Problem Set 8. Long-Run Growth and Inflation.
Due 11.59 pm, Tuesday, November 30.

In the mainstream, new-Keynesian, view, the long run differs from the short run. In the short run there may be one friction or another that prevents the economy from adjusting demand and supply in the labor market, which makes it possible for there to be involuntary unemployment. In the long run, something close to perfect competition prevails and the economy gravitates towards full employment. Aggregate demand does not matter for the determination of long-run output and employment.

The evidence for the mainstream position is that if aggregate demand entered the picture as assumed by Harrod the economy would exhibit either growing unemployment or runaway inflation. It is indeed the case that developed capitalist economies exhibit neither the growing unemployment that deficient aggregate demand would produce nor the runaway inflation to which excessive aggregate demand would lead, as in Harrod's model . Nevertheless, *Raising Keynes* argues that aggregate demand matters in the long run as well as in the short run.

1. **What does *Raising Keynes* assume about labor supply? How does this assumption reconcile a role for aggregate demand with the absence of both growing unemployment and runaway inflation?**

Raising Keynes assumes an endogenous labor supply. In other words, rather than assuming that the labor force is determined (in the long run) exogenously by the rate of growth of population, Raising Keynes assumes that each economy essentially has infinite labor supply in the long run, provided by what Marx called reserve armies. These are immigrant communities, were previously female populations and agricultural workers, and so on.

How does RK deal with the issues of runaway inflation or growing inflation? Well, our representation of the long-run labor supply curve is that it is essentially perfectly elastic at the conventional wage, $\left(\frac{w}{p}\right)^*$ which is a socially determined wage at which we assume there exists labor supply for any level of output. In a world where we only have this update to the short-term model, increased pressures for labor do not necessarily increase wages, since they just lead to more drawings from the reserve armies.

In the mainstream view of the long run, the real wage is determined by the marginal productivity of labor at full employment.

2. **How is the real wage determined in the alternative perspective of *Raising Keynes*? Does labor productivity matter?**

In Raising Keynes, the real wage is determined endogenously, but based on an additional and exogenous factor, which is the *conventional wage*. The simplest theory of wage formation which is consistent with an endogenous formation process is to assume that conventional wages drive wages entirely. We make this assumption for its mathematical simplicity, but the Appendix goes over how conventional wages *and* the unemployment rate can drive wages jointly.

What is this conventional wage? Well, it is a socially determined subsistence wage, at which people are willing to work. It can be seen as the wage a working class aims for, in order to reach some middle-class standard of living.

Does labor productivity matter? Yes, it does. As Professor Marglin argues, productivity is what drives the size of the economic pie, and hence what becomes this "middle class aim" basket of goods and services, which the conventional wage is seen as being a means of acquiring, changes. So, as productivity changes occurred and cars became commonplace, it became expected that most Americans would have cars, and that became factored into the wage workers expected (i.e. a wage consistent with owning some basal pleasures/goods from a given period in time, for given social standards). In sum, productivity drives the size, but not the distribution, of the economic pie.

In the framework of *Raising Keynes*, a shock to aggregate demand is supposed to increase both employment and the rate of inflation. Figure 1 charts the relationship between the employment ratio (the ratio of employment to the labor force) and the inflation rate over roughly half a century.

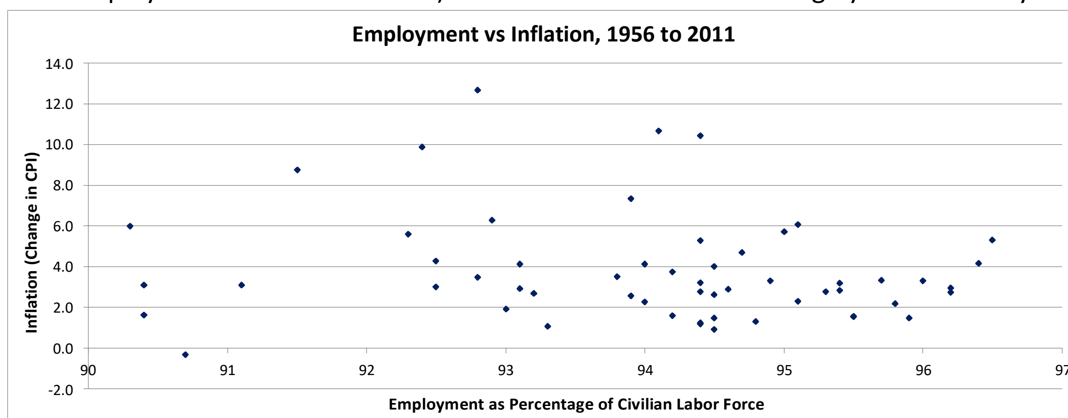

Figure 1

3. **How does *Raising Keynes* reconcile a role for aggregate demand with the lack of any apparent relationship between the employment rate and the rate of inflation in Figure 1?**

As Professor Marglin highlights, aggregate demand shocks lead to a tradeoff between inflation and unemployment (this is the one unanimous result across the different permutations of models that increasing investment or decreasing savings, which raises aggregate demand, leads to rising inflation and rising employment, à la Philipps). Shocks to the GS curve stemming from changes in the relative price of energy lead to a *shift, rather than a movement along,* the Philipps curve.

As such, while the aggregate data does not show any significant tradeoff between inflation and unemployment, conditioning on energy price regimes would show different Philipps curves, corresponding to different iterations based on these supply-side shifters or shocks. Only recently have we seen the *slope* of the Philipps curve change, as opposed to massive shifts being the main driver. Hence, as Robert Gordon argues, the Philipps Curve is not necessarily dead.

In the mainstream view of the long run, it makes no sense to ask whether high wages are good for employment and output because causality runs from the supply-side determinants of the level of employment to the real wage. The real wage is endogenously determined.

4. **In the long-run framework of *Raising Keynes*, unlike in the mainstream framework, the question of whether high wages are good for employment and output is a reasonable one. What determines the answer?**

As Professor Marglin says, *it depends*.

1. Higher wages may lead to more income going towards people in the economy with higher marginal propensities to consume, which can bolster aggregate demand
2. Higher wages reduce the profit share, which has a mixed effect on investment, depending on the *kind* of investment being pursued.
    a. Capital widening investment is aimed at increasing capacity, and it falls when wages are higher
    b. Capital deepening is aimed at substituting labor for capital, and it rises when wages are high

Which form of investment is most important depends on the business cycles. When the economy is hot, raising output is important since there is very little slack, so capital widening is more important. In periods where the economy is not performing well, higher wages may induce more investment of the capital deepening form, and those higher wages may also help bolster aggregate demand.

Hence, the effects on consumption and investment, overall (and hence on aggregate demand in a closed economy) depend on what stage we are at in the business cycle.

- In booms, we have a bolstering of consumption through higher wages, but a reduction in investment given the predominance of capital widening investment geared at increasing capacity. The overall effect is unclear.
- In busts, we have a bolstering of consumption *and* capital deepening as the main form of investment, which also rises with higher real wages and higher conventional wages as a determinant. Hence, the effects both point towards the benefits of higher wages in determining aggregate demand.

The theoretical differences between the mainstream and *Raising Keynes* have practical consequences.

5. **What are the policy implications of the differences between the two models?**

The policy implications are stark. In the long-run growth models that are traditional, there is no role for aggregate demand. Long-run growth is entirely pinned down by supply side factors, and since these are assumed to be exogenous (e.g. population growth), there is no role for AD. For example, consider the Solow model. At the balanced growth path level of the capital stock, an economy's growth rate is driven entirely by exogenous parameters like population growth, technological growth, the depreciation rate, and so on. Hence, there is no role for monetary and fiscal policy in such models: the short-run tradeoff between inflation and unemployment known as the Philipps curve vanishes, because it is assumed that AD has no role in long-run growth determination. Indeed, as Volcker famously quoted, his belief was that monetary policy in the long-run would simply be inflationary, since all the frictions (price stickiness) subside in the long run.

Given our models, if aggregate demand matters in the long run, then there is a greater role for both monetary and fiscal policy to be influential even moving beyond the short run. As Professor Marglin highlights, this means that choosing price stability over output and unemployment in the

long run (as many governments mandate for their central banks) on the premise that monetary and fiscal policy have no long-run role is an argument based on a faulty premise. The tradeoff still exists in the long run, according to Professor Marglin, and there may be a role for favoring higher long-run inflation if it allows for higher long-run employment, for example.