1 INTRODUCTION

In policy analysis with traditional macroeconomic models for The Netherlands, like the Freia-Kompas model of the Central Planning Bureau (Van den Berg et al. 1988), wage equation plays an important role. In a standard wage equation, private wage growth is explained by the percentage change of consumer prices, labour productivity, the forward shifting of income taxes and social premiums and the change and the level of the difference between the unemployment rate and the frictional unemployment rate. The latter effect is the so-called Phillips curve effect. Simulation results of all kinds of government policies crucially depend on these various elements of the wage equation. For example, a reduction of indirect taxes will reduce wages because of its linkage to the consumer price. Similarly, wages will also be reduced when income taxes or social premiums fall.

However, because of the inclusion of the Phillips curve effect these kind of effects are likely to be only relevant in the short and medium term. Since the fall in wages induces a reduction of unemployment, the Phillips curve effect will generate a positive impulse on wage growth, which will continue as long as unemployment lies below its steady-state value. Therefore, in the long term the real wage rate will return to its steady-state value and so will unemployment. This implies that a permanent change in the tax burden has no long run effects on unemployment.

Recently, the Phillips curve has been criticized for several reasons (Blanchflower and Oswald 1989, Christofides and Oswald 1989). It is argued that wage formation can better be described by the so-called wage curve, in which wage growth only depends on the change in unemployment and not on the level of unemployment. Unemployment would therefore have a downward influence on wage levels and not on wage growth. This has important policy implications, since it implies that a permanent reduction in tax rates will have long-term effects on unemployment that do not diminish by the Phillips curve effect. The other side of the coin is that unemployment will not automatically return

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to the level of frictional unemployment in the long run if other determinants of
the wage equation, like the direct or the indirect tax rate, remain unchanged.
The purpose of this paper is to investigate whether this claim also applies to
the Dutch situation. The contents of the paper are as follows. Section two sket-
ches the theoretical background of the Phillips curve and the wage curve. Sec-
tion three reports the estimation results. Section four summarizes the main
conclusions.

2 THEORETICAL BACKGROUND OF THE PHILLIPS CURVE AND WAGE CURVE

The Phillips curve

Much of the literature on empirical research of wage formation stems from the
work of Phillips (1958). Phillips started from the proposition that the price of
any product changes in response to excess demand. Applying this proposition
to the labour market leads to the famous Phillips curve, which relates wage
growth to the level of unemployment. Phillips' model is one in which em-
ployers bid up wages competitively in order to attract labour away from other
firms. When demand for labour is high and there are few unemployed, em-
ployers will bid up wages rates rapidly to attract the most productive labour.
On the other hand, when labour demand is low and unemployment is high,
workers will be reluctant to accept wage cuts and hence wage rates fall only
slowly. Phillips therefore notes that the relation between unemployment and
the wage growth is likely to be highly non-linear. In addition, Phillips argues
that wage growth might also depend on the change in the unemployment rate.
In a period of rising business activity, employers will be bidding more vigorous-
ly than they would when the average unemployment rate was the same but
business activity was falling. This creates loops in the Phillips curve. This is
often labelled the weak Phillips curve effect.

In a subsequent paper, Lipsey (1960) builds on the work of Phillips. In con-
trast to Phillips he argues that the origin of the loops in the macro-Phillips-
curve could be found in the aggregation of micro-labour-markets, which are
affected differently by fluctuations in aggregate demand. A second innovation
in the Phillips curve by Lipsey concerned his inclusion of the cost of living in-
dex as an explanatory variable.

Phelps (1968) and Friedman (1968) stressed the role of expectations.
Whereas Phelps focused on the influence of expectations with respect to wages
of other firms, Friedman builds on the paper by Lipsey (1960) and considers
the endogeneity of expectations of consumer prices. From his paper the
Phillips curve was redefined into the so-called 'expectations augmented' 
Phillips curve:

\[ \Delta \log w = \Delta \log pc^e + f(\Delta ur, ur) \quad f_{ur} < 0, f_{\Delta ur} < 0 \quad (1) \]