unemployment Rate</th>
<th>Change in Hourly Manufacturing Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930</td>
<td>9.0</td>
<td>-1.8</td>
</tr>
<tr>
<td>1931</td>
<td>16.3</td>
<td>-7.3</td>
</tr>
<tr>
<td>1932</td>
<td>24.1</td>
<td>-13.7</td>
</tr>
<tr>
<td>1933</td>
<td>25.2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Source: Historical Statistics of the United States

But in 1933 wages stopped falling even though unemployment remained high. If we extend the table into the recovery, we will find that wages pick up even though unemployment remains high until the outbreak of World War II. Table 2 provides the extended data.
Clearly a simple model of wages responding to the unemployment level will not do even if the long run is as limited as the transition from depression to recovery. In fact if we look at the entire period from 1929 to 2011, a regression equation that accounts for wage changes in terms of a conventional wage, changes in the price level, and unemployment provides a good fit to the data:\(^6\)

\[
\frac{\Delta W}{W_{t-1}} = 47.36 - 77.53 \left(\frac{W}{Y}\right)_{t-1} + 0.5368 \left(\frac{\Delta P}{P}\right)_{t-1} + 0.09168 \frac{\Delta P^{em}}{P^{em}} + 0.4614 \frac{\Delta Prod}{Prod_{t-1}} - 0.2878 UNRATE + 1.011 DUM1 - 3.106 DUM2
\]

\[
(18.00) (31.42) (0.1142) (0.0159) (0.1349) (0.0848) (0.7955) (0.9284)
\]

\[R^2 = .71\]

Newey-West Standard Errors in Parentheses

Observations: 82 (1930-2011) \( F(7, 74) = 29.05 \)

\(^6\) Olivier Blanchard and Larry Katz (1999) present a similar econometric analysis but with a very different interpretation of the variable that I interpret as a conventional wage.
### Table

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage Change in Money Wages</td>
<td>4.739877</td>
<td>4.062962</td>
<td>-13.2099</td>
<td>17.53904</td>
</tr>
<tr>
<td>Lagged Share of Wages</td>
<td>0.56005</td>
<td>0.018159</td>
<td>0.514063</td>
<td>0.595732</td>
</tr>
<tr>
<td>Lagged Change in Consumer Prices</td>
<td>2.980698</td>
<td>3.787021</td>
<td>-11.4793</td>
<td>12.57783</td>
</tr>
<tr>
<td>Change in Price of Fuel (PPIENG)</td>
<td>4.635366</td>
<td>11.84866</td>
<td>-26</td>
<td>55.2</td>
</tr>
<tr>
<td>Change in Output Per Employee Hour</td>
<td>2.215437</td>
<td>2.391377</td>
<td>-6.64112</td>
<td>12.55187</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>7.241463</td>
<td>4.849283</td>
<td>1.2</td>
<td>24.9</td>
</tr>
<tr>
<td>DUM1</td>
<td>0 for years before 1970, = 1 thereafter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUM2</td>
<td>0 for years before 1994, = 1 thereafter</td>
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The conventional-wage share\(^7\) emerges from the model. We assume that money-wage dynamics, without the control variables, are given by

\[
\frac{\Delta W}{W_{t-1}} = \theta \left[ \left( \frac{W}{Y} \right)^* - \left( \frac{W}{Y} \right)_{t-1} \right]
\]

where \( \left( \frac{W}{Y} \right)^* \) is the conventional wage and \( \theta \) is the speed of adjustment. In a regression equation we have

\[
\frac{\Delta W}{W_{t-1}} = a_0 + a_1 \left( \frac{W}{Y} \right)_{t-1} \equiv -a_1 \left[ a_0 - \left( \frac{W}{Y} \right)_{t-1} \right]
\]

Thus \( \theta = -a_1 \) and \( \left( \frac{W}{Y} \right)^* = \frac{a_0}{-a_1} \). In the above regression this gives \( \left( \frac{W}{Y} \right)^* = 0.61 \) (se = 0.018, computed by the delta method). Note for future reference that coefficients of DUM1 and DUM2 imply that after 1970 the conventional-wage share rises to 0.62, and after 1993 it falls to 0.58.

### A Long Run Model in the Spirit of The General Theory

The basic long-run model, depicted in Figure 4, relates the real price level \((P/W)\) to the labor:capital

\(^7\) The conventional wage is formulated as a share of product rather than as a wage rate. In theoretical models we can assume the conventional wage as a rate because there is no productivity growth to propel wage expectations. But this will hardly do for empirical tests.
ratio, \( l \equiv \frac{L}{K} \). At any moment of time the capital stock is given, so in the short run \( l \) is a measure of employment. Formally we have

\[
Y = F(L, K)
\]

\[
f(l) \equiv F \left( 1, \frac{L}{K} \right)
\]

The three schedules of Figure 4 are given respectively by the equality of desired investment and desired saving per unit of capital

\[
i(\rho_h) = s f(l) \quad \text{(aggregate demand)}
\]

where \( \rho_h \) is the hurdle rate of interest and \( s \) is the uniform marginal propensity to save; by the equality of real price and marginal cost

\[
\frac{P}{W} = (f')^{-1} \quad \text{(goods supply)}
\]

and by the exogenously given conventional wage

\[
\frac{P}{W} = \left( \frac{P}{W} \right)^* \quad \text{(labor supply)}
\]

Evidently the difference between the short run and the long run is in how wages are determined. This is a matter of emphasis. The same forces are at play, but with a short-run focus the emphasis is on unemployment as a determinant of wage changes, and the conventional wage lurks in the background.
With a long-run focus, we shift the emphasis to the conventional wage, knowing full well that unemployment will play a role in determining money wages in the long run as well as in the short run. Although the labor force is endogenous, it doesn’t adjust instantaneously; indeed the unemployment rate is obviously a variable which plays an important role in determining the creation and mobilization of one or another reserve army.

The model in Figure 4 is overdetermined. Any two of the three schedules are sufficient to determine employment and the real price. All three together make the usual concept of equilibrium quite irrelevant. We can make sense of Figure 4 only if we shift the focus to the dynamics of adjustment.

With flexprice dynamics (John Hick’s term, 1974), an imbalance between expenditure and income drives (nominal) price changes. The aggregate-demand schedule is a locus of stationary prices. The labor-supply schedule is a locus of stationary money wages, and the distance the economy is from this schedule drives (nominal) wage changes. Between these two loci lies stationary real-price locus along which the ratio of nominal price to nominal wage does not change, that is, \( \frac{P}{W} = 0 \). In a flexprice regime the goods-supply schedule, along which price is equal to marginal cost, is a locus of stationary output. The picture is given in Figure 5. As Figure 5 is drawn the flexprice equilibrium at \( E \), where both employment per unit of capital and

Equilibrium with Flexprice Dynamics

![Equilibrium with Flexprice Dynamics](image)

the real price are stationary, is one with perennial excess demand, the result of which is price and wage inflation. Aggregate expenditure exceeds aggregate income, so prices rise. And because the equilibrium
real wage is below the conventional wage, \( \frac{P}{W} > \left( \frac{P}{W} \right)^* \), there is constant inflationary pressure on wages. At E wage inflation and price inflation take place at the same rate, so that the real price remains stationary over time.

The alternative to flexprice adjustment is what Hicks (1974) called fixprice adjustment. This terminology is misleading since prices are not fixed; rather the direct impact of an excess or shortfall of expenditure relative to income is on output and employment; prices (and wages) are affected only indirectly. Prices are driven by the relationship between actual employment and the profit-maximizing rate of employment, that is, by the horizontal distance between today’s level of employment and the goods-supply schedule. Money wages continue to be driven by the gap between the actual real price and the conventional real price.

This process defines the equilibrium in Figure 6. Since the GS schedule is now a locus of stationary

The Model With Fixprice Dynamics

prices and the LS schedule is the locus of stationary money wages, the stationary real price locus, \( \left( \frac{P}{W} \right)^* = 0 \), lies between them.

As Figure 6 is drawn, the equilibrium, like the equilibrium in Figure 5, is characterized by inflation: producers raise prices to because they are losing money at the margin, while workers, who find themselves making do with less than the conventional wage, put pressure on wages. At E the pressure
on prices and pressure on wages just balance, so that while both are rising the real price remains stationary.\textsuperscript{8}

A model with investment demand determined solely by the hurdle rate of interest and saving a constant fraction of income is too simple a framework for answering the questions posed at the outset of this essay. For instance, the impact of redistributing income from rentiers to wage earners is zero if the propensity to save is uniform across income classes. And a production function of the form $f(l)$ does not allow us to examine the impact of supply shocks.

The chapters of Raising Keynes on which this essay draws examine the effect of modifying both the investment-demand function and the saving function. To model a shift in the goods-supply schedule it is assumed that there is a third input to production, energy, along with labor and capital. I model a shift in the GS schedule as the result of a change in the exogenously given price of energy.

Here Tables 3-6 report only a summary of the results, without the graphs or the algebra. The most

\textsuperscript{8} Equilibrium deflation is also possible: if the aggregate-demand schedule lies to the left of the intersection of the goods-supply and labor-supply schedules, the stationary real-price schedule and aggregate-demand schedule will intersect at a point where prices and wages are falling at the same rate. This is not a theoretical distinction between the long run and the short run, but an empirical one: Most of the history of capitalism has been characterized by rising output and inflation. The Great Depression, the case that concerned Keynes, and the Great Recession, are exceptional in historical perspective.
A striking result is the importance of how the economy adjusts to changes in parameters: flexprice and fixprice results differ for both price and wage shocks. Indeed, it is only the qualitative reaction to changes in investment demand and saving propensities that is invariant with respect to the adjustment mechanism.
The second noteworthy result is the variability of the response to an exogenous price shock. An anti-Phillips, stagflationary, result, in which inflation and employment move in opposite directions, is one possibility, but Phillips-type movements, in which inflation and employment move in the same direction, are also possible. More surprising is the possibility that an increase in the price of energy will lead to higher employment as well as to higher prices.

Finally, results with respect to the conventional wage both confirm and go beyond the conventional wisdom on the left. When investment demand is fixed and saving depends on profits, a higher conventional wage will lead to greater aggregate demand and higher employment via the impact on consumption demand: higher wages mean lower profits and less saving, so it takes more output and employment to generate the saving corresponding to the given level of investment demand. But once the assumption of fixed investment demand is dropped, the opposite result becomes possible. If capacity-expanding investment dominates, then lower profitability leads to lower investment demand and a lower level of employment. By contrast, the profitability of cost-cutting investment is enhanced by higher wages, and this provides an alternative avenue to a wage-driven Phillips-type association between inflation and employment.

**Inflation and Employment Empirics**

So much for the theory. It remains to be seen how the theory stacks up against the data. In particular, to what extent does this framework explain the ephemeral aspect of the Phillips curve that has led the mainstream to deny the policy relevance of a long-run trade-off between price stability on the one hand and output and employment on the other?

The models, it must be conceded, are not directly suitable for empirical work since they omit a crucial component of empirical reality, namely, technological progress. But I believe the lessons of these models are nonetheless applicable. First, the models all agree on one point: positive demand shocks, represented in the model by increases in investment demand or reduction in desired saving, lead to an increase in employment and an increase in inflation. In other words, according to the theory, the Phillips curve should be reflected in the long-term data.

Beyond this prediction that the Phillips curve is alive and well, the models suggest that there are a variety of plausible responses to supply shocks. Both a negative association between inflation and employment (anti-Phillips stagflation) and a positive association (the Phillips relationship) are possible.

Were we living in a world without technological change, it would be reasonable to apply the theory to data relating the labor:capital ratio to the real wage (or to the real price of labor) and to translate demand and supply shocks into changes in the labor:capital ratio and changes in the real wage. But in a world of changing technology, the labor:capital ratio will vary independently of demand and supply shocks and so will the real wage rate.

In short, we must be content with a proxy for the state variable \( l \) in applying the theory and a proxy for a conventional real wage as the driver of money wages. The simplest proxy for \( l \) is the ratio of
employment to the labor force. Despite the endogeneity of the labor force, it is fixed at each moment of time. So variations in the employment ratio will capture the effect of demand and supply shocks that are reflected in variations in $l$ in my theory. The obvious proxy for a conventional wage rate is a conventional wage share. We saw earlier that an equation in which the independent variables are the difference between the actual share and the conventional share, the unemployment rate, and price inflation does a reasonable job of accounting for money-wage growth in the US over the last 80 years.

The challenge is then to make sense of the haphazard collection of points in Figure 1, which shows the relationship between the employment ratio and inflation in the US over the period 1955 to 2011. As it stands, Figure 1 does not hold out much hope for a Phillips relationship, but, as Robert Gordon and others have argued, when we separate demand and supply shocks, the Phillips curve comes into its own.

We begin by looking at the data for the first years of this period, when Keynesians believed all too easily that the world, like their models, could be understood in terms of the behavior of demand, with nary a side glance at supply. Figure 7 presents the subset of data from Figure 1 for the period 1956 to 1969, the core years of the so-called Golden Age. This does not look very promising if the goal is to fit a Phillips curve to the data. We do not need a regression line to see that employment and inflation do not move together even over this limited period.

However, I have not exploited one feature of the model, namely, the different implications of the two adjustment processes for lags between changes in employment and changes in the rate of inflation. Flexprice adjustment implies that prices move first, in response to the balance between desired expenditure and output; capacity utilization adjusts later, when the rise in prices makes it profitable to expand production. We can capture this in a simple way by assuming that capacity utilization responds with a one year lag to inflation, with changes in the rate of inflation in turn triggered by a change in aggregate demand. Figure 8 presents the data for 1956-1968 with this lag structure. No improvement
in the fit would, I believe, be an understatement.

However, if we assume fixprice adjustment, and thereby impose a lag structure that goes in the opposite direction—first comes the change in output and employment, then comes the change in the rate of inflation—the results look more promising. In fact, a log-linear specification does even better, as in Figure 9, in which a one percentage point additional capacity utilization leads to a uniform percentage increase in the inflation rate, regardless of the employment ratio.

So far, so good, but conventional wisdom says that the Phillips curve falls apart immediately after the 1960s. If, however, we take a somewhat longer view, we can make better sense of the data. Add the period through 1983, and the data sort themselves out differently. In Figure 10, there are two distinct
curves covering, respectively, the periods 1956-1969 and 1973-1983. The Phillips curve is somewhat flatter in the second period, and the intercepts are very different. In between are the years 1970-1972, to which we shall return shortly.

Figure 11 brings the story up to the present century. Once again there are important changes in the intercept, and the Phillips-curve trade-off increases moderately in 1997-2001. The period 1994-1996 is a transition period, like the period 1970-1972, not belonging to either the era before or the era after.

Between the ‘70s and the late ‘90s, changes took place that allowed any given employment ratio to be achieved at a progressively lower rate of inflation. For instance, in 1982, an employment ratio of just

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9 If we replace employment by capacity utilization (defined as the ratio of GDP to potential GDP), the slope of the Phillips curve changes very little over the sample until the first decade of the 21st century.
over 90 percent (an unemployment rate approaching 10 percent!) coexisted with an inflation rate of 3.1 percent the next year \((\exp(1.13) = 3.1)\); approximately a decade later, in 1991, the employment ratio was over 93 percent with the same rate of inflation; by the end of the century, in 2000, the employment ratio was just shy of 96 percent with inflation even less than 3 percent. Indeed, Figure 12 suggests that by the late 1990s the relationship between employment and inflation was back to where it had been in the Golden Age of the 1950s and 1960s. To illustrate, the data points for 1956 and 1999 are virtually indistinguishable; in 1956 as well as in 1999, employment was just under 96 percent and inflation in both 1957 and 2000 was 3.3 percent.

Figure 13 brings the story up to date. Clearly, something new has happened in this century. Not only
has the dispersion of the data increased, but the trade-off between employment and inflation has become much flatter. If the data for the years 2002-2013 define the actual Phillips curve under which the US economy is now operating, it appears we could have much higher employment without touching off much more inflation.

According to the theory, the Phillips curve shifts over time because of supply shocks. For the most part, changes in the real price of energy, that is, the price of energy relative to other goods, correlate with the observed shifts in the Phillips curve. Figure 14 shows the course of the price of energy as a percentage of the price of all goods except for energy and food. The increase in the real price of energy between 1973 and 1980 correlates with the upward shift in the Phillips curve relative to the initial period, and the subsequent downward shift in the 1980s correlates with the downward shift in that period. The upward shift in the Phillips curve in the first decade of this century fits the same pattern.

This leaves the shifts over the periods 1970-1972 and 1994-1996 unexplained. These are not periods in which the price of energy is changing, and thus the observations for these years cannot be accounted for in terms of energy-price shocks.

For the theory to account for the shifts in the Phillips curve during periods in which relative energy prices were flat we look to wage shocks rather than price shocks. The basic idea is that in these

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10 The year 2008 is omitted because inflation was negative and the log of the inflation rate therefore undefined. 2008 is literally off the chart. Evidently including 2008 would increase the dispersion dramatically!

11 This leaves unexplained why changes in the real price appear to play themselves out as one-time shifts rather than more gradually. It is possible that what is pictured as successive Phillips curves in fact incorporate energy-price shocks along with demand shocks, in which case the actual Phillips curves are flatter in both the upswing and the downswing in the price of energy.
exceptional periods employment and inflation were responding to changes in the conventional wage. In the first of the two periods in question, I would argue that American workers attempted to raise the conventional wage (as a share of output) in order to defend the Golden Age rate of wage growth in the face of declining productivity growth. In the second period, their children were unable to defend themselves against the erosion of the conventional wage share.

In the late 1960s workers were riding high. Prosperity, strong unions, two terms of a Democratic Congress and Administration, an economy relatively well insulated against low-wage competition from abroad—all combined to empower workers to press wage claims vigorously. By contrast, in the ‘90s, while the economy was again prosperous, none of the other ingredients of working class vigor was present. The downward shift in the Phillips curve in the 1990s was, in this view, the result of a fall in the conventional wage share, the culmination of trends and policies that had prevented real wages from rising over the previous two decades.

According to the theory I have elaborated, upward pressure on the conventional wage in the early 1970s would have been consistent with increasing inflation and falling employment in a fixprice regime, provided capacity-augmenting investment dominated. And downward pressure would have produced the opposite result in the 1990s.

The following regression summarizes these results.

\[
\text{LOG INF}(+1) = 0.221 \text{EMP} + 0.011 \text{ENERGY PRICE} + 1.018 \text{DUM1970} - 0.877 \text{DUM1994}
\]

\[
(0.049) \quad (0.004) \quad (0.164) \quad (0.131)
\]

\[R^2 = .58\]

Standard Errors in Parentheses\(^{12}\)

Observations: 56 \quad F(4, 51) = 17.9

The variables are

- LOG INF\((+1)\) is the natural logarithm of the year-on-year change in the consumer price index one year ahead, CPIAUCNS
- EMP, Ratio of employment to labor force, 1 – UNRATE
- ENERGY PRICE, Ratio of index of price of energy to consumer price index excluding energy and food = PPIENG/CPILFESL indexed so that the value is 100 for 1982
- DUM1970, dummy variable = 0 for years before 1970, = 1 for 1970 and later years
- DUM1994, dummy variable = 0 for years before 1994, = 1 for 1994 and later years

\(^{12}\) Robust (Newey-White) standard errors cannot be calculated since the observation for 2008 is missing. I have calculated robust standard errors for a truncated sample ending in 2007, and for this truncated sample there turns out to be little difference between the ordinary standard errors and the robust standard errors, suggesting that serial correlation is not a problem.
The important takeaway from all this is, first, that there is indeed a trade-off between output and price stability, not only in the short run but also in the long run. And, second, that the starting point for the trade-off depends on supply conditions. Higher output must be paid for with higher inflation, but how much inflation is consistent with any given level of capacity utilization depends on the supply side. ENERGY PRICE captures the effect of the real price of energy, and the two dummy variables are intended to capture the effect of changes in the conventional wage.

Now we can now see why Milton Friedman (1968) and Edmund Phelps (1968) were correct in predicting that high inflation would not see less unemployment, but Robert Lucas could still be stunningly wrong in theorizing that this meant the demise of the Phillips Curve:

> The central forecast to which [Friedman and Phelps's] reasoning led was a conditional one, to the effect that a high-inflation decade should not have less unemployment on average than a low-inflation decade. We got the high inflation decade, and with it as clear-cut an experimental discrimination as macroeconomics is ever likely to see, and Friedman and Phelps were right. It really is as simple as that. (Lucas, 1981, p 560)

As Lucas observed, the average rate of unemployment over the quarter century preceding his article did not depend very much on the level of inflation because, as the Phillips curves in Figure 10 show, the displacements due to supply-side shocks change the average rate of inflation more than the average rate of employment.

But there is no way that the analysis is as simple as Lucas claimed. The lack of correlation between the average rate of unemployment and the rate of inflation is totally consistent with the existence of a demand-induced trade-off: within each of the two periods covered in Figure 10, higher employment goes along with higher inflation, but across periods there is less difference between the average rate of unemployment (4.9 percent vs 7.3 percent) than there is between the average rate of inflation (2.1 percent vs 7.9 percent). Experience confirmed the letter of Friedman and Phelps, but not the interpretation that the lack of a negative correlation between the average rate of inflation and the average rate of unemployment undercuts the idea of a demand-side trade-off between employment and inflation.

**Keynes for All Seasons, With a Little Help from his Friend Marx**

This essay develops and tests a model that responds to Harrod’s plea for a framework suitable for analyzing the economy over a period in which investment adds to the capital stock. And thus adds to the supply of goods while at the same time being a source of aggregate demand, indeed the key source of private demand so long as consumption is assumed to respond passively to income. As Harrod wrote in his review of *The General Theory*

> The only criticism of Mr. Keynes which I venture to offer is that his system is still static... In the dynamic theory, as I envisage it,... our question will then be, what rate of growth can continue to
obtain, so long as the various surrounding circumstances, including the propensity to save, remain the same? (1937, pp 85-86)

But the model immediately departs from Harrod and the ensuing literature in rejecting the idea of a fixed labor force. This involves three major conceptual changes, for which my inspiration is Marx rather than Keynes. First, we have to replace that mythical notion, “the economy,” with the portion of the economy for which the essential features of wage labor and profit maximization are present. This is not to say that sectors like the household, the family farm, and the government—sectors in which one or the other distinguishing feature of capitalism is missing—are not worthy of study. Rather, these non-capitalist structures require a very different framework of analysis. One size does not fit all.

Second, we have to replace the idea that the labor force available to the capitalist sector is given by population, and indeed that population is given. Over the last several centuries, capitalist economies have grown much more rapidly than the larger economic structures in which they have been embedded. To do so, they have had to draw labor from non-capitalist parts of the economy. And when domestic sources of labor have not sufficed, capitalist economies have relied on permeable national borders (whatever the official stance of governments has been towards immigration) to fill the gap. Japan is the most notable exception to this dictum, relying only marginally on immigration, and at that only during its short lived flirtation with empire in the first half of the 20th century. South Korea and China, each for its own reasons, have followed the path charted by Japan.

This second innovation requires a third: with the labor force endogenous, the wage has to be exogenous. Here I build on the classical idea—Smith’s and Ricardo’s as well as Marx’s—of a subsistence wage determined not only by productivity but by historical and cultural conditions and by conventional standards of fairness. To emphasize these non-biological determinants of the level of wages, I prefer the term conventional wage to the perhaps more familiar subsistence wage.

The model is overdetermined because it has three independent schedules—aggregate demand, goods supply, and a conventional wage—but only two state variables, real price and the labor:capital ratio. Equilibrium cannot be defined apart from the dynamic process by which the economy—strictly speaking, the capitalist sector—is assumed to adjust when it is not in equilibrium. The equilibrium associated with a flexprice process and the equilibrium associated with a fixprice process differ from one another, but both share the property that the equilibrium is characterized by a stationary labor:capital ratio and a stationary real price level. This equilibrium is associated not with constant prices and wages but with prices and wages that change at the same percentage rate.

Deflation and stagnation are possible in the long run. But with rare exceptions (the Great Depression of course, and, more recently, Japan again comes to mind), the over several centuries the story of capitalism has been one of expanding output and ever higher prices.

Interpreted through the lens of this model, the historical data for the US economy over the last six decades suggests three important results. First, inflation responds with a lag to the level of economic activity, which suggests that the fixprice model fits actual experience better than does the flexprice
model. With fixprice adjustment the first response of the economy to disequilibrium caused by a demand shock is for output to adjust, with price adjustments following as producers struggle to get back on their goods supply curves and wages respond to the accompanying reduction in real wages; with flexprice adjustment the sequence is the other way around: the first response is for prices to change, with output and wages both responding to the initial price change.

Second, aggregate demand shocks lead to a trade-off between the rate of inflation and the level of economic activity, à la A W Phillips and his eponymous curve. This generalized Phillips curve is stable in the short run.

Third, shocks to the goods supply schedule, emanating from changes in the relative price of energy, and to a lesser extent shocks to the conventional wage, shift the Phillips curve while changing the demand-side trade-off between inflation and employment relatively little. Only in this century does the slope of the Phillips curve change markedly, while during the whole period 1956-2013 the Phillips curve shifts no fewer than five times.

In the perspective of my model, the Friedman dictum, “inflation is always and everywhere a monetary phenomenon” (1970, p 11) may be correct but only because we live in a monetary economy, not because causality runs from an exogenously determined money supply to the level of prices. Friedman’s (1968) view that the Phillips curve is inherently unstable because of the dynamics of the inflationary process is also only partially correct. It is indeed true that the Phillips curve shifts, but that is not the same thing as being unstable, at least in a broader framework than one that focuses only on aggregate demand.

A takeaway is that inflation is the price society pays for higher levels of economic activity. In contrast with the widespread view that inflation is the enemy of a thriving real economy, the model presented here leads to the conclusion that aggregate demand matters in the long run as well as in the short run, and that higher levels of aggregate demand produce higher levels of economic activity along with higher prices.

The political problem is that the benefits of higher levels of economic activity and the benefits of more stable prices are not shared evenly. Main Street may fear inflation, but Main Street clearly benefits from high levels of economic activity. Wall Street has good reason to be at best ambivalent about high levels of economic activity, but more than ample reason to loath inflation. And Wall Street has a much easier time of getting itself heard in the halls of government, particularly in the boardrooms of central banks.

13 For instance, Paul Volcker (2013), the former head of the Federal Reserve:

I know that it is fashionable to talk about a “dual mandate”—the claim that the Fed’s policy should be directed toward the two objectives of price stability and full employment. Fashionable or not, I find that mandate... illusory... It is illusory in the sense that it implies a trade-off between economic growth and price stability, a concept that I thought had long ago been refuted not just by Nobel Prize winners but by experience.
As I write this, the United States is mired in a recovery that is moving at glacial speed, while an entire generation of Greeks, Italians, Spaniards, and Portuguese are being sacrificed on the altar of fiscal rectitude, a pillar of which is price stability. Keynes may have been right when he suggested, at the end of the *General Theory* (p 383),

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.

He may have been right as well to stress that “the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas.” But the marketplace of ideas is a market far from the norm of perfect competition. It welcomes those that are backed by the purchasing power of Wall Street with more open arms than those that challenge money power. The rest of us pay the price for this particular market failure.
References


