

# Output Effects of Incomes Policies in Open Economies

By Andreas Wörgötter\*

This paper studies output effects of disinflationary incomes policy, which keeps the distribution of income constant. The underlying theoretical model follows the small country assumption on capital markets but not on goods markets. Wages and prices are assumed to be sticky in the short run and need time to adjust to their long run equilibrium levels. Preliminary empirical results for Austria are reported.

## I. Introduction

Incomes policy always gained more attention when the public felt dissatisfied with the outcome of unregulated economic actions which could no more sufficiently be controlled by traditional fiscal and monetary policy. This hope that there should be something else, which makes economic development, especially concerning inflation and unemployment, more coinciding with social preferences is well reflected in the wide variety of targets, which incomes policy measures should help to achieve.

Since the end of World War II three generations of income policies can be identified in industrial market economies.<sup>1</sup> The first decade after the war has been dominated by efforts to reconstruct the destroyed capital stock and manage the transition from war to peace also in economic terms. Incomes policy in this time has been devoted to a limitation of real wages in order to allow capital accumulation with sufficient speed.

During the Fifties labor ceased to be in a state of oversupply in more and more countries. Full employment growth became reality in the in-

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<sup>1</sup> An excellent survey of incomes policy in Europe is provided by *Flanagan / Soskice / Ulman* (1983). References covering also US experiences with incomes policies can be found in *Brunner / Meltzer* (1976) and a series of contributions on wage-price policy in the August 1972 issue of the *Review of Economics and Statistics*.

dustrial world and producible capital has been followed by (unproducible) labor as the limiting factor of economic growth. Inflation began to accelerate without sufficiently responding to fiscal and monetary policies except at the cost of increasing unemployment and decreasing capacity utilization for considerable time periods. The problem of inflation was seen (by the proponents of incomes policy) as outcome of the interaction of mark-up pricing in oligopolistic goods markets and exaggerated wage claims by organized labor. With the absence of severe effective demand failures oligopolistic firms did not have much incentives to resist wage demands which exceeded their “constant price level”-amount, because increasing labor costs could easily be shifted on the higher prices, while strikes could severely damage a firm’s profitability.

The second generation of incomes policy aimed to lower both price and wage inflation, while income distribution and real wages (in opposition to the first generation income policies) should remain unaffected. In that way society should be served a free lunch in form of less restrictive fiscal and monetary policy, which could allow higher growth and employment rates at simultaneously lower inflation rates. Finally economic environments changed dramatically in the beginning Seventies, both by the transition from fixed to flexible exchange rates and several supply shocks in form of tremendously rising energy and raw material prices. The result was (and is) a severe disruption of both internal and external stability of industrialized market economies. The scope for incomes policy (where still discussed or adopted) became twofold: Slowing down the wage-price spiral, which was set in motion by rising energy prices and regaining international competitiveness in order to stimulate export demand, output and employment at home.

In this way the emphasis of incomes policy has shifted from the resolution of capital shortage after the war to making full employment and price stability compatible with each other<sup>2</sup> and finally regaining internal and external stability after the supply shocks of the seventies.

Public support for incomes policies has undoubtedly been greatest during the first generation period after the war. Later on both frequency and length of incomes policy measures declined together with its empirically observable success. Recently an upswing of reliance on market forces alone can be observed (with Austria as an exemption which certifies the rule). This changed attitude vis à vis incomes policies could be partly understood as a reflection of social preferences, which

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<sup>2</sup> A task which has been doubted already by *Kalecki* (1943) for capitalist economies.

became more hostile against centralized public policy and the disappointment with the working of incomes policy during full-employment periods, which obviously failed in general to prevent inflation rates from climbing up to intolerable heights.

The scope of this paper is a discussion of problems, which may accompany incomes policies of the third generation type and which did not find any recent attention in the literature (at least to my limited knowledge). Before going into the detail of the analysis I would like to present a short outline of the main ideas, which seem important for evaluating the working of income policy measures, which are ought to reduce inflation, improve international competitiveness and increase output and employment via an "export led growth" strategy. The yet not fully explained puzzle with incomes policy is the gap between its theoretical attractiveness and the meagre fruits which it allows to reap if actually planted into the soil of a troubled economy. *R. Dornbusch* (1983) deals with the problem how the small European Economies should optimally handle their problems with the "real interest rate shocks" coming from the US and concludes: "The mix that is most frequently suggested consists of incomes policy and a monetary rule. Experience with incomes policy is not encouraging by any means." Dornbusch then goes on to propose a mix between money supply rules and supply side policies, may be because that combination has not entered so many battlefields as did incomes policy.

Starting the explanation of the just mentioned puzzle with the conclusion of my paper, I argue that incomes policy creates a *J*-curve effect similar to the effects of a devaluation on the trade account, that means things get worse in the short run before a more favourable long run position can be attained.

This outcome is generated by the interaction of sticky prices and wages, which allow an improvement of international competitiveness only within some longer or shorter time period, and a real interest effect, which depresses investment and consumer durables immediately. In the long run a position with higher output and employment can be obtained—given that incomes policy is able to slow down price and wage inflation for sufficiently long time. Short periods of incomes policy working would precisely satisfy M. Friedman's doubts about the efficiency of interventionist economic policy and just increase the amplitude of the business cycle without improving the overall state of the economy.

This argument can be extended to cover all types of disinflating policies and also closed economies. In the latter case the interaction

producing a *J*-curve pattern of disinflation on output and employment runs between the immediately working real interest effect and the delayed influence of the real balance effect.

The next two chapters give an outline of the underlying model and a discussion of short and long run effects of disinflating incomes policy on output and employment. Afterwards preliminary empirical results for Austria will be reported and finally the consequences and prerequisites for a successful disinflating incomes policy will be discussed.

## II. A Small Open Economy Model

In the following we restrict ourself to the small open economy case and use the model presented by *Dornbusch* (1983) as framework for analyzing the effects of disinflating, distribution neutral (that means real wage preserving) incomes policy on output and employment. Dornbusch's model combines an open economy IS-LM model with a sticky price and wage adjustment equation and is open to both fixed and flexible exchange rate regimes. We repeat his log linear model in equation (1) to (6).

- |     |                                                    |                                     |
|-----|----------------------------------------------------|-------------------------------------|
| (1) | $y = a \theta - br + f$                            | IS-curve                            |
| (2) | $m = q + hy - ci$                                  | LM-curve                            |
| (3) | $q = \beta w + (1 - \beta)(e + p^*)$               | Price level definition              |
| (4) | $r = i - \dot{q} = r^* + \beta \dot{\theta}$       | Real interest rate definition       |
| (5) | $i = i^* + \dot{e} = i^* + \dot{\theta} + \dot{w}$ | Perfect capital mobility assumption |
| (6) | $\dot{w} = \gamma y + \alpha(q - w) - \delta$      | Wage (and price) dynamics.          |

Equation (1) relates real domestic output ( $y$ ) to the real exchange rate ( $\theta = e + p^* - w$ ), the real interest rate  $r$  and  $a$  (fiscal or foreign) demand shift parameter  $f$ . Therefore the traditional small country assumption on goods markets has been dropped and replaced by a downward sloping foreign demand curve for domestic goods. Even small economies cannot sell more on international markets, unless relative prices change.

Equation (2) reflects money market equilibrium with money supply (exogenous with flexible exchange rates ( $e$ ) and endogenous with fixed exchange rates) equal to money demand, which varies proportionally with the price level  $q$ , positively with the level of activity  $y$  and negatively with nominal interest rates.

Equation (3) defines the price level as weighted average of domestic prices (proportional to domestic wages)  $w$  and foreign prices in domestic currency ( $e + p^*$ ).

Equation (4) gives a definition of the real interest rate  $r$ , which is the difference between the nominal interest rate ( $i$ ) and the rate of inflation ( $\dot{q}$ ).

Equation (5) reflects the “price taking” position of a small country on international capital markets. Nominal interest rates parity has to be fulfilled in the absence of risk premia.

Finally, equation (6) links wage (and price) changes to the state of excess demand on goods and labor markets, a real wage persistence effect and the incomes policy parameter  $\delta$ . Here the sticky wage and price argument enters the scene. Wages and prices are assumed to be fixed for some time and consequently only a small number of wage and price contracts are negotiated during a small time interval. Changes in the wage and price *levels* will take some time until they have worked their way out of a sufficient accumulation of wage and price level *changes*. Incomes policy can not immediately change wage and price levels, but has only the possibility to slow down (disinflate) the rate of wage and price changes. At the moment at which a disinflating incomes policy is announced only actual and expected rates of price and wage inflation changes, but nothing (or not too much) happens to the wage and price level, which needs *time* to change.

Contrary to prices output and employment (proportional to output) is allowed to move instantaneously. This would suggest to mark Dornbusch’s model as Keynesian fix-price, flexible quantity type. The structure of this model has close relations to *Dornbusch* (1976), which related overshooting exchange rates to the short run stickiness of prices and wages.

The model (1) - (6) can be reduced to a two dimensional differential equation system in nominal wages (prices)  $w$  and real exchange rates  $\theta$ .

The dynamic properties of this system are characterized by a saddle-point equilibrium, which conveniently allows to discard all perfect foresight trajectories except the only one leading to the stationary state equilibrium point. Figure 1 shows the relations between  $w$  and  $\theta$ , along which wages and real exchange rates respectively do not change, and the only stable trajectory under perfect foresight concerning nominal exchange rate behavior.

The arrows indicate the movement of the system outside the equilibrium A. The  $\dot{w} = 0$  schedule is positively sloped because rising wages

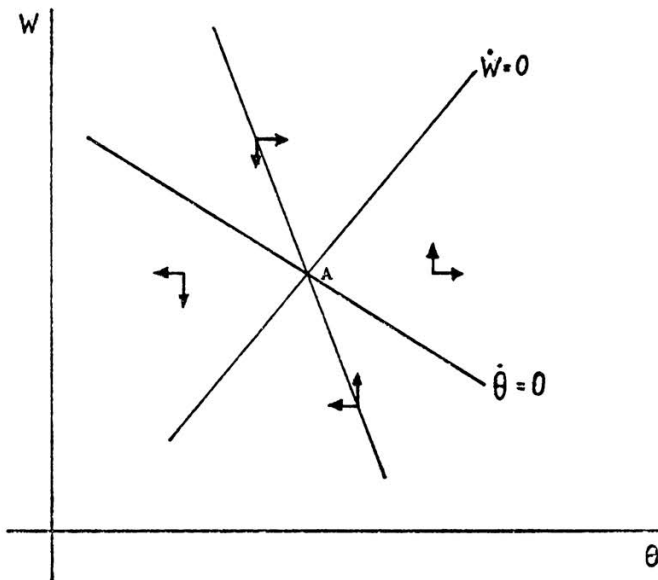


Figure 1

and prices reduce real balances which would make  $\dot{w}$  negative via falling output and employment unless real exchange rates rise (real wages  $w - q$  fall). At the same time reduced real balance would make real exchange rates rise to restore money market equilibrium unless the level of real exchange rates is reduced, which makes the  $\dot{\theta} = 0$  schedule fall.

The  $\dot{w} = 0$  schedule shifts to the right (downwards) if the demand shift parameter  $f$  falls, money supply  $m$  falls (in the fixed exchange rate case the nominal exchange rate appreciates), foreign interest rates  $r^*$  rise and the disinflationary incomes policy parameter rises.

The  $\dot{\theta} = 0$  schedule shifts to the right (upwards) if money supply, exogenous demand and foreign interest rates rise and if incomes policy becomes less disinflationary ( $\delta$  falls).

Dornbusch himself mentions, that his model is appropriate for short run cyclical issues only, concentrating on effective demand and the interaction between wages (prices), interest rates and exchange rates (money supply) with foreign prices, productivity and capital accumulation kept constant. This mix makes this model especially attractive for the study of third generation incomes policy measures, which concentrate on demand and international competitiveness.

### III. Short and Long Run Effects of Simultaneous Wage and Price Disinflation

Analyzing the short and long run effects of simultaneous wage and price disinflation in the *Dornbusch* (1983) model, we have to distinguish between alternative exchange rate regimes.

#### 1. Disinflationary Incomes Policy under a Regime of Fixed Exchange Rates

With fixed exchange rates the dynamics of model (1) - (6) reduces to a single differential equation in  $w$ , because nominal wages and real exchange rates are now related on a one to one basis ( $\Theta = \bar{e} + p^* - w$ )

$$(7) \quad \dot{w} = \frac{-(\gamma a + \alpha(1 - \beta))w + (\gamma a + \alpha(1 - \beta))(e + p^*) - \gamma br^* + f - \delta}{1 - \beta\gamma b}.$$

The relation between output and wage levels (or real exchange rates) is determined by equation (8).

$$(8) \quad y = \frac{(a + \alpha(1 - \beta)\beta b)(e + p^* - w) - br^* + f - \beta b \delta}{1 - \beta\gamma b}.$$

The stationary state solutions for wages and output are given by (9) and (10).

$$(9) \quad \bar{w} = e + p^* - \frac{\gamma br^* - \gamma f + \delta}{\gamma a + \alpha(1 - \beta)}.$$

$$(10) \quad \bar{y} = \frac{\alpha(1 - \beta)f - \alpha(1 - \beta)br^* + a\delta}{\gamma a + \alpha(1 - \beta)}.$$

Equation (7) to (10) allow a separation of short and long run impacts of incomes policy on output (and employment, assuming a proportional relationship between the two variables).

In the short run (that is in our case, the moment when the incomes policy is set in motion) more moderate wage and price increases ( $\delta > 0$ ) do not change the real exchange rate immediately, but affect the rate of inflation and the real interest rate only. With fixed nominal interest rates disinflation will cause real interest rates to move upwards and so depress investment and consumption of consumer durables. Initially incomes policy will slow down economic activity, as equation (8) demonstrates. As time goes on disinflation will depreciate real exchange rates (although nominal exchange rates are assumed to remain fixed), stimulate export demand and thereby help to expand output and employment which in the long run (equation (10)) will be higher than before the implementation of disinflationary incomes policies.

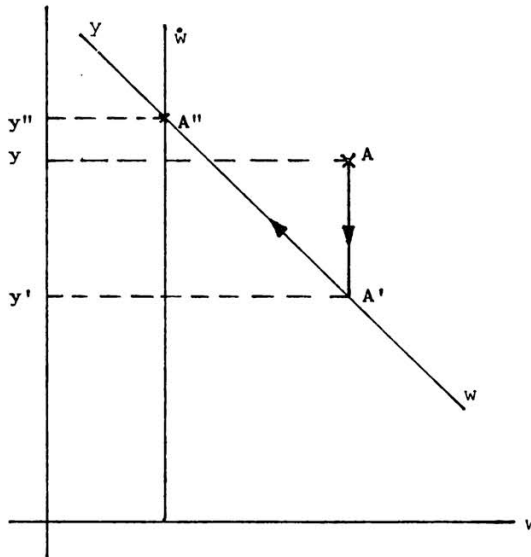


Figure 2

Figure 2 illustrates the deviating short and long run impact of disinflationary incomes policy.

Let  $A$  be the old stationary state, before incomes policy starts to work ( $\delta = 0$ ). Immediately after  $\delta$  becomes positive (incomes policy on) output drops from  $y$  to  $y'$ , while wage (price) levels and real exchange rates remain initially constant, because of the sticky wage assumption. The rise in real interest rates forces output down on the  $wy$ -line, which refers to equation (8). The longer wages and prices are allowed to fall, the more the improved international competitiveness (the depreciated real exchange rate) outweighs the influence of increased real interest rates until the system arrives at the new stationary state with higher output, lower nominal wages and a higher real exchange rate. The real wage from the households point of view ( $w - q$ ) has fallen, but the functional income distribution has been kept constant.

Figure 3 displays the impact of disinflation on output under a fixed exchange rate regime over time.

In  $t_0$  disinflation starts, output falls to  $y'$  and gradually approaches the new stationary state  $y''$  when time passes. The time path of output reflects a  $J$ -curve pattern.

Within the simple world of model (1) - (6) there exists also a simple relief from the disturbing initial effects of incomes policy. That is a



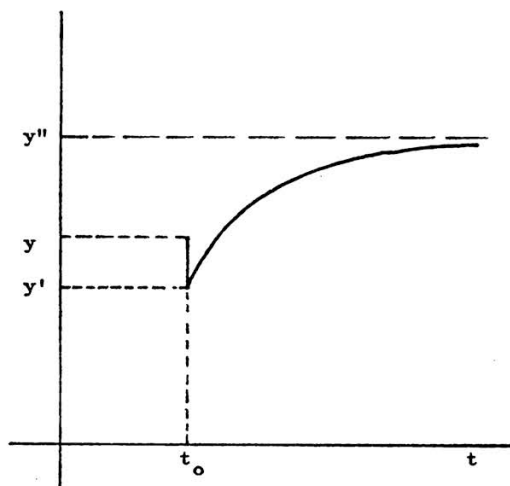


Figure 3

devaluation, which immediately depreciates real exchange rates by the full amount, which otherwise would have to be worked out falling wages. A combination of incomes policy and devaluation could increase output and employment without having to suffer from the *J*-curve effect. The Belgian recovery plan 1982 could be interpreted within this framework and might provide an interesting empirical test for the outlined reasoning.

## 2. Disinflationary Incomes Policy under a Regime with Flexible Exchange Rates

Allowing exchange rates to vary makes it necessary to consider the complete dynamics of model (1) - (6):

$$(11) \quad \dot{w} = \frac{1}{\Delta} (\beta \gamma b (w - m) + ((1 - \beta) (\beta b (\gamma - \alpha h) - \alpha c) - \gamma ac) \Theta + (1 - \beta) \gamma b c r^* - \gamma c f + (c + \beta b h) \delta)$$

$$(12) \quad \dot{\Theta} = \frac{1}{\Delta} ((m - w) + ((1 - \beta) (\alpha c - 1) + \alpha (\gamma c - h)) \Theta + (c - b (\gamma c - h)) r^* + (\gamma c - h) f - c \delta)$$

$$(13) \quad \Delta = \beta b (\gamma c - h) - c < 0 .$$

The stationary state solutions ( $\dot{w} = \dot{\Theta} = 0$ ) are given by equations (14) - (16):

$$(14) \quad \bar{w} = m + \frac{(c (\gamma a + \alpha (1 - \beta)) + (1 - \beta) b (\bar{\alpha} h - \gamma)) r^* - (1 - \beta) (\alpha h - \gamma) f}{\gamma a + \alpha (1 - \beta)} - \frac{(a h + (1 - \beta)) \delta}{\gamma a + \alpha (1 - \beta)}$$

$$(15) \quad \bar{\theta} = \frac{\gamma br^* - \gamma f + \delta}{\gamma a + \alpha(1 - \beta)}$$

$$(16) \quad \bar{y} = \frac{\alpha(1 - \beta)f - \alpha(1 - \beta)br^* + a\delta}{\gamma a + \alpha(1 - \beta)}$$

The steady state solutions for output and real exchange rates coincide for fixed and flexible exchange rates (compare equations (9) - (10) and (14) - (16)). Whether nominal exchange rates depreciate, remain constant or appreciate in the long run depends on the stationary state “incomes policy multipliers” of nominal wages and real exchange rates. Any difference between the long run impact of incomes policy on wages and real exchange rates has to be filled out by an appropriate change in nominal exchange rates, which will be positive, zero or negative according to  $ah + 1 - \beta < (=, >) 1$ .

A priori it is not possible to exclude one direction of change for long run nominal exchange rates reacting on disinflating incomes policy. It is therefore not possible to state that disinflation would in any case strengthen the position of domestic currency on international exchange markets. If the price elasticity of output ( $a$ ), the output elasticity of money demand ( $h$ ) and the degree of openness ( $1 - \beta$ ) are low, the fall in nominal wages would not depreciate real exchange rates sufficiently, so that nominal exchange rates have to depreciate too — despite disinflation. In the short run things become even more complicated. If we take a look on Figure 4 we can distinguish between three cases of initial impacts of incomes policy on output and exchange rates under a flexible exchange rate regime.

Let  $\dot{w} = 0$ ,  $\dot{\theta} = 0$  and  $FF$  be the schedules which rule after incomes policy has been put into force. By assumption (13) we have secured that disinflationary incomes policy will shift the  $\dot{w} = 0$  schedule more to the right, than the  $\dot{\theta} = 0$  schedule to the left. The new stationary state  $A(\bar{w}, \bar{\theta})$  will be located somewhere downwards to the right of the old stationary state, which may have been to the left ( $A_1$ ), on ( $A_2$ ) or to the right of the only stable adjustment path  $FF$  ( $A_3$ ). In the *first case* ( $A_1$ ) exchange rates will initially depreciate by the amount, which is necessary to put the system on the stable adjustment path  $FF$ . This improves international competitiveness immediately and possible eliminates the before mentioned *J-curve* effect on output and employment. Nevertheless the real interest rate effects still keep output below the stationary state level. Whether output initially rises stays constant or falls depends on the magnitude of the initial depreciation and the relative importance of improved competitiveness and rising real interest rates (equation (4)) on the demand for domestic output. Once on the stable

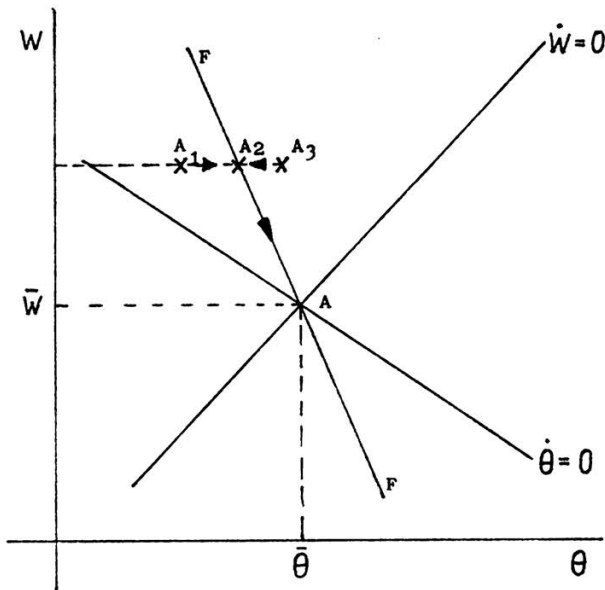


Figure 4

adjustment path  $FF$ , nominal exchange rates might continually further depreciate, remain constant or appreciate. There may be initial under-shooting or overshooting of nominal exchange rates.

In the second case — by chance — the new stable adjustment path happens to go through the old stationary state ( $A_2$ ). Nothing happens to nominal exchange rate initially. Output will fall because of the rise in real interest rates, while now international competitiveness takes time to improve. Again depreciation, constancy or appreciation of nominal exchange rates is possible during the adjustment process towards the new stationary state  $A$ .

Finally an initial appreciation ( $A_3$ ) also cannot be ruled out. Only for that case the further dynamics of nominal exchange rates has a unique direction. Referring to the money demand equation (2) one can immediately conclude that money market equilibrium requires further appreciations (falling nominal interest rates) to compensate for the reduced transactions demand for money, which comes from a reduced price level and declining economic activity after an initial appreciation.

Flexible exchange rates may weaken or aggravate the initial decline in economic activity. What happens to output and employment will mainly depend on the relation between initial nominal exchange rate depreciation and long run real exchange rate depreciation. The larger

the former in relation to the latter, the more favourable is the time path of output and employment following a policy of disinflationary incomes policy.

Up to now we only have been dealing with the effects of permanent incomes policy. From equations (9) - (10) and (14) - (16) it becomes clear that transitory incomes policy ( $\delta > 0$  for some time and  $\delta = 0$  before and after) does not alter the stationary states of the model (1) - (6), but merely increases the variance of the endogenous variables of our system. If the *J*-curve effect on output and employment is *p* present, the empirical outcome of transitory incomes policy will provide strong evidence, that it may have caused more harm than good to the economy. Most of the time when incomes policy is on, the economy will suffer from the real interest rate effect, whereas after the termination of disinflation via incomes policy both inflation rates and output will rise more rapidly, because of the coincidence of improved competitiveness, which has been generated by incomes policy for some time and the changing sign of the real interest effect. A sluggish economy during "incomes policy on periods" and a booming economy during the beginning of the "incomes policy off period" might hardly serve as a recommendation for incomes policy.

We will return to that point in chapter V, which deals with the necessary institutional framework for a successful incomes policy. Before, some preliminary empirical investigations of Austria's recent economic performance shall be discussed briefly.

#### IV. An Empirical Illustration for Austria<sup>3</sup>

Austria qualifies for several reasons to serve as empirical example for the previously discussed impacts of incomes policy on output and employment within the framework of R. Dornbusch's simple model. Austria is a small open economy with a long tradition in incomes policy, which more and more is oriented towards improving international competitiveness. Moderate wage and price increases should help to restore the external stability, which got lost after the two oil shocks and at the same time allow an export boom to pull the economy out of more serious employment problems.

Several modifications have been necessary, before model (1) - (6) could be used as a specification for empirical investigation. The transition from continuous to discrete time demands a new distinction between flexible variables (like output, money supply and the rate of in-

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<sup>3</sup> This chapter utilizes the results reported by Wörgötter / Wörgötter (1984).

flation) and sticky variables (like wage and price levels, real exchange rates under a fixed exchange rate regime). The difficulty, which arises with a discrete time model is, that with rates of change and the levels of a variable at two consecutive time periods linked by definition, it is no more possible to assume the first being flexible and the latter being sticky.

This problem has been circumvented pragmatically by lagging the influence on "sticky variables" and their effects on other variables by one year, whereas "flexible variables" are linked to their determinants within the same period of time. Furthermore world trend inflation and productivity growth had to be taken into account. Additionally the assumption that income distribution does not change even in the short run is replaced by an adjustment mechanism, which guarantees a constant share of labor in the long run.<sup>4</sup> The estimation of a revised version of model (1) - (6) has been carried out under the assumption of fixed exchange rates with yearly Austrian data from 1968 to 1982 applying 3-stage least squares. The results and a list of variables are reported below. Again all variables (except interest rates) are transformed logarithmically. Numbers in brackets below the estimated coefficients denote the respective *t*-test statistics.  $\Delta$  indicates absolute changes,  $a_{-1}$  refers to a one period (year) lag, the standard error estimate of the single equations is given by S. E.

$$(17) \quad \Delta w = 1.621 + 0.612 (y - yt)_{-1} - 0.286 (ak - q)_{-1} - 0.0234 \Delta lz$$

(5.87)      (8.59)                      (5.53)                      (4.18)

$$\text{S. E.} = 0.00935$$

$$(18) \quad \Delta ak = \Delta w - \Delta pr$$

$$(19) \quad \Delta q = -1.388 + 0.806 \Delta ak + 0.194 \Delta (e + p^*) + 0.258 (ak - q)_{-1}$$

(4.02)      (7.69)                      (1.85)                      (3.98)

$$\text{S. E.} = 0.0120$$

$$(20) \quad \Delta m = \Delta q + \Delta y - 3.483 \Delta i - 0.145 d 79$$

(1.81)                      (2.87)

$$\text{S. E.} = 0.0536$$

$$(21) \quad r = i - \Delta q$$

$$(22) \quad y = yoecd - 0.264 + 0.067 (e + p^* - ak)_{-1} - 0.241 r$$

(0.52)      (1.37)                      (3.04)

$$+ 0.0262 d 7778 + 0.184 f .$$

(6.27)                      (8.06)

<sup>4</sup> For more information on the link between functional income distribution and the wage-price system in Austria see *Wörgötter (1983)*.

Wage increases (equation (17)) are governed by excess demand on goods and labor markets, measured by deviations from an exponential growth path of gdp, lagged one period. An increase of gdp by 1 % relative to its average trend growth path increases wage inflation after one year by 0.6 %. The next term in (17) refers to the rigidity of real wages. Any decrease of “productivity adjusted” real wages induces a catch up impulse on nominal wage inflation. Finally (17) contains a dummy variable, which is equal to one from 1977 to 1980, a period of especially moderate wage demands from the trade unions in Austria. According to our estimates during that 4-year period wage inflation has been by approximately 2.3 % lower compared to the rest of the observation period, given the excess demand and rigid real wage effect would have been the same.

The changes in unit labor costs ( $\Delta ak$ ) are by definition equal to the rate of wage inflation ( $\Delta w$ ) minus the rate of labor productivity increase ( $\Delta pr$ ).

Prices (equation (19)) are set according to the development of labor costs and the rigid real wage effect. Foreign prices enter the consumer price index by definition.

Equation (22), the money market equilibrium condition, is of no importance for the dynamics of the system, because of the fixed exchange rate assumption.

The real interest rate is defined according to (21) by the difference between the nominal rate of interest  $i$  and the rate of inflation  $\Delta q$ .

Real output is assumed to follow closely the international trend, measured by the OECD output, and is positively related to the real exchange rate and a domestic demand shift parameter (real government expenditures). A rise in real interest rates will depress real activity. The dummy variable refers to the effects of an announced tax increase in 1978.

All but one relevant estimated parameters show up with the correct sign and reasonable magnitude. The exception is the link between real exchange rates and real output, which comes out insignificantly and very small (0.067).

In the following we use the model to simulate the effects of permanent and transitory disinflationary incomes policy. Table 1 reports the simulated time path for output effects of an increase in the rate of disinflation (the parameter from  $\delta$  equation (6)) by one percentage point for alternative parameter values of  $c$ , ( $= \partial y / \partial (e + p^* - w)$ ) and  $c_3$  ( $= \partial y / \partial \tau$ ).

Table 1: Cumulated Output effects of an increase in permanent disinflation by 1%

	I	II	III	IV	V	VI
$t$	$c_1 = 0.067$ $c_3 = + 0.241$	$c_1 = 0.2$ $c_3 = + 0.241$	$c_1 = 0.5$ $c_3 = + 0.241$	$c_1 = 0.067$ $c_3 = + 1.0$	$c_1 = 0.2$ $c_3 = + 1.0$	$c_1 = 0.5$ $c_3 = + 1.0$
1	-0.19	-0.19	-0.19	-0.81	-0.81	-0.81
2	-0.15	-0.01	0.29	-1.15	-1.01	-0.91
3	-0.08	0.24	0.88	-1.23	-0.83	-0.15
4	-0.01	0.45	1.31	-1.17	-0.45	0.88
5	0.06	0.62	1.54	-1.04	0.00	1.79
6	0.12	0.76	1.62	-0.88	0.44	2.33
7	0.18	0.88	1.62	-0.71	0.81	2.43
8	0.24	0.98	1.60	-0.54	1.10	2.17
9	0.29	1.06	1.58	-0.38	1.31	1.73
10	0.34	1.13	1.58	-0.23	1.45	1.30
$\infty$	1.64	1.64	1.64	1.64	1.64	1.64

The first column in Table 1 refers to the simulation with the estimated parameter values and demonstrates the working of the *J*-curve effect. For the first four years of successive disinflation the real interest rate effect outweighs the real exchange rate effect, which takes long time until it can contribute to a recovery of economic activity. In the long run (which is quite long for the first column) output will be 1.64% (= 1/0.612) higher than without disinflation.

The shape of the *J*-curve effect depends on the difference between the real exchange rate effect and the real interest rate effect. The smaller the former in relation to the latter, the longer it will take until the economy can step out of the initial trough into which it has been pushed by disinflation. If both parameters increase together the probability of unstable output responses on incomes policy increases, as can be seen from a comparison of columns I and IV, II and V, II and VI.

Table 2 reports simulation results of output effects related to a transitory disinflation of 2.34% p.a. lasting four years. Again alternative parameter values (now for the real exchange rate effect  $c_1$  only) are considered.

The results of simulating transitory and permanent incomes policy measures provide obvious arguments for the puzzle mentioned in the beginning of the paper. Undoubtedly disinflation will improve international competitiveness and stimulate foreign demand for domestic products, allowing higher output and employment levels. That makes incomes policy attractive in the case when other policy instruments are either unavailable or already discredited. But the short run evaluation of incomes policy will suffer from the initial real interest rate effect. This can go so far as in column I of Table 2 where output effects are negative during the "incomes policy on"-period ( $t = 1, \dots, 4$ ) and positive for "incomes policy off"-periods ( $t \geq 5$ ). This would easily lead to the conclusion, that incomes policy does no good to the economy and its abolition (in our simulation experiment after 4 years) would provide a relief from unnecessary restrictions, and help to boom the economy. Again this phenomenon will be weaker if exports respond more to real exchange rate depreciations. The lesson one could learn from the outlined theoretical and empirical considerations about incomes policy is, that it would not make sense to design incomes policy in order to combat transitory shocks, because this increases the variance of the business cycle. Nevertheless incomes policy can be a powerful instrument to improve the trade off between inflation and employment in the long run.



Table 2

Cumulated output effects of a 4 year transitory disinflation by 2.34 % p. a.

	I	II	III
$t$	$c_3 = - 0.241$ $c_1 = 0.067$	$c_3 = - 0.241$ $c_1 = 0.2$	$c_3 = - 0.241$ $c_1 = 0.5$
1	- 0.46	- 0.45	- 0.45
2	- 0.36	- 0.04	0.66
3	- 0.18	0.50	2.03
4	- 0.01	0.99	3.04
5	0.61	1.87	4.03
6	0.66	1.79	3.10
7	0.63	1.52	1.13
8	0.59	1.26	0.67
9	0.55	1.05	0.10
10	0.52	0.89	- 0.08
$\infty$	0	0	0

### V. The Necessary Institutional Framework for a Successful Incomes Policy

The type of incomes policy, which has been discussed in the previous chapters, bears a close similarity to what *Galbraith* (1980) has called "The Problem of Limited Mobilization". In our case incomes policy should allow the employment of idle resources, which would improve both internal and external economic conditions at the same time. Moderating wage and price inflation allows a higher level of employment and output, which is consistent with the equilibrium real exchange rate.

The success of an incomes policy measure, designed for the limited mobilization of resources, will depend on several factors, which did not enter the model we have been discussing. Given the assumptions of model (1) - (6) incomes policy would increase employment and output, without increasing inflation. Before we can sufficiently rely on this

result, we have to deal with some questions concerning the institutional framework, which seems necessary both for a successful implementation and a successful result of incomes policy.

The first condition we have to check is whether incomes policy can be put into work at all. This will depend on the shape of the wage and price determination process of the economy. The more competition dominates on labor and goods markets, the less will be the chance for a successful disinflationary incomes policy, but "it is relatively easy to fix prices that are already fixed".<sup>5</sup> Disinflationing prices and wages via incomes policy will be more resource consuming and also end up with more relative price distortions if markets are governed by perfect competition with a large number of transactors. This argument is especially important for the imposition of disinflation on labor markets. Whenever the degree of competition on labor markets is high, there will be little chance for disinflation without seriously affecting resource allocation. This will also be the case if labor markets are highly unionized, but the trade unions have to compete for membership by demanding at least wages which are high enough to preserve the relative wage structure. Successful incomes policy and competition will exclude each other. Trade unions only can agree on moderating wage increases, if they can feel safe from the possibility of losing members to other organizations of workers, which negotiate for higher nominal wages. Similar considerations can also be made for goods prices. The limits the application of incomes policy to a framework of goods and factor markets with a high degree of market imperfection. Additionally we have to consider, that once imposing incomes policy, market structure (the degree of competition) will have to be stabilized for the time of "incomes policy on"-periods.

A second limitation for the application of incomes policy stems from the time path of its impacts on output and employment. The *J*-curve effect, which initially aggravates a recession makes it necessary that those institutions, which bear the responsibility for incomes policy, are stable enough, to dive through the initial reduction in output and employment largely undamaged. This demands a low rate of time preference from policy makers.

Finally we have to consider the type of shock, which is to be stabilized by incomes policy. If the disturbance is affecting also the main trading partners (like the OPEC-shocks or the recent real interest rate shocks coming from the U.S.) moderating wage and price inflation will hardly improve international competitiveness, because an overall re-

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<sup>5</sup> Galbraith (1980), 17.

duction of inflation will leave relative prices unaffected.<sup>6</sup> Only local shocks may successfully be stabilized by disinflationary incomes policy, which can only improve international competitiveness, if it is able to depreciate the real exchange rate.

The necessary framework for a successfully working incomes policy imposes restrictions on the structure of goods and labor markets, the time horizon of politicians and the structure of the shock, which is to be stabilized, which have to be kept in mind for the discussion about the outcome of incomes policy.

### Summary

This paper is concerned with the output effects of incomes policy, which instantaneously reduces wage and price inflation, but takes time to change relative prices between domestic and foreign goods. In this way, price and wage rigidity forces real interest rates to rise in the short run and thereby generates a time path of output and employment with an initial recession (J-curve effect).

Empirical results have been reported for Austria, which demonstrate, that the "break even point" of incomes policy can taken up to several years until output comes out of the initial recession. This result is especially important for the prospect of transitory incomes policy measures, which are likely to generate the empirical outcome, that it is the termination of income policy, which allows the economy to boom again.

Finally some restrictions on the framework which allows incomes policy to work successfully have been discussed. These include a high degree of monopolization both on goods and factor markets, a long time horizon for politicians and the absence of "retaliation" by trading partners, suffering from the same external shocks.

This makes it easy to conclude that from an Austrian point of view the service "incomes policy" does not belong to the internationally tradables sector.

### Zusammenfassung

Anhand eines kleinen Modells einer offenen Volkswirtschaft wird demonstriert, daß eine Einkommenspolitik, die darauf aus ist, die heimische Inflation relativ zur Weltinflation zu reduzieren, kurzfristig zu negativen Output- und Beschäftigungseffekten führen kann, ehe die positiven Auswirkungen einer realen Abwertung wirksam werden können. Dieser J-Kurveneffekt einer Disinflation auf Output und Beschäftigung entsteht durch den Anstieg der realen Zinssätze in der Übergangsperiode vom alten zum neuen stationären Zustand des Systems. Daraus kann der Schluß gezogen werden, daß Einkommenspolitik selbst unter günstigsten Voraussetzungen nur als langfristiges wirtschaftspolitisches Instrument sinnvoll eingesetzt werden kann und zur kurzfristigen Stabilisierung der Konjunktur ungeeignet ist.

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<sup>6</sup> *Rosner et. al.* (1984) have analyzed wage disinflation under such circumstances.

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