1. Introduction

In the 1970s and early 1980s supply-side economics was developed as an alternative to Keynesian economics. A key message is that tax cuts could be a major help in increasing economic growth and lowering unemployment. However, the theoretical and empirical foundations of supply-side economics are rather weak. As a rule the suggested rationale for this new look on economic policy is based on fragmentary insights lacking a general framework even though they may seem plausible by themselves.

In this paper I will try to explain a major transmission channel by which supply-side policies can promote economic growth and employment. In particular, I will elaborate the contention of Knoester (1983, 1984) that shifting forward of higher taxes and social security contributions into higher real wages, can be responsible for the occurrence of a negative instead of a positive balanced-budget multiplier — i.e. the Keynesian Haavelmo effect — as a result of a simultaneous increase in public spending and taxation. I will call such a negative balanced-budget multiplier — meaning a decrease instead of an increase in economic growth — the *inverted Haavelmo effect*. In reverse, a simultaneous decrease in taxation financed by cutting public spending will improve the economic performance substantially. In that way the inverted Haavelmo effect can serve as a theoretical and empirical underpinning of supply-side policies.

This paper seeks to integrate and elaborate my earlier research on this topic. I will discuss in particular some present policy issues. First, I will explain the rationale and some empirical indications for the phenomenon of higher taxes being shifted forward into higher real wages. In section 3 the implications of forward shifting for fiscal policy will be discussed. Section 4 deals with the question whether tax cuts should be financed by a simultaneous cut in public spending or by an increase in the government budget deficit. It will moreover review some aspects of international policy co-ordination and of a revenue-neutral tax change. I will end with some concluding remarks.

2. Taxes and Wages

There can be a close link between wages and taxation. This follows from the contention that wages are the result of a bargaining process between employees and employers. A central element of wage bargaining is that employees do not bargain for nominal but for real net wages, which implies that they seek to claim anyhow compensation for rising costs-of-living and increases in taxes and social security contributions.

This wage bargaining process, of which the formal details can be found in Knoester and...
Van der Windt (1987), suggests that wage rates depend on four conditions:
- the shifting forward of direct taxes and social security contributions;
- the inflation rates affecting employees (consumer prices) and employers (GDP prices);
- the extent to which employees succeed in absorbing productivity growth into earnings;
- a transformation of the unemployment rate which gives these conditions their appropriate weights.

If forward shifting of taxes has played a role, real wages must have risen faster than they would have in the absence of it. Some recent empirical indications for this phenomenon can be found in Knoester and Van der Windt (1987). They show for ten OECD countries that forward shifting of taxes and social security contributions has been responsible for a substantial rise in real wages in the 1960s and 1970s. The forward shifting explains 40 to 50 percentage points of the past real-wage growth in Australia, Canada, the Netherlands and Sweden. For Germany, Italy and the United States the tax burden explains about 25 percentage of past real-wage growth and in Japan, France and the United Kingdom 15 percentage points.

These international differences depend on two underlying conditions: on the one hand the degree to which employees in each country have succeeded in shifting forward higher taxes into higher real wages — or in technical terms the height of the forward shifting coefficient in the wage equation — and on the other hand the degree to which each country has financed its public sector expansion by increasing taxes and social security contributions. So the given explanation of past real-wage growth for ten OECD countries reflects the multiplication of occurred tax events by the relative success of employees in shifting forward these events into higher real wages.

Forward shifting of taxes into higher real wages has in two respects important implications for economic policy. First, it is of importance for our view on wage flexibility and the working of the labour market. After all, forward shifting of taxes can overcompensate changes in real wages caused by market forces, i.e. by the level of unemployment. Hence the classical self-equilibrating mechanism of the labour market — i.e. a lower real wage growth induced by high unemployment rates — may not work at all because the forward shifting of taxes can overcompensate this classical adjustment process, which may even result in changing real wages the other way round. The second policy implication affects our view of fiscal policy. Forward shifting of taxes means that rising taxes will change real wages and the distribution of income at the expense of the profits share of national income. This change in income distribution can have far-reaching implications for our view on the consequences of balanced-budget financing, i.e. a simultaneous increase in public spending and taxation. These consequences of the forward shifting of taxes will be further analysed below.

3. The Inverted Haavelmo Effect

The Keynesian view on the effect on national income of a simultaneous increase in public spending and taxation has been formalised by Haavelmo (1945). In his view this effect is positive. This »Haavelmo effect« suggests that there is no penalty at all for higher public spending financed by an increase in taxes and/or social security contributions. On the contrary, it provided a perfect alibi for the postwar expansion of public spending financed with taxes and social security contributions as has actually occurred in almost all OECD countries.

Yet Haavelmo himself (1945, p. 318) already toned down extreme optimism about his analysis by ending his famous paper by saying that he did abstract from any effects there might be of a redistribution of income. However, forward shifting of taxation can have far-reaching consequences for income distribution. If higher taxes are shifted forward in full, each tax increase will lead to a correspondingly higher real wage claim by employees, as a result of which the income distribution deteriorates for employers resulting in a fall in the ratio of profits to national income. Such a lower profit ratio will depress the investment ratio, so that economic growth will fall. Simultaneously, increased real wages caused by a forward shifting of taxes, will push up classical unemployment.

Lower economic growth, in combination
with rising unemployment, will boost public spending and social security benefits, which in turn will lead to an increase in taxes and social security contributions. This rising burden of taxation will lead to a further forward shifting into higher real wages and so on. Thus the ultimate result of this process can be a vicious circle of increasing unemployment and taxation and decreasing economic growth. These negative effects of increasing taxation can in due course outweigh the positive effects on economic growth and employment of the correspondingly increased public spending.

Of course, the question whether this will really happen and if so, to what extent, may vary for different periods and for different countries. A better grasp of this matter can be obtained through the use of empirical macroeconomic models which contain at any rate the said interactions. In Knoester (1983, 1984, 1987a) general models are developed which can be used as a suitable starting-point for the empirical verification of the effects of balanced-budget financing. An important feature of these models is that they do not only contain a block describing the Keynesian view on economics — viz. income-expenditure equations representing effective demand — but also a block describing the supply-side of the economy. The precise details of this supply-side block can be found in Knoester and Van Sinderen (1984). In addition, these models contain wage equations derived from a wage bargaining model implying that in principle an increase in direct taxes and social security contributions is shifted forward into higher real wages. The models contain moreover a labour market block in which, according to Knoester (1986), employment is not only determined by effective demand — represented by excess capacity — but also by classical determinants such as real wage rate growth and the investment ratio. They have been empirically verified for Germany, the Netherlands, the United Kingdom and the United States for the 1960—1980 and 1960—1982 periods respectively (see Knoester (1983, 1987a)).

Simulations of balanced-budget financing with these models — i.e. the effects of a simultaneous increase in public spending and taxation — suggest that in the short run the Haavelmo effect — i.e. a positive balanced-budget multiplier — is not relevant when Haavelmo's simple Keynesian model is stripped of its simplicity in the way described. For Germany, the Netherlands and the United Kingdom, the short-run effects of balanced-budget financing are a decrease in economic growth, whereas economic growth barely increases only in the United States. The same holds true for the unemployment rate, which shows a rise in the European countries and only a slight decrease in the U.S.

In the long run the balanced-budget multiplier appears to be clearly negative for all four countries. After five years economic growth falls by between c. 1.5 % and 2.5 % as a result of a simultaneous increase in public spending and taxation by 1 % of GDP. At the same time the unemployment level increases by between 1.0 and 2.0 percentage points. These negative balanced-budget multipliers, which we call the inverted Haavelmo effect, are the result of the forward shifting of taxes into higher real wages. As shown in Knoester (1983, 1984) the balanced-budget multipliers are zero if the same policy measures are repeated with the exclusion of a forward shifting of taxes.

Forward shifting of taxes is responsible for this in the following way. The forward shifting into higher real wages has direct and indirect negative effects on economic performance. The direct effects are related to the occurrence of classical unemployment as has been explained by Malinvaud (1977) and others. When real wages go up, employment falls. This in turn leads to higher social-security benefits and consequently to higher social security contributions or taxes, which can set in motion new rounds of forward shifting resulting in higher real wages and lower employment. Another direct effect results from the impact of real wages on a country's competitiveness and exports. A shifting forward of taxes increases unit labour costs and thus causes competitiveness to deteriorate. As a result, exports fall, which in turn causes economic growth to decrease.

The indirect negative consequences of the forward shifting of taxes follow from a change in income distribution at the expense of profits. Higher real wages depress the profit ratio, causing investment and employment to fall. By these mechanisms a downward negative spiral is set in motion, in which the negative
effects of a forward shifting of taxes on the supply-side of the economy play a central role. The direct and indirect negative effects of a forward shifting of taxes outweigh the initial positive Keynesian ones. As a result, a negative instead of positive balanced-budget multiplier occurs in consequence of a simultaneous increase in public spending and taxation.

4. Tax Cuts and Economic Policy

In almost all OECD countries, tax cuts are a standard ingredient these days in the debate on how to boost economic growth and reduce unemployment. I will discuss this question against the background of the inverted Haavelmo effect. When use is made of the principles of the inverted Haavelmo effect in reverse, it means that cuts in direct taxes should be accompanied with simultaneous cuts in public spending. Table I shows the results of such a policy for four countries according to the empirical models of Knoester (1987). It appears that, as a result of a 1 % GDP cut in direct taxes, financed by a simultaneous cut in public spending, production will rise in the short run in Germany, the Netherlands and the United States. Only in the United Kingdom it will fall off slightly. In all four countries the unemployment rate will fall in the short run.

In the long run — i.e. after five years — a substantial rise in production and employment evolves in all four countries, with a subsequent fall in the unemployment rate. These outcomes are the result of an increase in the investment ratio, which in turn is a consequence of an improved profit ratio. The profit ratio goes up because lower direct taxes lead to lower wage claims by employees, which will change the income distribution in favour of the employers. An additional favourable effect is the impact of lower taxation on the competitiveness of each country. Because lower wage claims depress the wage rate, export prices can be cut, which will boost exports. So the inverted Haavelmo effect provides a plausible basis for tax cuts as suggested by supply-side economics. A caveat is, though, that there can be no cheap solution for financing these tax cuts. They should be accompanied with simultaneous cuts in public spending in order to prevent the crowding-out effects of higher government budget deficits.

Of course, alternative forms of lower taxation with a balanced budget — i.e. revenue-neutral tax operations — are possible. According to Mundell (1986) such revenue-neutral actions do not affect economic growth significantly. As shown in Knoester (1987b) similar conclusions can be drawn for the effects of lower direct taxation financed by higher indirect taxes. This policy-mix seems to be favourable only, when the bargaining power of employees to shift forward higher indirect taxes into higher nominal wages is

Table I. Effects of a once-for-all 1 % GDP decrease in direct taxes financed by a simultaneous decrease in public spending.

<table>
<thead>
<tr>
<th>Change in levels after year</th>
<th>Germany</th>
<th>Netherlands</th>
<th>United Kingdom</th>
<th>United States</th>
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<tr>
<td></td>
<td>1 5</td>
<td>1 5</td>
<td>1 5</td>
<td>1 5</td>
</tr>
<tr>
<td>Profit ratio (% GDP)</td>
<td>0.6 1.1</td>
<td>1.0 1.2</td>
<td>1.0 1.0</td>
<td>0.6 0.8</td>
</tr>
<tr>
<td>Investment ratio (% GDP)</td>
<td>0.0 0.7</td>
<td>0.1 0.8</td>
<td>-0.0 0.4</td>
<td>0.1 0.5</td>
</tr>
<tr>
<td>Volume of production (%)</td>
<td>0.4 2.6</td>
<td>0.7 2.6</td>
<td>-0.1 1.5</td>
<td>0.5 2.1</td>
</tr>
<tr>
<td>Inflation rate (%)</td>
<td>-0.6 -1.9</td>
<td>-1.6 -2.2</td>
<td>-0.6 -4.0</td>
<td>-0.2 -1.9</td>
</tr>
<tr>
<td>Export volume (%)</td>
<td>0.1 0.7</td>
<td>0.0 0.9</td>
<td>0.2 1.3</td>
<td>-0.1 0.3</td>
</tr>
<tr>
<td>Utilisation rate (%)</td>
<td>0.3 1.3</td>
<td>0.6 0.7</td>
<td>-0.3 0.4</td>
<td>0.5 0.4</td>
</tr>
<tr>
<td>Private employment (%)</td>
<td>0.2 2.7</td>
<td>0.2 1.7</td>
<td>0.1 1.7</td>
<td>0.4 2.4</td>
</tr>
<tr>
<td>Unemployment rate (%)</td>
<td>-0.2 -2.1</td>
<td>-0.2 -1.3</td>
<td>-0.1 -1.3</td>
<td>-0.3 -2.0</td>
</tr>
<tr>
<td>Public sector deficit (% GDP)</td>
<td>0.0 -0.4</td>
<td>0.1 -0.2</td>
<td>0.0 -0.2</td>
<td>0.0 -0.2</td>
</tr>
</tbody>
</table>

Source: Knoester (1987a).
very limited. Hence, the policy-mix suggested by the inverted Haavelmo-effect — i.e. a simultaneous decrease in public spending and direct taxation — seem to be a far better option for policy-makers.

5. Concluding remarks

This paper suggests a major transmission channel for tax-cutting policies as advocated by supply-side economists. A starting-point is the Keynesian Haavelmo effect which says that, as a result of a simultaneous increase in public spending and taxation, national income will increase, i.e. the balanced-budget multiplier will be positive. It is argued that this Haavelmo effect is no longer valid in present circumstances. The reason is that higher taxation will be shifted forward into higher real wages because employees will seek to maintain their real net income position. As a result, the profit ratio and the investment ratio will fall, resulting in a lower rate of economic growth. These negative effects outweigh the positive effects of the simultaneous increase in public spending. In that way a negative, instead of positive, balanced-budget multiplier results, which is called the inverted Haavelmo effect. In reverse, it is argued that a policy of lower direct taxation financed by a simultaneous decrease in public spending, will boost economic growth and reduce unemployment. In this way the inverted Haavelmo effect suggests a theoretical and empirical basis for tax cuts as advocated by supply-side economics.

References