

# Keynesianism in practice

## The case for government support for sustainable energy projects

Tsjalle van der Burg considers a non-orthodox type of Keynesian policy – the stimulation of sustainable energy projects – which have the potential to increase production and employment while also lowering government debt and reducing energy dependency.

*'It is curious how common sense, wriggling for an escape from absurd conclusions, has been apt to reach a preference for wholly "wasteful" forms of loan expenditure rather than for partly wasteful forms, which, because they are not wholly wasteful, tend to be judged on strict "business principles".'* (JM Keynes 1936)

When unemployment levels rise significantly – as they have in many countries over the last two years as a consequence of the global recession – orthodox Keynesian policies, such as those which increase private or government consumption, are often used as a quick way of increasing production and employment. Unfortunately, they also tend to raise government debt and lead to a deterioration in the balance of payments. Given that the current priority of many western governments is to make sharp reductions in the size of national deficits, it is sensible to look for alternatives.

This article considers a non-orthodox type of Keynesian policy, one that consists of stimulating investments in sustainable energy. It is a policy that has the potential to increase production and employment while simultaneously lowering government debt. Although part of the article is focused on

the policy context in the Netherlands, its lessons have relevance for governments across Europe.

Let us start by considering the effects of a Dutch wind farm on the economy of the Netherlands. Economically, the project is profitable for the electricity producer only when it receives a subsidy equivalent to at least 30 per cent of the investment costs. Investment in the wind farm generates positive expenditure effects, increasing production and employment in the Dutch economy (boosted also by multiplier effects). This implies an increase in tax revenues and a decrease in social security benefits. It is not *a priori* implausible that these favourable effects on the government debt equate to 40 per cent of the investment cost. Viewed this way, a subsidy of 30 per cent may in fact result in an overall decrease in Dutch government debt.

This argument can also be made in favour of many other types of project. For example, it has been used by football clubs that want to build a stadium but need government aid to be able to do so. The clubs suggest that building the stadium will increase production and employment, which in turn will decrease government debt – for this reason, they argue, the government is able to offer a substantial subsidy without increasing its

debt on balance. However, this argument fails to take account of the decreases in expenditure elsewhere in the economy that are caused by building the stadium. The new stadium will attract new fans who will spend money on entrance fees, among other things, but this will leave them with less money to spend on other things. This will cause a decrease in production and employment elsewhere, which will increase government debt.

## **Investments in sustainable energy can have significant advantages for both the country that invests and, in situations of high unemployment, the world economy**

The important difference with the wind farm example is the following. The wind farm reduces the use of oil by power plants. Investing in the wind farm will cause a similar decrease in expenditure elsewhere but, since the main impact is a shrinkage in the sales of oil producers, most of this decrease will occur outside the Netherlands. Nevertheless, this 'exported impact' will have negative domestic impacts – for instance, major ports like Rotterdam may lose some oil-handling revenues – but the overall impact of this will be relatively small. To a large extent, the argument still applies.

There are, of course, many other sustainable energy projects – such as biomass projects, solar collectors, insulation of buildings, and so on – the effects of which (in countries that are net importers of energy) may be similar to those of the wind farm example. Investments in a particular project cause an increase in expenditure and employment, and most of the costs of the resulting decreases in expenditure elsewhere in the economy tend to be borne by actors outside the country. Thus, the projects can lead to increased

production, increased employment and a lower government debt. In addition, imports of energy will decrease, which may or may not be counterbalanced by the imports caused by the investment and the related increase in expenditures.

Many savings on energy concern savings on oil. Since the average oil producer saves a relatively large part of their income, and given the Keynesian theory that savings can deepen economic crises, it follows that reductions in the incomes of oil producers may also have an overall positive impact on the world economy.

Of course, the analysis above is a rudimentary one. Still, a more advanced qualitative analysis also leads to the conclusion that investments in sustainable energy can have significant advantages for both the country that invests (if it is a net importer of energy) and, in situations of high unemployment, the world economy (Van der Burg 1996).

### **Microeconomics and macroeconomics**

Increases in expenditure – related to sustainable energy projects, football stadiums or any other project – do have some other negative effects which need to be considered, as these are often neglected in cases where small, individual projects are concerned.

Let us first consider large-scale policies. Suppose the government invests in a programme of many different projects which together add up to many billions of euros. This large increase in expenditure will decrease unemployment, which will cause inflation to rise, in what is known as the Phillips curve effect. Higher levels of inflation will eventually weaken the economy in a number of ways, for example, by lowering the level of exports. Another negative effect occurs in cases where investment programmes are financed on the capital market – which is likely if they are part of a Keynesian policy – as this can cause other

investments to decrease, because of higher interest rates or simply because banks have less money left to help other investors.

At first glance, the situation seems to be different for small projects. The expenditure effects of a small project are often calculated via a relatively simple model in which there is no Phillips curve and no capital market – in many cases, the model used is an elementary input–output model. This method of calculation appears to be correct: if, for instance, the expenditure on a small project leads to a decrease in unemployment of seven man-years, this will likely have no significant effect on the wage demands of labour unions or on related inflation.

However, suppose this method leads to the conclusion that there are many small projects for which it is true that every single project has positive expenditure effects, causes an increase in production and employment, and produces a (net) decrease in government debt. And

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suppose that, because of this, the government decides to support all of these small projects. In this way, the resulting increase in expenditure will, overall, be sufficiently large to have negative effects on the economy through the Phillips curve and capital market effects and, because these negative effects were not taken into account when analysing the projects individually, the effects of each project will in fact be less positive than originally expected.

Therefore, it is better to use an alternative method for appraising small projects, one which is based on an econometric macro-model of macroeconomic policies in the country

concerned. The details of the method are discussed elsewhere (Van der Burg 1996), however, the essential idea is as follows. Suppose that an increase in expenditure of 10 billion euros leads to an increase in inflation, which in turn increases government debt by X billion euros over the long term. For the appraisal of a small, individual project worth 2 million euros then, one assumes the project causes an increase in government debt that is equal to X billion euros multiplied by 0.0002 (being 2 million/10 billion), insofar as the Phillips curve effect is concerned. Speaking more generally, the macroeconomic effects of a small project are assumed to be proportional to the effects of a large project, after certain corrections are made for project-specific characteristics. In this way, policymaking can become a consistent process, as the same model will be used for both small and large increases in expenditure.

One implication of using this method is that fewer investment projects will be acceptable, because macro-level effects that would otherwise be invisible at the micro-level will make single-project increases in expenditure less positive. Put another way, the test of an econometric macro-model for an investment project is more onerous than the test of an elementary input–output model.

### A case study

Perhaps applying this model to a specific example may be more helpful to policy-makers, so this article considers the calculations made for investment in a Dutch wind farm (discussed more extensively in Van der Burg 1996). While the figures concern the period before 1991 and are specific to the Netherlands, they remain relevant in light of the significant levels of unemployment currently being experienced across Europe as a result of the economic downturn, and point to the need for other countries to develop and test similar models.

The wind farm in question is assumed to have been built and run during the period

1975–1990 – during which time the Netherlands experienced high levels of unemployment – and the economic effects of the project were calculated via the Freia model of the Dutch Central Planning Bureau (CPB), which was often used in the 1980s to analyse the effects of macroeconomic policies. The Freia model is an econometric macro-model of the Dutch economy and is partly based on Keynesian insights. As such, it argues that in the short term at least any increase in exports, consumption, private investment or government expenditure causes an increase in production and employment (given that the analysis starts out from a situation of high unemployment).

## **If the Dutch wind energy project had been part of a European policy for sustainable energy, its positive effects could have been multiplied across other European countries**

However, the model is also based on certain other insights. One of these insights is that lower wages lead to increases in exports and investment. Another related point is that an increase in spending also has negative effects, which will be most serious if the increase concerns government consumption. Here, the Phillips curve and capital market effects (especially those related to government borrowing) play a crucial role. On balance, the Freia model does not favour an orthodox Keynesian policy of increasing government consumption: in this model, this policy causes a net decrease in production and employment

over the medium term, and an increase in government debt. Conversely, the model leads to the conclusion that one of the best policies for combating unemployment (in the medium term) is one of reducing government consumption and moderating wages.

Using this model for the analysis of our relatively small wind farm, and applying the methodological principle for the appraisal of small projects discussed above, the conclusions are as follows. If the oil price is such that investments in the wind farm have to be subsidised by 17 per cent in order to make them profitable for the electricity company, then the long-term effect on government debt will be exactly zero.<sup>1</sup> The fact that a subsidy of 17 per cent does not lead to an increase in government debt is related to the expenditure effects of the project, which cause an increase in tax revenues and a decrease in social security benefits. These favorable effects counterbalance both the subsidy itself and all other negative effects on government debt (including effects related to the Phillips curve, capital market effects, and effects related to a decrease in production by conventional power plants). Given the oil price noted, the project has (on balance) positive effects on production, employment and the current account. These effects may constitute a reason for providing a subsidy higher than 17 per cent. (The effects on the environment were not analysed, but could be another reason for providing a subsidy.)

Earlier, Chan-Lee and Kato (1984) compared the econometric macro-models of 14 countries (including five countries smaller than the Netherlands). They concluded that the Freia model puts too much emphasis on the negative effects of (orthodox) Keynesian policies, and especially on capital market effects. The wind farm was assumed to have been

1 The oil price needed to get this result was 32 euros a barrel, which was more than 50 per cent above the actual price at the beginning of the 1990s. Thus, in reality, the wind farm was not profitable at that time, even with a subsidy of 17 per cent. Of course, the oil price is higher at present, and wind farms are more efficient due to technological development. On the other hand, the early wind farms were built on the most favourable locations, and a few small wind farms occupied better locations than the particular wind farm analysed here.

financed on the capital market. Thus, the use of alternative models to the Freia model would probably have led to still more favourable conclusions regarding the wind farm.

## Stimulating sustainable energy is a policy that should be pursued vigorously in the wake of the global recession

A large proportion of the expenditure effects of any increase in spending in the Netherlands leaks away to other countries through imports. However, if the Dutch wind energy project had been part of a European policy for sustainable energy, its positive effects could have been multiplied across other European countries. An interesting hypothesis presents itself here: if the project had needed a subsidy of 50 per cent to be profitable for the electricity company, it would not have increased the debt of all European governments taken together.

### The effect on oil prices

A European policy for sustainable energy has an additional advantage, for which we turn to the work on project appraisal by Little and Mirrlees (1974). These authors discussed a country that consumed a substantial part of the world production of some natural resource, and that had to import it. If the country saved on this resource, it incurred a special and possibly substantial advantage: the world market price of the resource would decrease, and therefore the import costs to the country would reduce also.

Applying this idea to the European Union (which is a net importer of oil) and using normal values for the price elasticities of demand and supply of oil (which are needed to determine the effect), leads us to the following conclusion: if the European Union were to reduce its oil imports by 100 billion euros (before

allowing for any change in the oil price), then the resulting decrease in the world oil price would further reduce the value of European oil imports by 20 billion euros (Van der Burg 1996).

As a caveat, it is important to note here that investments in sustainable energy imply an increase in spending, which causes inflation to rise (via the Phillips curve), which has negative effects on the economy. These effects have been taken into account in the Freia-model calculations of the effects of the Dutch wind farm. However, it remains uncertain whether a European sustainable energy policy would increase inflation on balance, because it would also result in lower energy prices. This effect was neglected in the calculations presented above.

### Lessons for the future

Economic textbooks argue that in situations of high unemployment, orthodox Keynesian policies cause an increase in production and employment in the short run but have negative impacts on government debt, inflation, and the current account. However, subsidies for investments in sustainable energy may well provide the advantage of stimulating expenditures with few of the disadvantages of orthodox Keynesian policies. As such, they present interesting an option for governments looking for ways to boost growth without increasing their deficits. This type of Keynesian policy could be implemented by a country in isolation; however, a European-wide policy would likely have more extensive and positive impacts.

Of course, there are also other instruments by which to promote sustainable energy, such as energy taxes. These instruments may or may not have effects which are even more favourable than those of subsidies, under certain circumstances. However, this only reinforces the main conclusion: stimulating sustainable energy is a policy that should be pursued vigorously in the wake of the global recession. And, of

course, this conclusion is further reinforced by the fact that the policy helps to prevent climate change and environmental degradation more generally, as well as helping to reduce the dependence of Europe on foreign energy producers.

At present, European policymakers are focusing on other instruments to deal with the economic crisis, including lowering government expenditure, lowering wages, raising retirement ages and so on. Although this may reduce government deficits in the long run, it will also increase unemployment, at least in the short term. And it will likely reinforce the negative sentiments held by many towards the European Union, especially in countries such as Greece that are now experiencing lower living standards, following the EU's imposition of a programme of strict structural economic

reforms. This is not to deny that some reductions in living standards will be necessary to achieve greater economic stability, but Europe should also try to provide some *positive* strategies for the near future. A European policy which promotes investment in sustainable energy – and allows eurozone countries to have higher deficits than is allowed by the present rules, to the extent that they stimulate sustainable energy – is the best way to accomplish this.

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Chan-Lee JH and Kato H (1984) *A comparison of simulation properties of national econometric models* OECD Economic Studies, Spring, 109–150

Keynes JM 1936 (1973) *The General Theory of Employment, Interest and Money* London: Macmillan

Little I and Mirrlees J (1974) *Project Appraisal and Planning for Developing Countries* London: Heinemann

Van der Burg T (1996) *Project Appraisal and Macroeconomic Policy* Dordrecht: Kluwer Academic Publishers