

National Institute Economic Review

<http://ner.sagepub.com/>

MACROECONOMICS FOR THE 21ST CENTURY: FULL EMPLOYMENT AS A POLICY GOAL

Roger E.A. Farmer

National Institute Economic Review 2010 211: 109

DOI: 10.1177/0027950110364104

The online version of this article can be found at:

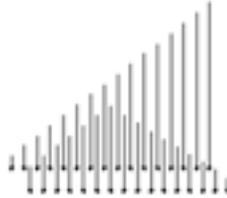
<http://ner.sagepub.com/content/211/1/109>

Published by:



<http://www.sagepublications.com>

On behalf of:



[National Institute of Economic and Social Research](http://www.niesr.ac.uk)

Additional services and information for *National Institute Economic Review* can be found at:

Email Alerts: <http://ner.sagepub.com/cgi/alerts>

Subscriptions: <http://ner.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Feb 2, 2010

[What is This?](#)

MACROECONOMICS FOR THE 21ST CENTURY: FULL EMPLOYMENT AS A POLICY GOAL

Roger E.A. Farmer*

This paper describes research that integrates Keynesian and Walrasian economics in a new way. The author develops a model in which high unemployment can persist and any unemployment rate can occur as an equilibrium. Equilibrium is selected by the self-fulfilling beliefs of asset market participants. Using this new framework, the author argues that fiscal policy is not the best solution to the problem of restoring full employment. A policy of asset market management, similar to quantitative easing, is put forward as a more effective approach.

Keywords: Unemployment; Keynesian economics; quantitative easing; financial crisis

JEL Classifications: E2; E24; E40; E50

Introduction

In this article I summarise some results from a research agenda that reconciles Keynesian economics with Walrasian general equilibrium theory in a new way. The key ideas from Keynesian economics are that free market economies may support any unemployment rate as an equilibrium and that the equilibrium we observe is selected by confidence. The key idea from microeconomic theory is that individuals are rational and goal oriented and they do not make systematic forecast errors. These ideas are worked out fully in two working papers, Farmer (2009a and b), and in two books, Farmer (2010a and b).

Although I recognise that the market system may lead to inefficient outcomes with high unemployment, I do not believe that fiscal stimulus is the right response to a financial crisis. My reconciliation of Keynes with Walras is different from the orthodox approach and it leads to a different policy proposal.

As an alternative to fiscal policy, I argue for a policy of asset management in which the central bank, in

conjunction with the treasury, targets both a short interest rate and a second asset price. Ideally, the second target should be the growth rate of a stock market index, but the price of long-term government debt is a good substitute. I argue that a policy of quantitative easing, of the kind that has recently been implemented by central banks throughout the world, should become a permanent component of aggregate demand management.

Where the new-Keynesians went wrong

There have been many previous attempts to merge Keynes with Walras. This was the central goal of John Hicks (1937), Alvin Hansen (1936) and Don Patinkin (1989) amongst others. Patinkin argued that Keynesian economics is about what happens when agents trade at non-Walrasian prices. According to this perspective, excess unemployment occurs when the price level is too high relative to nominal demand. If left to itself, a free market economy will eventually adjust to a classical equilibrium as nominal prices fall. Since this process takes time, the government may restore full employment

*University of California Los Angeles, National Bureau of Economic Research, and Centre for Economic Policy Research; e-mail, rfarmer@econ.ucla.edu. This paper summarises work presented at the 6th Euroframe Conference on Economic Policy Issues in the European Union, 'Causes and consequences of the current financial crisis: what lessons for European Union countries?' held on 12 June 2009 at the British Academy. I would like to thank Ray Barrell and Catherine Mathieu for inviting me to present my work, the Economic and Social Research Council for their sponsorship and participants at the conference for their comments. I also thank the National Science Foundation for their support of this research under grant SBR 0720839.

and improve the welfare of its citizens by increasing aggregate demand through expansionary fiscal policy.

The work of Patinkin and other post-war Keynesians developed into what Paul Samuelson (1955), in the 3rd edition of his undergraduate textbook, labelled the ‘neoclassical synthesis’. According to this theory, the economy is Keynesian in the short run because of sticky nominal prices; it is classical in the long run after all nominal prices have had time to adjust. Some contemporary commentators, notably Joan Robinson (1965, pp. 100–1), were unimpressed. She called Samuelson’s theory ‘bastard Keynesianism’, arguing that it castrated the central message of the *General Theory*. This message is that high unemployment is an equilibrium phenomenon.

In the 1980s, the neoclassical synthesis was revived and extended by a group of economists who referred to themselves as new-Keynesians. They advocated inflation targeting as a central bank operating procedure and central banks throughout the world heeded their call. The world entered a period of prosperity. Growth remained strong, inflation and interest rates fell and all three variables became less volatile. Economists attributed this success to economic theory. The business cycle was widely reported to be dead. Like Mark Twain’s demise, these reports now appear to have been greatly exaggerated.

So where did we go wrong as a profession? Hicks, Hansen, Patinkin and Samuelson distorted the main message of *The General Theory*. These postwar Keynesians led us down the path to new-Keynesian economics. In new-Keynesian economics (see the exposition in Clarida *et al.*, 1999), markets fail because some firms are artificially prevented from exploiting obvious profit opportunities by adjusting prices. This is a caricature of the Keynes of *The General Theory* (1936), which does not rely on sticky prices or wages as Keynes made clear in Chapter 19.

But although price rigidity was never a central component of *The General Theory*, it is central to new-Keynesian economics. Despite the important role of sticky prices, this assumption has never been satisfactorily reconciled, by the new-Keynesians, with individual maximising behaviour. Instead, the new-Keynesians assume that employment departs from its optimal value because firms must wait to be chosen at random by an exogenous selection device before they are permitted to recalculate their prices. The exogenous

selection mechanism that decides who may change prices is facetiously referred to as a ‘visit from the Calvo fairy’ after Guillermo Calvo’s (1983) seminal paper which first introduced the device.

The Calvo fairy is not the only unrealistic feature of new-Keynesian economics. Perhaps more damning is the fact that there is no unemployment in the benchmark new-Keynesian model. Instead, all variations in the *employment* rate occur as utility maximising households choose to vary their hours in response to changes in the real wage. It is hard to take this model seriously as an explanation for the Great Depression or the 2007–2009 financial crisis. But it continues to dominate the discussion in policy circles, because until now, there has been no good alternative. My work seeks to rectify this situation.

Dotting the i’s and crossing the t’s

As Paul Krugman argued recently in the *New York Times*, we need a formal analysis of a problem before we can be confident about our policy predictions. In Krugman’s (2009) words:

“I’m on a continuing quest to develop a tractable model . . . Why? you may ask. Why not go with verbal intuition? Well, I’m enough of a conventional economist to think that there’s no substitute for a model with dotted i’s and crossed t’s; it’s not the truth, but it really does help clarify your thinking.”

When I began this project, I thought that I would be able to give Krugman what he was looking for – an internally coherent theory based on individual behaviour that would justify Keynesian policies. But as the project developed, I began to realise that in order to save Keynesian economics, I would also need to change it. The model I develop here is explained more fully in Farmer (2009a and b, and 2010a and b). Although it is consistent with the key ideas of Keynesian economics, it does not provide a defence of fiscal policy. Instead, I advocate a different approach to restoring full employment.

Technical assumptions

The model I will describe is designed to capture two key ideas. First, any unemployment rate can be an equilibrium. Second, the equilibrium that prevails is picked out by ‘animal spirits’ in the asset markets. The simplest environment that captures my main idea has the following properties:

- There are two distinct physical goods, capital and a consumption good. I need this assumption to ensure that there is a relative price of capital so that one can meaningfully discuss changes in asset prices.
- Labour is traded in a market with costly search and recruiting. I need this assumption to ensure that unemployment persists in equilibrium.
- There is a single unit of capital and a measure of labour of length one. Think of this as a large number of workers. The model will decide the fraction of those who remain unemployed.
- Capital does not depreciate and cannot be reproduced. It is owned by firms and traded in a frictionless rental market.

The return to capital represents the profit stream of the firm. In the model, the price of a unit of capital and the price of a share in a company are the same. In practice, the relative price of capital and the value of the stock market are very different concepts. Complicating the model to allow for this distinction would not alter my main message although it is clearly important for empirical work.

There are two technologies. One is a standard neoclassical production function that explains how labour and capital are combined to produce a good. The other is a search technology similar to those that have been widely used in other search models of the labour market (see Pissarides, 2000). The search technology produces filled vacancies from unemployed workers and corporate recruiters. These recruiters are employed workers. Instead of working as recruiters they could alternatively produce commodities.

I simplify the model by assuming that the entire labour force is fired at the end of every period and rehired at the beginning of the next period. This allows me to describe the equilibrium of the economy as a series of disconnected static problems.

In the real business cycle model that has dominated macroeconomics for twenty years, variations in employment occur because households choose to supply more or less hours to the market in response to variations in the wage over time. I assume instead that households do not value leisure and all of their members would like to find a job. Variations in employment, in my model, occur because of variations in the fraction of the labour force that are unemployed.

To close the model I assume in my 2009a working paper that there is a single infinitely lived family that maximises the utility of its members. I show that this assumption implies that fiscal policy cannot be used to restore full employment.

In my 2009b working paper I relax the representative family assumption by allowing for a more realistic demographic structure with birth and death. I show there that fiscal policy can increase employment, but the fiscal multiplier is less than one and increased government purchases are predicted to decrease welfare.

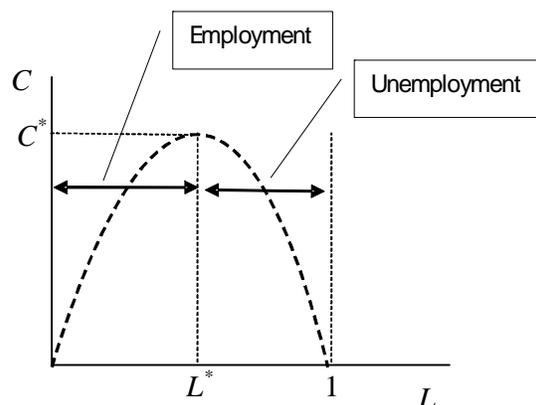
The social optimum

Let's suppose that households can appoint a social planner to organise production. This planner is charged with the task of maximising the welfare of the representative agent. How would she behave?

Since there is no feasible way to transfer resources from one period to the next, the planner faces a series of disconnected one-period problems. In each period she will maximise consumption by optimally allocating workers between two tasks. Some workers will be assigned to the direct production of commodities. Others will be assigned to the task of searching for new workers to hire. Since the activity of recruiting diverts resources from productive activity, the social planner will choose to leave some workers unemployed. The problem of the social planner is depicted in figure 1.

The dashed curve represents the quantity of the consumption good that can be produced as the planner increases employment from 0 to 100 per cent of the

Figure 1. The problem of the social planner



labour force by adding more workers to the recruiting department. Initially, adding more recruiters is productive and additional workers result in additional output. But once the planner reaches L^* , additional employment becomes counterproductive. By employing additional workers, the social planner could achieve 100 per cent employment. This is not a good thing to do since these workers would be so busy recruiting each other that no one would be available to produce goods. $1-L^*$ is a good candidate for what Milton Friedman has called the natural rate of unemployment.

What goes wrong in the labour market?

General equilibrium theorists have shown that, under certain assumptions, free markets work well in the sense that a competitive equilibrium replicates the decisions that would be made by a benevolent social planner.

To decentralise a social planning problem, general equilibrium theory posits the existence of a set of competitive headhunting firms that would operate the search technology. These firms would purchase, from households, the exclusive right to match an unemployed worker with a vacant job. They would purchase, from firms, the exclusive right to fill a job. Although we do see headhunting firms, in practice these firms act as substitute recruiting departments for firms that are too small or too specialised to run their own operations. They do not pay unemployed workers for the right to find them a job.

How would an organised employment market operate if it did exist? Suppose that a competitive headhunting firm were to offer to pay an unemployed worker for the right to match him with a job. A dishonest unemployed worker could turn down every job offer and continue to receive payments while remaining unemployed. Since there will often be good reasons to refuse a job, it would be impossible to write a contract in which the worker must take any job that he is offered.

A given number of jobs can be filled by a large number of unemployed workers and a few recruiters or by a few unemployed workers and a large number of recruiters. But should society match workers with jobs by asking a few unemployed workers to search for a lot of vacant positions or a lot of unemployed workers to search for a few vacant positions? I argue that either outcome can occur in the real world because the price signals that tell firms and workers how to behave are missing.

Search equilibrium

Search theory provides an alternative description of how the labour market works. Workers look for jobs, taking as given the probability that they will find one. Firms assign workers to the recruiting department, taking as given the number of workers that each recruiter can hire. Firms and workers take prices, wages and rental rates as given as in Walrasian general equilibrium theory.

An equilibrium is a set of prices and a set of plans by firms and households such that firms maximise profit, households maximise utility, and demands and supplies are equated in all markets. The firing probability of a worker and the hiring effectiveness of a recruiter are determined by the fact that the number of workers who find jobs must be consistent with the aggregate search technology. These terms enter individual decision problems as externalities that appear, to the observer, to be productivity shocks.

The equilibrium concept I have described sounds a lot like the one used in search models that have been widely studied in the literature: see, for example, the survey by Rogerson *et al.* (2005). But my concept has fewer equations than unknowns. Decentralisation of the social planning solution requires the addition of two markets and two prices – one for the time of a searching worker and one for the time of a searching recruiter. The search equilibrium adds just one price, the money wage.

As a consequence, my model has many labour market equilibria in the steady state. A given number of jobs may be filled by many searching unemployed workers and a few searching recruiters. Or it may be filled by a few searching recruiters and a large number of unemployed workers. The relative prices that should direct market participants to the optimal mix of unemployment and vacancies are missing.

I believe that search theorists have missed this fact because economists are trained, especially in graduate school, to look for a model in which prices and quantities are uniquely determined by fundamentals. When confronted by an underdetermined model, existing theorists have chosen to add an equation in an attempt to bring the theory into line with existing general equilibrium models. Typically, they make the assumption that, when a firm and a worker meet, they bargain over the wage. I believe that a more fruitful theory can be developed by throwing away this assumption and recognising that there is a pervasive

labour market failure, and as a consequence, any unemployment rate can be an equilibrium.

The implications of this idea

Most economists, new-classical and new-Keynesians alike, hold to some variety of the natural rate hypothesis. The idea that the economy gravitates towards a natural rate of unemployment that, in the words of Milton Friedman (1968),

“is the level that would be ground out by the Walrasian system of general equilibrium equations, provided there is imbedded in them the actual structural characteristics of the labour and commodity markets, including market imperfections, stochastic variability in demands and supplies, the cost of gathering information about job vacancies and labour availabilities, the costs of mobility, and so on.”

According to the natural rate hypothesis, the natural rate of unemployment is independent of fiscal and monetary policy. I believe that this is false. In the world in which we live, and in the alternative theory of the labour market sketched above, fiscal and monetary policy have a permanent effect on the unemployment rate. There are many possible equilibrium unemployment rates and each of them is consistent with any growth rate for the real economy and any inflation rate. There are no forces in the economy that lead it towards the peak of the graph in figure 1. Instead, any unemployment rate can persist as an equilibrium. Adam Smith's invisible hand has palsy.

Fiscal policy or quantitative easing?

You might think that the model I have described provides a good way of understanding why we need fiscal policy to move the economy from a high unemployment equilibrium back towards the social optimum. But that's not necessarily the case. It all depends on the structure of aggregate demand.

In Farmer (2010a), I build a series of general equilibrium models with alternative population demographics. I show there that, if the world is well described by a representative household, fiscal policy is not the answer. In that environment, if households lose confidence in the value of assets, there will be a self-fulfilling drop in the value of the stock market. As households feel less wealthy, they will spend less, firms will cut back on employment and the economy will move to a new

equilibrium with a higher unemployment rate and less production. It is nevertheless an equilibrium in which no firm can profit by offering a lower wage and all firms earn zero excess profit.

But the fact that the equilibrium is inefficient does not mean that fiscal policy is the right solution. The Keynesian argument for fiscal policy is based on the theory of the multiplier. According to this theory, consumption is a function of income. Higher expenditure by government causes higher expenditure by the newly employed and a virtuous cycle of employment results in an expansion of the economy that is larger than the original increase in government purchases.

Postwar research on the consumption function (see, for example, Friedman, 1957), found that consumption depends not on income, but on wealth. Friedman called this *permanent income*. This finding has important implications for the efficacy of fiscal policy since it implies that increased government deficits will crowd out private expenditure. In my view, we have seen crowding-out in the past six months as private savings rates increased in response to large fiscal deficits. Fiscal policy may not be completely crowded out; but even partial crowding out will offset the benefits of a fiscal expansion by transferring the costs of the recession to our children and grandchildren who must repay the debts that are incurred by large fiscal programmes.

If fiscal policy did not prevent us from sliding into a great depression, what did? It is my view that the purchase of private assets and long bonds, by the Fed in the US, and gilts, by the Bank of England in the UK, was responsible for increasing the value of private wealth. Lower mortgage rates helped stem the collapse in house prices. The purchase of gilts restored the value of shares, through substitution effects in the asset markets. In my view, policies like this should become an alternative pillar of monetary policy. Policies that restore private wealth and private expenditure are superior to fiscal expansions that increase the size of government and place our children and our grandchildren further into debt to overseas investors.

A new employment policy

If fiscal policy is not the answer, what should we do collectively to restore full employment?

Confidence can affect asset prices. Sustained plunges in asset prices can have long-term permanent effects on the

unemployment rate. Intervention by the central bank can also affect asset prices and, when the markets become destabilised, governments can and should intervene to restore confidence.

Consider the US case. Before the creation of the Fed in 1913, short-term interest rates were much more volatile than they are now. They were allowed to move around, not just in response to fundamentals, but also in response to market sentiment. After 1913, the Fed began to target directly a single asset price – the interest rate on overnight loans. In my view, the government should engage in a more extensive asset management policy by targeting a second asset price. In Farmer (2010b) I argue that this should be a stock market index; but the yield on government bonds would be a feasible alternative.

One might be sceptical about the possibility of moving the interest rate on long bonds independently of the short rate, since orthodox theory of the term structure of interest rates argues that this cannot be done. The US experimented with a policy to move long and short rates independently in the early 1960s and according to conventional wisdom this exercise, ‘operation twist’, was a failure. In fact operation twist was not unsuccessful. It was never tried.

In a 2006 NBER working paper, Kenneth Kuttner has shown that bond purchases by the Fed in the 1960s were tiny and he presents convincing evidence to show that, at other times, the Fed and the Treasury did have a significant impact on the yield curve by varying the quantities of bonds of different maturities in the hands of the public. Recent experience with quantitative easing suggests that Kuttner is right. The Fed *can* move short rates independently of long rates and, by moving long rates, the Fed can, and has, influenced the value of the stock market.

Conclusion

Although my theory of aggregate supply sounds superficially like the Hicks-Hansen description of Keynesian theory that was taught to generations of economists in the postwar period, it is very different.

Unlike the Hicks-Hansen model, the equilibrium concept that I have described does not rest on some prices being away from their Walrasian levels and there are no forces in the model that cause some agents to want to charge different prices.

I have argued that it is time to drop the natural rate hypothesis and return to the Keynes of the *General Theory*. This is not just empty rhetoric. It has implications for the policies to be used to stabilise the real economy in the 21st century.

REFERENCES

- Calvo, G. (1983), ‘Staggered prices in a utility maximizing model’, *Journal of Monetary Economics*, 12, pp. 383–98.
- Clarida, R., Galí, J. and Gertler, M. (1999), ‘The science of monetary policy: a new Keynesian perspective’, *Journal of Economic Literature*, 37, pp. 1661–707.
- Farmer, R.E.A. (2009a), ‘Confidence, crashes and animal spirits’, NBER Working Paper No.14846.
- (2009b), ‘Fiscal policy can reduce unemployment: but there is a better alternative’, CEPR Discussion paper No. 7526.
- (2010a), *Expectations Employment and Prices*, Oxford, Oxford University Press.
- (2010b), *How the Economy Works: Confidence, Crashes and Self-Fulfilling Prophecies*, Oxford, Oxford University Press.
- Friedman, M. (1957), *A Theory of the Consumption Function*, Princeton University Press.
- (1968), ‘The role of monetary policy’, *American Economic Review*, 58, pp. 1–17.
- Hansen, A. (1936), ‘Mr. Keynes on underemployment equilibrium’, *Journal of Political Economy*, 44, pp. 667–86.
- Hicks, J. (1937), ‘Mr. Keynes and the classics: a suggested interpretation’, *Econometrica*, 5, pp. 147–59.
- Keynes, J.M. (1936), *The General Theory of Employment Interest and Money*, London, Macmillan.
- Krugman, P. (2009), ‘Economists, ideology and stimulus’, *The Conscience of a Liberal: New York Times Blog*, 19 January.
- Kuttner, K.N. (2006), ‘Can central banks target bond prices?’, NBER Working Paper No. 12454.
- Patinkin, D. (1989), *Money Interest and Prices* (3rd edition), Cambridge MA, The MIT Press.
- Pissarides, C. (2000), *Equilibrium Unemployment Theory*, Cambridge MA, The MIT Press.
- Robinson, J. (1965), *Collected Economic Papers*, Oxford, Blackwell.
- Rogerson, R., Shimer, R. and Wright, R. (2005), ‘Search theoretic models of the labour market: a survey’, *Journal of Economic Literature*, 43, pp. 959–88.
- Samuelson, P.A. (1955) *Economics: An Introductory Analysis* (3rd edition), McGraw Hill.