

INFLATION, GROWTH AND STABILIZATION  
POLICIES IN ITALY: 1960-1984

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## 1. Introduction\*

In 1963 the Italian economy experienced, for the first time after the reconstruction period, the stringency of external constraints. Domestic demand had been growing very rapidly for almost five years, the employment situation was overheated and the result was a strong salary and wage push. The Italian inflation went out of line vis a vis the major European economies (see fig. 1). Monetary and fiscal policy turned very sharply into a restrictive stance; the labour market reacted with increasing unemployment and restructuring of the production processes; all these factors, along with the fixed exchange rate system, allowed a very quick realignment of the Italian inflation to the European performance, the reequilibrium of the external account and the return to a period of rapid growth.

Ten years later, in 1973, the first oil shock and the breakdown of the international monetary system, found the Italian economy in a very different situation due to socio-political factors. The economy overreacted and started deviating from the inflationary performances of the major European partners. The adjustment to the first oil shock took five years to be completed on the balance of payment side, whereas the rate of inflation, even if decelerating, remained higher than in the other countries. Still a long distance had to be covered to slow down inflation. A first step was made with the joining of the EMS, but such a decision was not followed by a coherent conduct of economic policy; in addition to that came the second oil shock. At present the cycle of long divergence from Europe is not yet concluded and this problem is still at the centre of heated political and economic discussions.

Since 1963 a long debate has developed on the causes of the Italian inflation. At the beginning the contrast between the cost-push and the demand (money) pull explanation was very strong; afterwards the "hot Autumn" and the first oil shock shifted emphasis to the socio-political and structural interpretations, often interconnected in their cause-effect relation.

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The impact on the government budget of both the rise and diffusion of small scale industry and the crisis of large scale firms, as well as the high dependence of the Italian economy on imported raw materials, especially oil, are often singled out as the main causes of the higher rate of inflation experienced in Italy as compared to the other industrialized countries. But it would also be possible to argue that the rapid growth of the "black economy", represented a reaction to the exceptional wage push of 1969 and to the crisis in industrial relations specially in large scale firms. In this way the economic system attempted to regain the organization and production flexibility needed to remain in the market and to restore profit margins. Similarly, since structural biases already existed in the sixties, they cannot constitute a sufficient explanation for the different behaviour of the Italian economy in the 60's and in the 70's.

With respect to this problem the main question which we hope to answer is why stabilization policies were able to bring the economy rapidly out of recession and back to high non inflationary rates of growth in the sixties, whereas they were quite ineffective in the seventies.

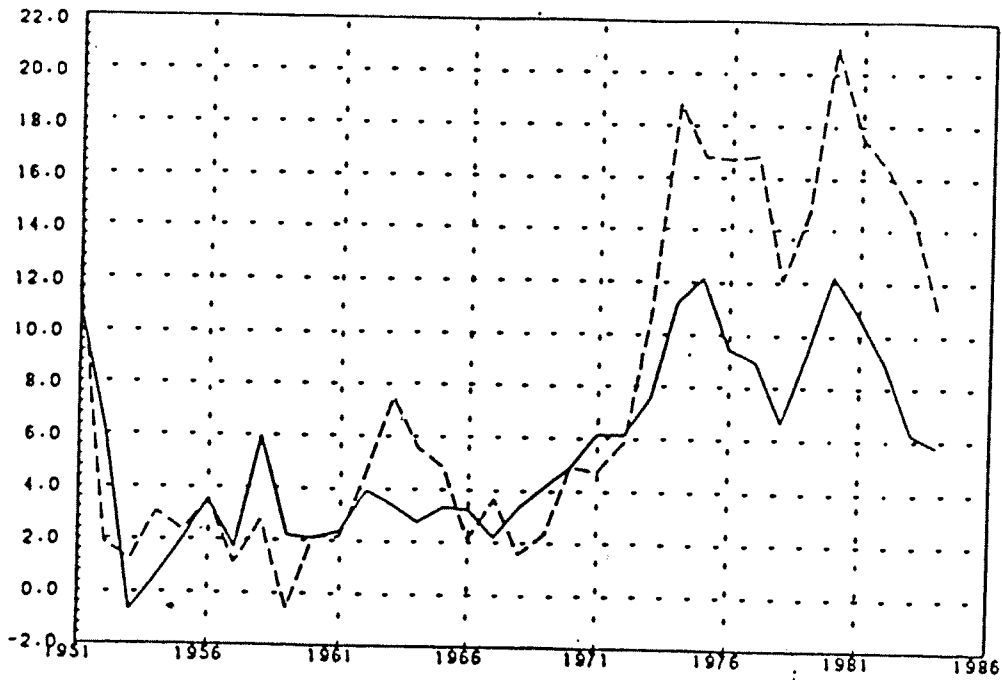
Actually, the factors that bring about inflation and favour its persistence, determine, at the same time, the degree of effectiveness of stabilization policies; the economy might thus be thought of as working under different regimes, during the two decades. As a consequence, to account for different impacts of economic policy, we need to resort to different schemes of short run output determination.

On the other hand, different economic regimes are associated with alternative mechanisms of growth. Hence to have a full understanding of the performance of economic policy in Italy, we need also a description of the different mechanisms, that, we think, ruled the long term growth process.

In the following pages we will analyze separately these short

FIG. 1

Inflation differential

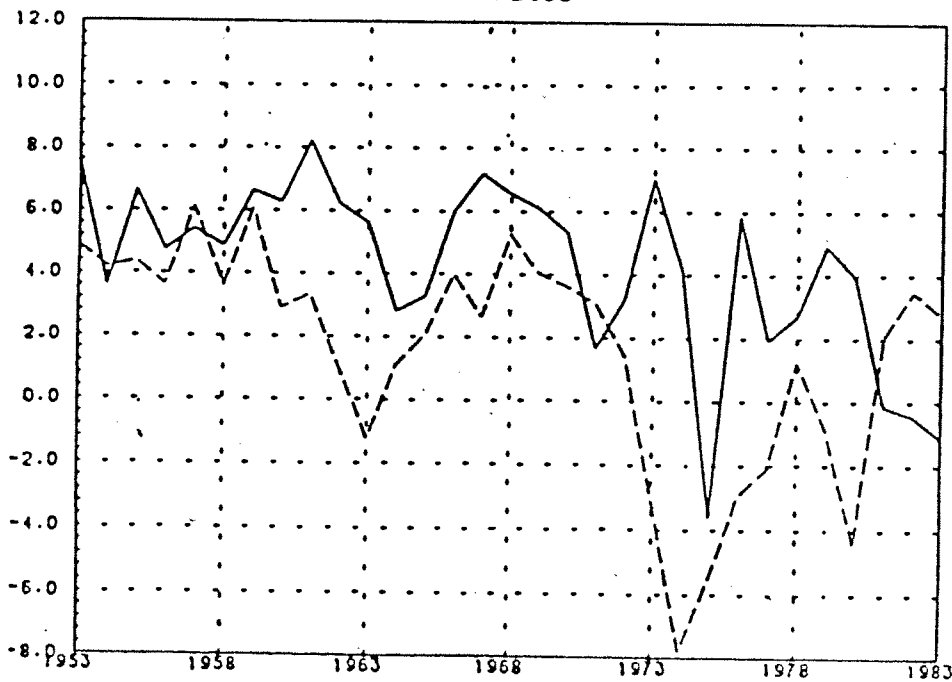


— Weighted average of consumer price inflation (Germany, France, UK)  
 - - - Consumer price inflation in Italy

SOURCE: ISTAT

FIG. 2

Growth and real interest rates



— Percentage change in real GDP  
 - - - Ex post real interest rate on long term bonds

Source: ISTAT

and long term aspects.

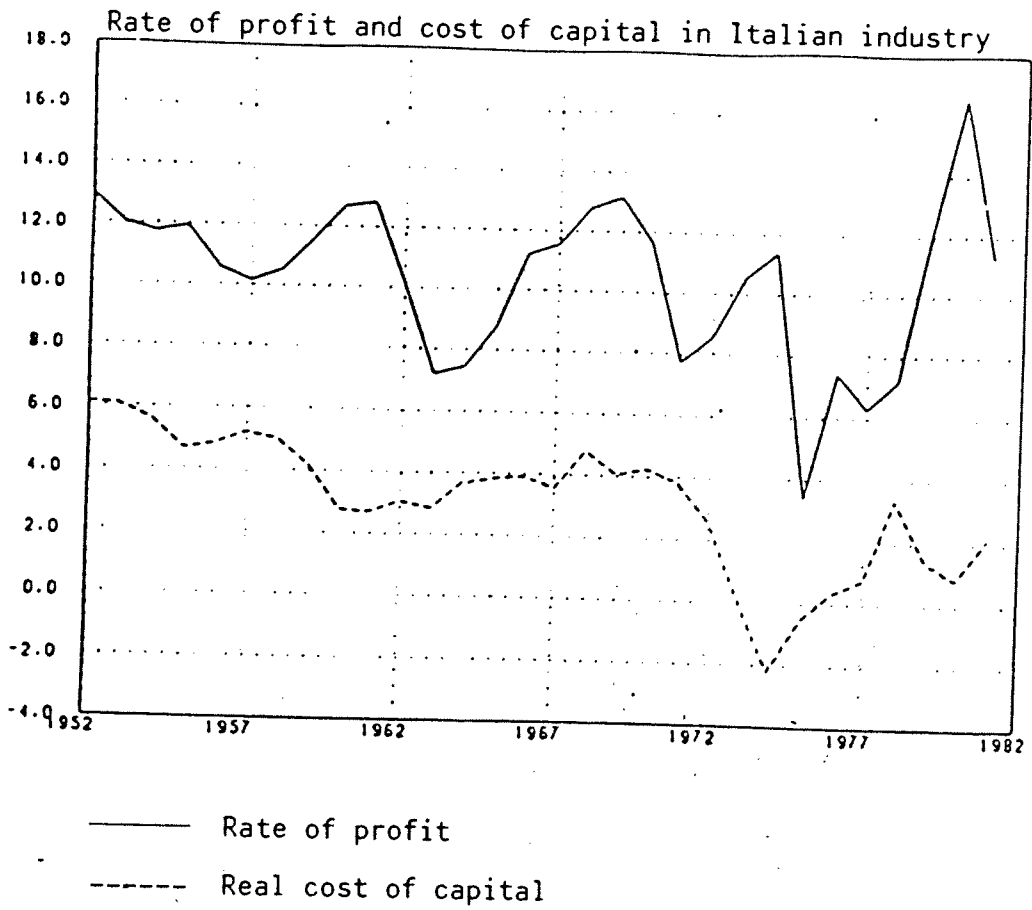
## 2. Inflation, income distribution and growth.

The growth of an economic system in the medium term is the result of the interaction of a set of variables: the behaviour of savings, the profit rate (i.e. the functional income distribution), the rate of technical progress, the growth of population and the trend in the terms of trade. The combination of these factors in the Italian economy has changed considerably since the war, generating different phases of economic growth.

In the period following the reconstruction, characterized by increasing openness to foreign markets and sustained demographic growth, the industrial structure expanded rapidly, absorbing the technical progress from which it had been excluded in the fascist period; both current and expected rates of profits, as a consequence of the limited wage dynamics and of economic expansion itself, were high and able to compensate long term real interest rates that on average, in the fifties, were around 3,5-4% (See fig. 2). In this way, positive real interest rates, high rates of profits, growing purchasing power for workers and steady capital accumulation found their coherence. To such a result contributed also the continuous improvement of the terms of trade particularly between manufactured goods and raw materials. Growing profits and wages were compatible, without generating inflationary pressures.

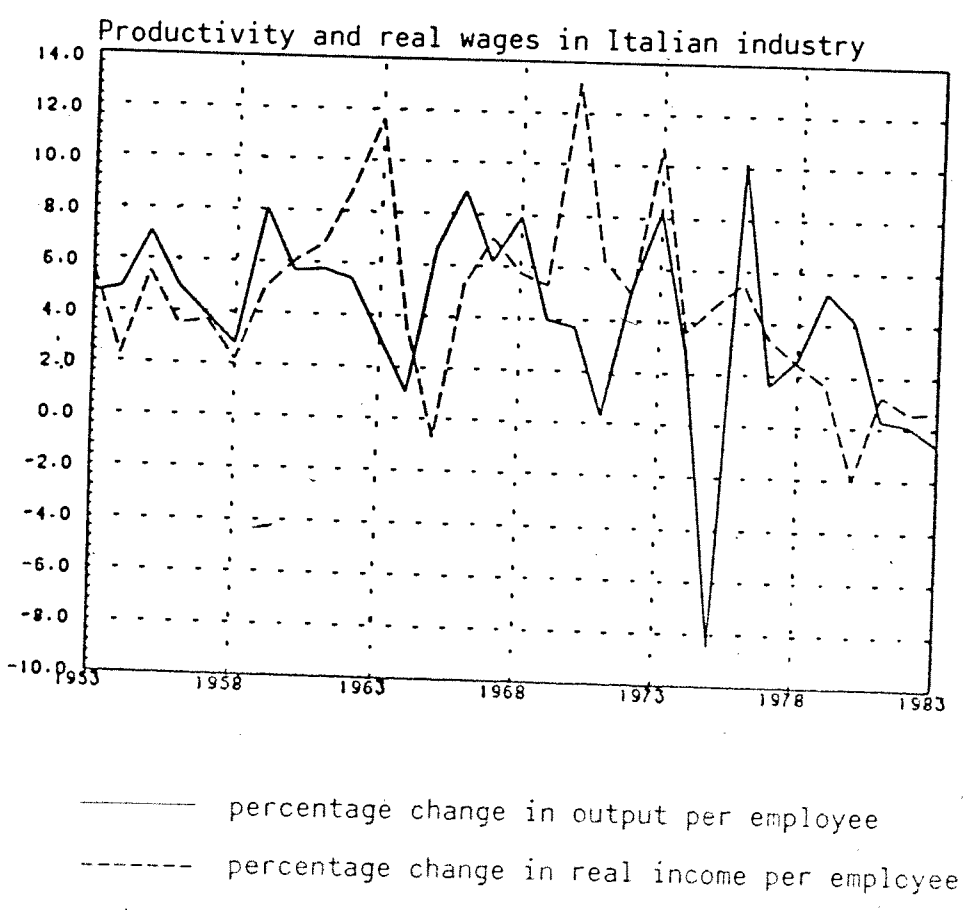
In the years after the period of maximum accumulation (between 1959 and 1962), inflationary tensions, reflecting some incompatibility between real wage growth and the pre-existent levels of profit rates, began to reveal changed conditions in the labour market and the appearance of disequilibria in the balance of payment current account.

Consequently, in the sixties, the average rate of expansion of the economy started to slow down, even if not considerably, since the lower profit rates were accompanied by lower real interest rates (about 2,5-3%;



Source: P. Onofri - A. Stagni (1984)

FIG. 4



Source: ISTAT

see fig. 3) and persisting improvements in the terms of trade.

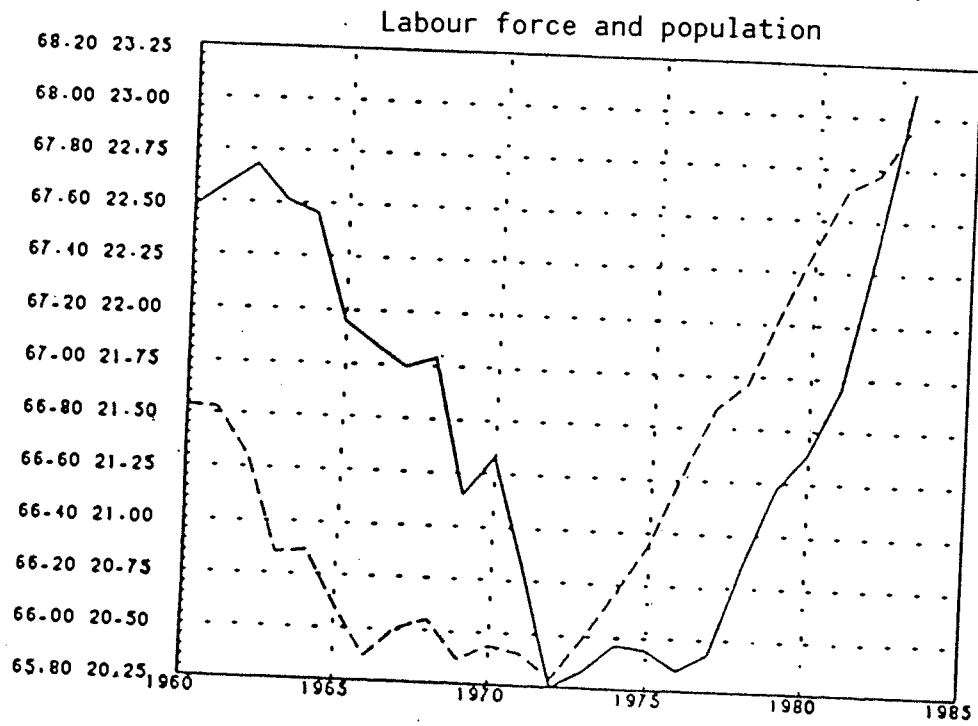
In conclusion, in the two decades after the war, economic growth, taking place in a favourable international setting, can be seen above all as a cumulative process in which expansion itself creates the conditions for further expansion: nominal variables, wages among them, are sticky, so that the product wage and the rate of profit depend on the pace of economic expansion and income distribution can change in favour of profits even in presence of a continuously growing purchasing power for workers (See fig. 4). At a more general level then, it is the behaviour of aggregate demand that governs the growth process.

In this phase the labour market began to experience the effects of the transition towards a fully industrialized society with total employment diminishing owing to the reduction of self-employed and agricultural workers, while industrial employment expanded.

From a demographical point of view, an imbalance between inflows in, and outflows from <sup>working</sup> age population can be noted. The number of entrants decreases due to the dramatic fall in the birth rate during the second world war. On the outflows side, the quick decline in retirements experienced until then, which had favoured the increase in working age population, is strongly reduced. Such a phenomenon reflects a temporary flattening of the birth rate during the 1900-1910 decade after his rapid decline in the previous decades. The overall result was a systematic reduction in the proportion of working age over total population. In fig. 5 a similar behaviour can be observed also in the absolute level of labour force.

Such a drop and the parallel appearance of all the socio-political factors, that more than a decade of literature has already emphasized, put the economic and political preconditions for the wage explosion of the years 1969-75.

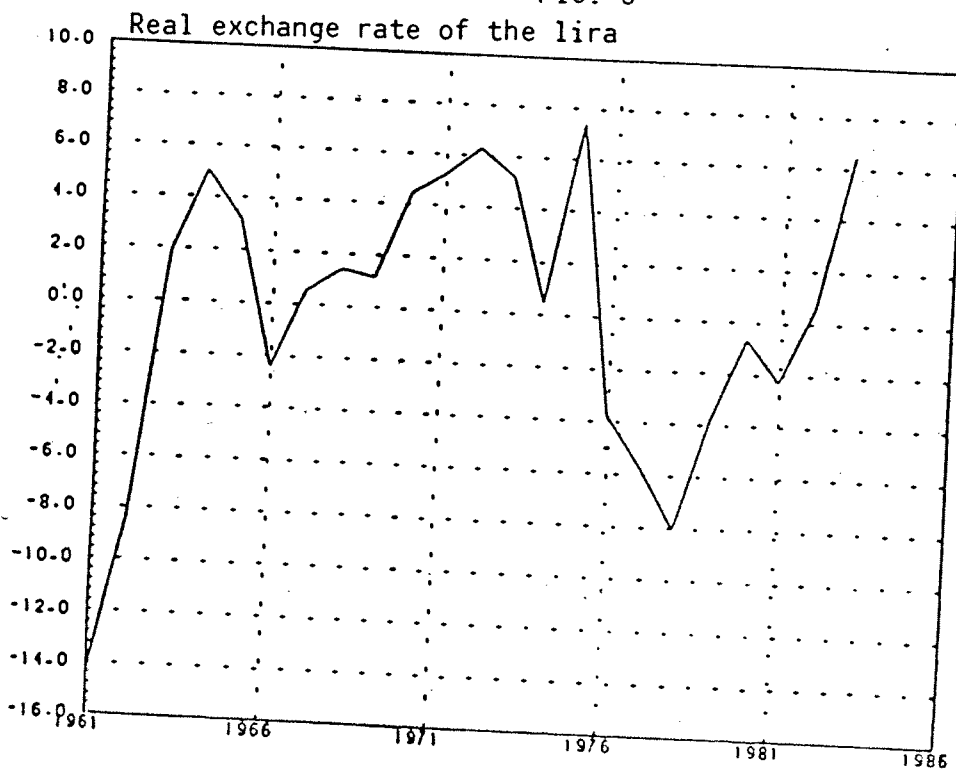
FIG. 5



— Ratio of working age population to total population  
 - - - Absolute level of labour force

Source: ISTAT

FIG. 6



Percentage deviation of the real multilateral exchange rate in terms of labour cost.

SOURCE: IMF



The economic picture of the system after the first oil shock is basically different from what it used to be: changes in income distribution can now easily mean modification in the standards of living; consequently more effective mechanisms for the defence of real income levels are put in action so that real instead of nominal variables happen to be rigid. In the wake of the wage push of 1970-71, the profit squeeze is even stronger; the relative price labour/capital shifts, at least until 1975, towards labour. Since real wages and profits are now more unrelated to the level of economic activity, the impact of aggregate demand on the accumulation process is reduced. Economic growth turns out to be more dependent on the valuation of profitability, which becomes more and more exogenous to the perspectives entrepreneurs have of the future aggregate trends of the economic system. The role of relative prices in investments decisions becomes more relevant.

In 1976 unit labour costs stop growing in real terms and profitability increases; real interest rates are negative (they have been negative three years due to persistent inflation) so is the real cost of capital (see again fig. 3: the conditions are then mature for a new investment cycle. The opportunity is given by a worldwide recovery of demand, but in fact the aim of this phase of accumulation, which begins in 1978 to last until 1981 is, above all, substitution of expensive labour for relatively cheap capital: But the acceleration of inflation, consequent to the second oil shock, reduces savings (the propensity to save of households falls from 20.3% in 1978 to 15.5% in 1981) and the investments cycle can be carried out only at the cost of a deficit of the external account. Monetary policy starts decreasing liquidity and causes real interest rates to return to positive values after eight years. The aim is bringing the propensity to save back to normal levels in order not to interrupt to new phase of accumulation. But the desired effects are slow to come about especially because of a fiscal policy which, instead of facilitating the redistribution

of demand from consumption to investment, it prevents it "de facto" diverting households savings to the financing of the current expenditure of the public sector. The outcome of this process is a period of slow growth of effective demand with domestic prices out of line with respect to international prices.

In the meantime some new phenomena are changing the basic context: the decline of demographic growth reduces the potential expansion of demand in domestic markets whereas, on the other hand, the increase of working-age population over total population contributes to a growing potential output. The industrial sector has already ended its expansionary phase and has begun a considerable contraction. The transition to a new equilibrium needs a period of substantial accumulation which can find various obstacles on its way. Among them, the worldwide shortage of financial capital which will keep real interest rates at high levels especially when, at the same time, the change in the age distribution of population, increasing the weight of old age groups, is expected to push upwards the propensity to consume. Therefore the new accumulation will need high profitability of new investments, a high savings rate by firms and a greater degree of penetration into foreign markets.

Since it is impossible to resort again to surreptitious forms of financing (the reduction of the real value of debts when real interest rates are negative) the costs of acting in accordance with the above constraints will be unloaded mainly on the labour market. With regard to this problem the most recent experience shows that the labour market is less independent, than in the seventies, of the general evolution of the economy.

At present, the decline of labour income share, the slowing down of real wage growth and the recovery of productivity growth in addition to the high level of real interest rates (that does not seem to hinder excessively economic activity), suggest that the slow absorption of

the effects of the "hot autumn" of 1969 and its aftermath, is coming to an end. In this sense the internal requisites for a phase of economic growth higher than in the seventies appear to have been regained.

On the other hand, the not yet disappeared inflationary gap, with its repercussions on the Balance of Payments, represents still a serious constraint for the near future. In this context, the question becomes whether economic policy instruments have effectiveness in controlling the economy. In the next paragraph we shall explicitly analyze the Italian experience from the point of view of stabilization policies.

### 3. Inflation, income distribution and stabilization policies: an historical review

The periods of economic growth briefly described in the preceding paragraph, were interrupted by two adjustment processes; a third adjustment phase is still going on. In all episodes, the reaction was stimulated by a rapid deterioration of the current account of the balance of payments.

The first breaking point is situated in 1963. Investment had been booming since 1958; the average rate of profit in the industrial sector had grown by about 3 points (from 10% in 1957 to 13% in 1961; see fig. 3); meanwhile the real cost of capital was declining. The firm financing was very easy in a stock exchange market where share prices had grown by 249% between 1958 and 1961. The rapid growth of the economy started having repercussions on the labour market: after 1961 unemployment reached levels (about 2.5%) that afterwards were considered frictional; wages began to rise at rates higher than productivity growth and inflation approached two digits. In 1963 the high domestic absorption determined a substantial deficit of the external account, which on its turn, fed inflationary expectations, while the exchange rate was moving at the lower bound of the parity band. The economic policy reaction was rapid and effective. Monetary restrictions, first, and restrictive budget

afterwards, induced a strong adjustment in the economy; the current account came back to a stable surplus compatible with the recovery of growth.

Within the fixed exchange regime, such a result was reached through a very low inflation of domestic prices which allowed a depreciation of the real exchange rate of the lira (see fig. 6). The drop of the rate of growth of the economy to 1% for the first time after 15 years of high growth caused a deep restructuring process in the industrial sector: productivity grew quicker than real wages (see fig. 4). Wages were rapidly influenced by the conditions of the labour market, which had reflected very quickly the weakening of domestic demand.

The adjustment of the economy did not involve the public sector: government savings were still positive. The overall excess of savings (mirrored by the surplus<sup>in the</sup>/current account of the balance of payments) was the basis for numerous requests of expansionary fiscal policies. The adjustment had been reached preserving the potentiality of growth (investments resumed on average annual rate of growth of about 10% in the period 1966-69) and expansionary policies had to contribute to effective demand constrained by the decrease of the labour income share. Towards the end of the decade larger budget policies were, at least in the short run, positive. The effectiveness of antinflationary policies, working without intervening on the nominal exchange rate, were thus associated with the effectiveness of expansionary policies.

Ten years later, the foreign imbalance following the first oil crisis, was tackled in an international context of floating exchange rate and in a more indexed economy, through a real depreciation of the lira (see again fig. 6) realized with a huge nominal depreciation of the exchange rate and the temporary slow down of the rate of growth of labour cost relative to wages (reduction of social contributions and deindexation of the retirement benefit fund). Compared with the previous

episode of 1963-66 the adjustment was different also from the point of view of domestic demand: it required, between 1974 and 1978, two restrictive budgets and two phases of credit rationing; the partial and temporary freeze of the indexation mechanism and, as already mentioned, an agreement for the reduction of the absolute level of labour cost. All these policy measures were favoured by the weakening of the dollar and by the improvement of the terms of trade. Inflation slowed down to 12%; the external current account returned to surplus although growth had recovered, at the end of the decade, to 4.5/5%. But these policies caused government savings to turn into a negative 5.4% of GDP since the government budget was loaded with the burden both of stabilizing the formation of household disposable income and of reducing the wedge between labour cost and wages in the industrial sector.

In spite of the first oil shock, real wages continued to grow for all the seventies and the labour market was not substantially influenced from what was going on in the other parts of the economy. These are the years of the strongest influence of trade unions, both on the wage dynamics (through the automatic escalator mechanism, which, at the beginning (1977), guaranteed a coverage of more than 100% for below average wages and fed wage growth even with moderate bargaining) and on the employment level (through the persistence of constraints to lay-offs and labour mobility). The result is that during this period (1973-1981) restrictive policies have low antinflationary effectiveness because the transmission of impulses from lower quantities to lower prices is reduced whereas lax fiscal policies have stronger effects on prices (via nominal exchange rate depreciation) than on quantities.

During the years 1978 and 1979, a surplus of the balance of payments and the recovery of growth were compatible with an inflation 4.5 points higher than the average inflation in the major seven industrialized countries. It was obvious that such compatibility was

only temporary. The inflation gap had to be reduced, and this was the aim of a monetary stabilization program: the depreciation of the lira vis a vis the European currencies was followed by the joining of the EMS. But, for various reasons, this decision was not accompanied by consistent policies. In fact what we have already said about the limited effectiveness of antinflationary policy, makes it clear that it would have required a very restrictive stance to reduce the inflationary gap. But recovery was well underway and the balance of payments was not constraining it; there seemed simply not to be enough good reasons to adopt immediately restrictive measures: hence in 1978-79 budget policy turned out expansionary again. Given such a fiscal policy, the monetary stabilization program could have been pursued only through a tight income policy. But a somewhat atypical income policy had already been carried out in 1976-78 and the political climate did not seem suitable to proceed further in this direction. Everything was, finally, complicated by the second oil shock.

This event marks the beginning of the third phase of Italian economic policies. Given the conditions just mentioned, the reaction to OPEC II was very slow: in 1980, when the oil price increase was showing its effects on the balance of payments, the main worry seemed to be the financing of the new emerging deficit and not its reduction. Only at the beginning of 1981 monetary policy turned into a restrictive stance aiming at reducing domestic absorption, whereas fiscal policy was still expanding. Meanwhile the Italian economy, in addition to the negative effects of the oil price and dollar increase suffered from relative domestic excess demand with respect to other countries. The result was not only to accommodate foreign inflationary impulses, but also to feed expectations of growing domestic inflation, so that the inflation differentials worsened further.

It took about a year and a half before budget policy started

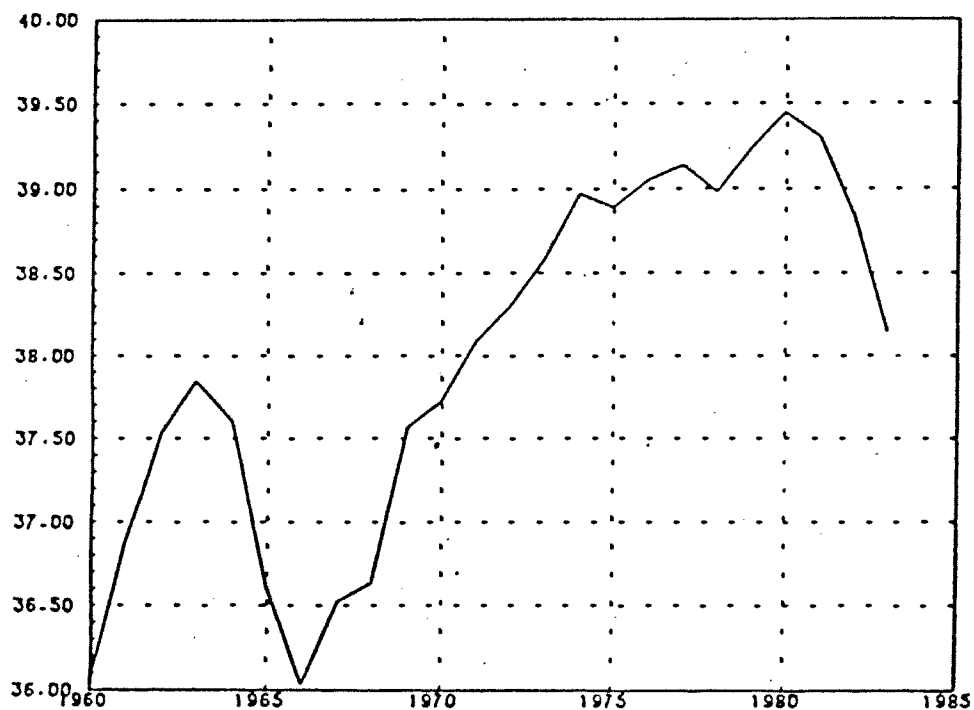
restraining household disposable income. The measures undertaken were mainly once and for all increases of government revenues; reduction of public expenditures were much more troublesome to carry out. Thus even if the steady deterioration of the budget deficits was arrested, there was not a u-turn in its evolution.

A stronger change of attitude was experienced for monetary policy since the middle of 1981. Among heated contrasts, an adjustment based once again on the depreciation of the nominal exchange rate was ruled out. This policy line was favoured both by the strength of the dollar and by the presence of the lira within EMS.

To cope with the difficulty of conducting an antinflationary policy with a still expanding fiscal policy, the Bank of Italy was freed from the compulsory financing of the public sector borrowing requirements. Consequently the central bank was in the condition of pursuing, with stronger effectiveness, restrictive quantitative targets.

In this respect, what is happening after 1981 resembles the events of the 1963-66 period rather than the experience after OPEC I. This is also confirmed by other observations: the number of employees is declining in the industrial sector and, for the overall economy, the proportion of employees to working age population has dropped to an extent comparable only to 1963-66 period (see fig. 7). Productivity growth has recovered considerably whereas, after several years of stagnation, a weak labour market is again influencing real wage growth even if nominal wage growth is still relatively high. Eventually, the transmission mechanism from quantities to prices seems to be recovering.

FIG. 7



Share of total employees over working age population



4. Inflation, income distribution and stabilization policies: some econometric evidence.

In the previous pages we have described the different role played both by real wage and stabilization policies in obtaining or constraining target growth rates of quantities and prices in the various phases experienced by the Italian economy.

A simple but effective way to give a more stylized picture of these events is to insert the concept of target real wage (TRW) within a wage-price model constituted by an expectations augmented Phillips curve and a simple price equation<sup>(1)</sup>

$$(1) \quad \dot{W}_t = \dot{P}_t^e + \dot{G}_t - \alpha (U_t - U_0)$$

$$(2) \quad \dot{P}_t = \dot{W}_t - \dot{\pi}_t - b_1 \dot{R}_t - b_2 \dot{U}_t$$

Where  $\dot{W}_t$ ,  $\dot{P}_t$ ,  $\dot{P}_t^e$ ,  $\dot{U}_t$  are the rate of change of, respectively, wages, actual prices, expected prices and unemployment rate;  $\dot{G}_t$  is the target real wage growth which can be observed when  $U_t=U_0$  and  $\dot{P}_t^e=\dot{P}_t$ ;  $\dot{\pi}_t$  is the long-run rate of change of labour productivity;  $\dot{R}_t$  is the rate of change of the terms of trade<sup>(2)</sup>;  $U_t$  is the unemployment rate;  $U_0$  is the long run level of  $U_t$  associated with  $\dot{P}_t^e = \dot{P}_t$  and  $\dot{G}_t = \dot{\pi}_t + b_1 \dot{R}_t$ <sup>(3)</sup>.

(1) See D. Grubb, R. Jackman and R. Layard "Causes of current stagflation" The Review of Economic Studies, vol. XLIX, n° 5, 1982.

(2) To be precise, we refer to a particular measure of terms of trade, i.e. the ratio of world price of outputs relative to the world price of inputs, which is an exogenous variable. As far as the ratio of home output price to world output price is concerned, we assume that, in the medium term, either exchange rates are sufficiently flexible to guarantee a given degree of competitiveness or that the dynamics of home prices is comparable - in average - with world output prices (or a mixture of the two).

(3) The price equation (2) can be thought of as deriving from a mark-up relationship where the mark-up varies positively with the cycle. To catch this procyclical effect, the mark-up level is assumed to be a function of the level of unemployment. Since we deal with an equation for the rate of change of prices,  $U_t$  appears in the rate of change form. Alternatively equation (2) can be derived from a neoclassical labour demand function with prices on the left hand side. For this latter procedure see D. Grubb et al. (1982), annex. 1.

Substituting (1) in (2) we obtain

$$(3) \quad \dot{P}_t - \dot{P}_t^e = -\alpha(U_t - U_0) + \dot{G}_t - \dot{\pi}_t - b_1 \dot{R}_t - b_2 \dot{U}_t$$

Let us assume adaptive expectations ( e.g.  $\dot{P}_t^e = \dot{P}_{t-1}$  ), so that some sort of nominal rigidity is present in the system. Consequently a trade-off between acceleration of inflation and unemployment exists. When expectations are correct ( $\dot{P}_t = \dot{P}_t^e = \dot{P}_{t-1}$ ) we can derive from (3) an expression for the Non Accelerating Inflation Rate of Unemployment (NAIRU)<sup>(4)</sup>.

$$(4) \quad U_t^* = U^0 + \frac{1}{\alpha} (\dot{G}_t - \dot{\pi}_t - b_1 \dot{R}_t)$$

under the assumption that  $\dot{U}_t = 0$ .

The definition of the NAIRU allows us to state that any of the following supply shocks: a worsening of the terms of trade<sup>of manufactured goods</sup>; an exogenous increase in  $\dot{G}_t$  with respect to  $\dot{\pi}_t$ ; (or alternatively) an exogenous decline of  $\dot{\pi}_t$ , given  $\dot{G}_t$ ; will increase the level of the NAIRU as a result of the shift of the overall relationship between unemployment and inflation acceleration. In the case we are dealing with, i.e. adaptive expectations, such a shift will induce an acceleration of inflation at the given unemployment rate<sup>(5)</sup>.

If the shock is not permanent, as in the case of a one period fall in  $R_t$  ( $\dot{R}_t < 0$ ), the immediate impact is likely to provoke a mix of higher unpredicted inflation and higher unemployment. In such a case the model implies that unemployment and some stickiness in the movement of nominal wages will reduce real wages so that in the following periods, when

$\dot{R}_{t+1} = 0$ , it will be possible to return to the original level of unemployment without additional costs in terms of inflation acceleration. So, when the shock is over and unemployment has gone back to the original level, there will be a new constant permanent inflation rate. This new permanent inflation

(4) An application of the concept of the NAIRU to the analysis of the current situation in EEC countries can be found in R. LAYARD, G. BASEVI, O. BLANCHARD, W. BUITER, R. DORNBUSCH "Europe: the case for unsustainable growth" CEPS papers, n. 8-9, 1984.

(5) If the rate of inflation is governed by money supply and expectations are rational, so that prices are always correctly foreseen (apart from an unpredictable disturbance), the economy after a supply shock will immediately jump to the new long-term unemployment rate.

rate will be higher (relative to the pre-shock level), the lower the cost paid in terms of unemployment. This, on its turn, amounts to say that if the shock is accommodated<sup>(6)</sup> and very little unemployment is created, the new permanent inflation rate will be relatively high. In a closed economy a high but perfectly predicted rate of inflation might not create any particular problem. But in an open economy, the initial fall in  $R_t$  may be associated with a loss of competitiveness in the international goods market according both to the degree of generalization of the shock and to the degree of accommodation adopted by the other countries. The external current account may become additionally binding and unemployment will have to grow to restore the previous level of competitiveness (through a phase of domestic inflation lower than foreign inflation) even if no further effect is needed on real wage<sup>(7)</sup>.

Consider now a permanent shock, for example an exogenous increase in  $\dot{G}_t$ . Once again inflation will accelerate and the new non accelerating inflation point will be reached at a higher level of unemployment (and with a shift in income distribution from profits to wages). Notice that to revert to the initial inflation rate, as it may be necessary due to balance of payment constraints, unemployment will have to grow, temporarily, to a level higher than the new NAIRU; a fortiori if we need a price level

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(6) Or if some sort of unemployment rigidity exists.

(7) Given eqs. (1) and (2) it is possible to show that after a one-period real shock, the cost (in terms of point-years of unemployment) of going back to the pre-shock inflation rate is independent of the distribution over time of unemployment and depends solely on the parameter  $\alpha$ . See D. Grubb, R. Jackman, R. Layard "Wage rigidity and unemployment in OECD countries" European Economic Review, 21, 1983. However, if, to restore competitiveness we need, for some periods, an inflation rate lower than the initial one, the cost of unemployment will be higher than indicated by Grubb et al.

not too different from the competitors price level<sup>(8)</sup>.

As a whole, this theoretical framework seems to be useful for two reasons. Firstly it helps to interpret the events of the seventies: a permanent shock in  $\dot{r}_t$  and  $\dot{G}_t$  was experienced in 1969-72; the first oil crisis occurred when that shock was still affecting the economy. The second oil crisis intervened when the wage-productivity shock was over, but the degree of accomodation was definitely higher for Italy than for the other industrialized countries. Secondly it points more clearly than simple Keynesian models, to the complex role of income distribution, in determining unemployment in an open economy as a result of a complex interaction between the external constraint and desired real wage growth. This is not without consequences for economic policies. The rest of this section is devoted to discuss these aspects.

#### 4.1. Nominal inertia and effectiveness of stabilization policies

When the real wage level becomes relevant for employment, what turns out to be crucial for effectiveness for demand expansionary policies is the degree of independence of real wages of the inflation rate, or, in other words how expansionary policies can affect the (growth of) real wage through their impact on (the growth of) prices.

In analysing the independence of real wages from the inflation rate we must refer to what is known (even if-loosely) as wage rigidity.

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(8) In the case of permanent supply shock, the cost of going back to the initial inflation level will be affected also by the coefficient of the adaptive expectations scheme.

Actually this term is used both in the sense of the rigidity of real wages in relation to labour market conditions, and in the sense of rigidity of nominal wages with respect to price movements. The former meaning will be examined in the second part of this section. The latter, on which we focus now, is often defined as "nominal wage rigidity"<sup>(9)</sup>, and it is one of the main causes of the more general phenomenon called "nominal inertia". In what follows though, we shall use "nominal inertia" and "nominal wage rigidity" as interchangeable terms.

Nominal wage rigidity may arise either from adaptive expectations (as in the above model) or from a wage-wage process (nominal wage inertia) or both. The degree of nominal wage rigidity will depend on the parameter of the adaptive expectations scheme <sup>and/or</sup> on the parameter expressing the adjustment lag of wages to prices <sup>(10)</sup>.

As far as the impact of nominal wage rigidity on the effectiveness of demand policy is concerned the above model allows some useful remarks. If nominal wage inertia is totally absent from one economic system and expectations are rational, not only a long run trade-off does not exist, as it is now largely accepted but neither a short run trade-off is allowed. In such a case real wages are completely independent of prices and expansionary policies are totally ineffective on output; their impact will influence prices only.

This result changes if backward looking expectations and/or multiperiod contracts induce some kind of nominal inertia. If this is the case, firms

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(9) See for ex. J.D. Sachs "Wages, profits and macroeconomic adjustment: a comparative study" Brookings Papers on Economic Activity, n. 2, 1979.

(10) Assume that expectations are formed according to the scheme  $P_t^e = \lambda P_{t-1} + (1 - \lambda) P_{t-1}^e$ ; the smaller  $\lambda$  the higher the nominal (wage) inertia.

will react to a policy expanding aggregate demand for goods, increasing both prices and quantities. The quantity effect is allowed by a reduction of the product wage due to price increases which are not followed by proportional wage increases since, under the assumption made, either nominal wages are determined with reference to expectations adjusting with lags to the current price increase, or they have already been fixed in previous periods agreements. For any given  $\alpha$  the greater the nominal inertia, the stronger the quantity effect in relation to the price effect, even if an acceleration of inflation cannot be avoided in any case. The analysis becomes specular when we take into consideration policies aiming at controlling inflation. In this case the impact of contractionary policies will show a weaker price effect (relative to the quantity effect) the greater the nominal inertia. In other words the more rigid the real wage with respect to prices, the stronger

the deceleration of prices resulting from a restrictive policy. In fact, a firm facing a decline in demand will react reducing (the rate of growth of) prices more than output if (the rate of growth of) nominal wages move rapidly in the same downwards direction.

On the whole, one can conclude that the same condition which increases the real impact of expansionary policy - i.e. the non invariance of real wages to prices - increases the costs in terms of output and employment of antinflationary restrictive policies. As a consequence, if an economy has experienced, in time, variable degrees of real wage rigidity to price changes, this can explain changes in the degree of effectiveness of macroeconomic policies.

Following this argument, may be worth testing if the Italian economy has actually experienced, in the course of time, varying degrees of nominal wage flexibility (real wage rigidity) respect to price changes. To do this (certainly not in a definite way) we modified eq. (1) of the above model, inserting a lagged wage inflation term.

$$(1') \quad \dot{W}_t = \dot{G}_0 + \gamma \dot{P}_t^e + (1 - \gamma) \dot{W}_{t-1} - \alpha (U_t - U_0)$$

In order to maintain the correspondence with the equation (1) the coefficients of  $\dot{p}_t^e$  and  $\dot{w}_{t-1}$  are supposed to sum to 1, so that a long run trade-off is still absent<sup>(11)</sup>. In addition, to simplify matters, we assumed a constant TRW growth.

Starting from eq. (1') we estimated the equation

$$(5) \quad \dot{w}_t = a_0 + a_1 \dot{w}_{t-1} + a_2 \dot{p}_t^e + a_3 U_t + \epsilon_t$$

where  $\dot{w}_t$  is the four quarters rate of change of hourly earnings in the manufacturing sector;  $\dot{p}_t^e$  is the expected rate of growth of consumer prices;  $U_t$  is the average unemployment rate over the four quarters period with reference to which the rates of change are computed;  $\epsilon_t$  is a stochastic error term with the usual properties. It can be observed that the constant term includes the constant TRW growth and the "normal" unemployment term  $a_3 U_0$ . The periods of estimation are 1961-68, <sup>1969-75, 1976-84,</sup> which we have previously identified as broadly correspondent to three different phases of Italian economic growth and macroeconomic policies<sup>(12)</sup>. As a proxy for  $\dot{p}_t^e$  we used the fitted values from a regression equation of consumer price inflation on lagged inflation and a distributed lag of money supply (M2) changes. Since we assume that the history of price inflation and money growth is the basis for the formulation of inflationary expectations, we introduce by hypothesis elements of backwardation in wage dynamics. Consequently our estimation cannot test nominal inertia due to the expectations formation mechanism but can only test the presence of nominal wage rigidity due either to the relative wage argument or to multiperiod contracts or both. In other words we are going

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(11) All the conclusions we drew on the basis of the above model hold unchanged if eq. (1) is substituted by eq. (1').

(12) This three periods division appears also in Dell'Aringa "Inflazione e distribuzione del reddito" *Rivista Milanese di Economia*, Quaderno n. 5, July-September 1983.

to test the null hypothesis  $a_1=0$ : if  $a_1$  is significantly different from zero we conclude that the data will not contradict the assumption that nominal wages are, at least in the short run, relatively rigid with respect to price movements (real wages relatively flexible). In addition if  $(a_1+a_2)$  is close to unity, as we have assumed in the theoretical model, we should be allowed to exclude money illusion on the part of workers. Finally if the value of these parameters change over time it is possible to derive implications (which we have described above) for the effectiveness of stabilization policies.

In table 1 we report the results of the estimation of eq. (5) for the 1961-84 period and for the three sub-periods we have already mentioned. The results shown in line 2, 3, 4 represent our preferred versions: from these we have excluded the variables which came out not statistically significant. The results obtained including all the variables are shown in line 5 and 6. We also include the Chow test for structural stability of the parameters.



	$a_0$	$a_1 (\dot{W}_{t-1})$	$a_2 (\dot{P}_t)$	$a_3 (U_t)$	corrected $R^2$	Dep. Var. mean	SER	Q(1)
1 1961-84	0.051 (2.58)	0.68 (8.17)	0.29 (2.56)	-0.0047 (-1.51)	0.75	0.16	0.03	30
2 1961-68	0.204 (1.78)	0.50 (2.35)	/	-0.031 (-1.62)	0.64	0.09	0.03	13.0
3 1969-75	0.093 (3.76)	0.31 (1.68)	0.52 (2.60)	/	0.63	0.20	0.03	9.3
4 1976-84	0.084 (1.82)	0.34 (2.47)	0.70 (3.60)	-0.009 (-2.31)	0.70	0.18	0.02	4.8
5 1961-68	0.313 (2.06)	0.52 (2.45)	-0.71 (-1.08)	-0.046 (-1.95)	0.64	0.09	0.03	14.8
6 1969-75	0.129 (1.06)	0.28 (1.47)	0.53 (2.56)	-0.005 (-0.30)	0.62	0.20	0.03	10.0

\* t-student in brackets \*\* LJUNG-BOX Q-test

We tested the presence of structural changes of the parameters performing the Chow test. The breaking points of the sample, obtained on the basis of the Quandt likelihood ratios came out to be: 1969 (second quarter) and 1975 (first quarter). Even if the implied intervals do not overlap perfectly with the periods we used in the text, they are remarkably similar. We tried various possibilities, keeping constant alternatively different coefficients; the test was always significant at the 1% level. As an example we report the case where we keep the constant unchanged and let all the other parameters vary. As it can be seen the results are largely consistent with the argument presented in the text.

#### CHOW REGRESSION STATISTICS

$$R^2 = 0.83$$

$$SER = 0.03$$

$$F(6, 85) = 6.11$$

	$a_0$	$a_1 (\dot{W}_{t-1})$	$a_2 (\dot{P}_t)$	$a_3 (U_t)$
interval 1	0.12 (2.68)	0.72 (4.86)	-0.33 (-0.79)	-0.016 (-2.14)
interval 2	0.12 (2.68)	0.34 (2.01)	0.63 (3.68)	-0.006 (-0.86)
interval 3	0.12 (2.68)	0.12 (0.81)	0.81 (3.56)	-0.010 (-2.68)

(t-student in brackets)

In table 2 we isolate the values of the estimated parameters  $a_1$  and  $a_2$  for the three subperiods (from lines 2,3,4).

TABLE 2

	$a_1$ ( $\dot{w}_{t-1}$ )	$a_2$ ( $P_t^e$ )
1961-68	0.50 (2.35)	0.0
1969-75	0.31 (1.69)	0.52 (2.60)
1975-84	0.34 (2.47)	0.70 (3.60)

The null hypothesis  $a_1=0$  is rejected in every period, while the price expectations parameter  $a_2$  is significantly different from zero only in the second and third period.

Some comments can be made about the implications of the changes in the values of the estimated parameters. During the sixties wage determination seems consistent with a wage-wage scheme, where inflationary expectations do not play any relevant role. The economy exhibits money illusion and consequently a long-run trade off between inflation and unemployment.

This situation changes in the following two periods: the long run trade off seems to disappear ( $a_1 + a_2 = 1$ ); the role of inflationary expectations

in determining wages, increases, especially in the third period; the coefficient of nominal wage inertia,  $a_1$ , stabilizes at about 1/3, declining considerably in comparison with the initial period. These estimates support the thesis that during the last fifteen years the Italian economy has experienced a growing stickiness of real wages with respect to expected prices; in other words a growing velocity of the wage-expected price reaction. This means that Italian policy makers have faced, in the seventies, a gradual reduction in the effectiveness of expansionary policies, the inefficacy becoming larger in the latest period.

The effects of such an increase in the degree of real wage rigidity with respect to price movements should have augmented the impact of antinflationary policies. Yet restrictive policies have not been very successful in restraining price inflation at least until 1983. For the 1969-76 period this is hardly surprising since the wage determination process, although characterized by a growing wage-price response, is dominated by a strong exogenous wage push (which could be interpreted as an upward shift in  $G^{(13)}$ ). In such a situation firms, confronted with a fall in demand, have incentive to reduce (the rate of growth of) prices but will be compelled to limit the price response and to accentuate the quantity response to a restrictive policy.

Conditions are different in the 1976-84 period, so that the efficacy of anti-inflationary policies should be relevantly enhanced: not only the wage-expected price process has by large superseded the wage-wage process but also the exogeneity of wage dynamics has noticeably declined, the labour market becoming (as we shall argue below) effective again in affecting real wage growth. Nevertheless the costs of disinflation in terms of output are still significant. Wage inertia has by no means disappeared as can be seen by the still rather high and significant coefficient of  $W_{t-1}$ . In addition to that, part of the effect captured

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(13) We shall come back to this problem in section 4.2.

by the  $\dot{P}_t^e$  coefficient, may be imputed both to the growing weight attributed to the ex-post indexation mechanism (at least till 1982) and to backward rather than forward looking expectations, induced by the scarce credibility of the government in his attitude to fight inflation. In such a situation any innovation in anti-inflationary policies takes time to affect the behaviour of economic agents and continues to imply a real adjustment cost.

## 4.2 Real wage rigidity and unemployment

### 4.2.1 The impact of stabilization policies.

As it turns out from the above discussion Italian restrictive policies, aiming at controlling prices, may act nowadays in more favourable conditions than in the past (although still with significant output costs due to persistent inflationary inertia). On the other hand expansionary policies have shown growing difficulties in causing a decline of (the rate of growth of) real wages through an increase in prices. This means that the use of the trade-off between inflation and unemployment has become more difficult with respect to the sixties.

Such a modification of the Phillips trade-off derives from the decrease in the degree of nominal inertia expressed by the variation of the  $\gamma$  coefficient ( $a_1$  and  $a_2$  in the estimates). However changes in the Phillips trade-off may also come from variation in the  $\alpha$  coefficient ( $a_3$  in the estimates) which may be taken as a short term indicator of the responsiveness of real wages to labour market conditions when  $\gamma$  becomes quite high and the pass through from prices to wages is rapid<sup>(14)</sup>. So it may be natural to investigate whether the previous argument holds in the light also of

(14) Starting from equation (1') and (2), i.e. from an accelerationist hypothesis, and assuming correct expectations ( $\dot{P}_t^e = \dot{P}_t$ ), we obtain the following relationship for wage inflation acceleration:

$$(6) \dot{W}_t = - \frac{\alpha}{1-\gamma} (U_t - U^0) + \frac{1}{1-\gamma} (\dot{G}^0 - \gamma \pi_t - \gamma b_2 \dot{U}_t - \gamma b_1 \dot{R}_t)$$

So in first approximation the trade-off is expressed by the coefficient  $\frac{\alpha}{1-\gamma}$

the modification of the  $\alpha$  coefficient. In table 3 we report the estimated coefficients  $a_3$  of the unemployment rate (see table 1, lines 1,2,3).

TABLE 3

	$a_3$ ( $U_t$ )
1961-68	- 0.031 (-1.62)
1969-75	0.0
1976-84	- 0.008 (-2.31)

In the 1961-1968 period unemployment has a relevant effect on wage inflation. When confronted with the need of an adjustment (due to external account difficulties) monetary authorities were able to obtain rapid results on inflation. The process was the traditional one from cut in nominal aggregate expenditure, through repercussions in the labour market and hence on prices. In other words restrictive policies worked in spite of relevant nominal inertia, through a strong effect running from quantity to prices. On the other hand the presence of money illusion favoured expansionary policies non allowing the higher rate of growth of nominal wages (due to lower unemployment) to be reflected in higher rates of growth of real wages.

For the 1969-75, on the contrary, we were not able to detect econometrically any influence of unemployment on wage settlements. The wage determination process is dominated by exogenous factors and the possibility of a trade-off disappears altogether. In this situation economic policies show more difficulties, with respect to the previous period, in increasing employment (15) <sup>moreover</sup> and have very scarce effects on price inflation given the absence of any response of wages to unemployment. As a matter of fact economic

(15) Owing to the smaller nominal inertia which we discussed in the previous section.

policies resulted accomodating and employment remained relatively high in the period because of the successful resistance of the Unions to lay-offs.

In the last period, finally, unemployment begins to exert again a significant influence on wage inflation so that at least a short run Phillips trade-off reappears. Restrictive policies have again the possibility of controlling prices but this regained effectiveness is conditioned by the large relative effect of price expectations, with respect to the unemployment effect on wage determination. As a result anti-inflationary policies can be more successful - as we claimed above - the more credible the government and the more forward looking expectations<sup>(16)</sup>. As far as expansionary policies are concerned, the presence of a short run trade-off cannot make us forget the strong estimated wage-price reaction ( $a_2 \approx 0.7$ ) which indicates that expansionary policies will cause a rather rapid acceleration of inflation. This means that it will be quite costly to keep the economy below the NAIRU for a long period.

#### 4.2.2. Exogenous supply shocks

The degree of real wage rigidity in relation to the labour market conditions, can be examined also from a different viewpoint: i.e. considering its effect on the reaction to an exogenous supply shock. As we have said at the beginning of this section a real shock will provoke an increase in the NAIRU and the displacement will be bigger the smaller the absolute value of the  $\alpha$  coefficient. So an economy experiencing a decline in  $\alpha$ , (as it appears to be the case for Italy),

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(16) As it can be seen, in the last period, the decrease of the  $a_3$  coefficient is compensated by the increase in the  $a_2$  coefficient (in relation to the 1961-68 period). In terms of the theoretical model the decrease in  $\alpha$  is compensated by the increase in  $\gamma$ .

will become more vulnerable to real shocks<sup>(17)</sup>. This is the line stressed by Grubb et al. (1983), who interpret the coefficient  $\alpha$  as a measure of real wage rigidity "tout court". This definition though is not without ambiguities since it does not consider the possibility of changing real wages through variations in prices<sup>(18)</sup>.

On the other hand, since a supply shock affects the economy provoking a "real wage gap" (the difference between the TRW and the feasible real wage (FRW), that is the level of real wage consistent with productivity growth and the terms of trade change), we consider more fruitful, in this context, to interpret real wage rigidity in terms of the responsiveness of the real wage gap to unemployment. Actually a persistent real wage gap will shift upwards the Phillips trade-off and, in the accelerationist case, will imply a permanent increase in the NAIRU. Consequently, after a supply

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(17) From eq. (6) in note (14) we can derive another expression for the NAIRU. Assuming  $\dot{W}_t=0$  and  $\dot{U}_t=0$  we obtain

$$(7) \quad U^* = U_0 + \frac{1}{\alpha} (G^0 - \gamma \dot{\pi}_t - \gamma b_1 \dot{R}_t)$$

Differently from eq. [4], in this case the effect on the NAIRU of a shock on productivity or on the terms of trade will be smaller than the effect of a shock in  $G^0$ , owing to the lag of adjustment of wages to prices. When the adjustment is over, however, the shock will be again completely reflected by the parameter  $\alpha$ .

(18) See Taylor's comments to Grubb et al. (1983). Notice moreover, that since according to our estimate, in the first period, the accelerationist hypothesis is rejected, any rate of unemployment is a potential NAIRU, so that the above definition of real wage rigidity would not make sense.

shock causing a real wage gap, an increase in unemployment is likely to occur. It is obvious that if the TRW reacts rapidly to the increase in unemployment, moving quickly towards the FRW the costs of exogenous supply shocks will be greatly reduced. But there is no reason to suppose that this will happen: the TRW depends on social and political factors as well as economic factors and the market forces themselves may be checked for a long time by accomodating economic policies. Nevertheless we want to suggest that in the longer term market mechanisms may push the TRW back in line with the FRW, through -unfortunately- levels of unemployment higher than "normal", and so they may be able to reduce the constraints faced by economic policies.

To this respect, it may be interesting to show the value of the TRW implied by the estimates growth/together with the productivity and the terms of trade change, all in per cent annual average, for the 3 periods under scrutiny (table 4).

The TRW growth has been obtained from the constants of our regression equations (Table 1), subtracting from them the term  $a_3 U_0$  where  $U_0$  has been taken to be the average of the unemployment terms over the relevant period.

TABLE 4

	$\dot{G}_E$	$\dot{\pi}_E$	$\dot{R}_E$
1961-68	4.8	7.4	1.0
1969-75	9.3	4.5	-2.7
1975-84	1.2	3.5	-1.5



These measures, of course, do not pretend to be precise or, even less, rigorous, but they can be used as a very rough indication.

The years 1969-75 are characterized by a TRW consistently higher than the FRW. Nevertheless, accomodating economic policies (fall of real interest rates, depreciation of nominal exchange rates) as well as the strength of the unions, kept average unemployment rate only about 1 percentage point higher than in the sixties. So, both social factors (Union strength) and economic factors (accomodating policies) favour, for the entire period, the persistence of the gap between TRW and FRW. This is not without consequences: the economy paid for it with a rooting of inflationary expectations, with a gap between domestic rate of inflation and the average rate of the other industrialized countries and finally with a growing public deficit. The economy could not proceed further in this direction. Accomodating policies were made very difficult by high inflation, by joining the EMS and by the already huge public deficit; to all this it must be added the effect of the second oil shock and the deep international recession. A radical change in policy followed. Moreover changed demographical trends and social factors (increase in women participation rate) increased considerably the supply of labour. These events made impossible for the Unions to prevent a dramatic deterioration in labour market conditions. So maintaining the TRW above the FRW for a long period strongly contributed to provoke an unemployment level much higher than in any previous comparable experience. This, in turn, has reacted on the strength and objectives of the Unions compelling them to accept much lower settlements: the market regains efficacy in determining wages. From table 4 we can see the dramatic fall of the TRW growth in the latest period. Although only indicative, this strong decline is consistent with the idea that, whereas for the medium period the TRW growth may be taken, reasonably enough, as an exogenous constant, in the longer run it may become endogenous,

determined by the long-term conditions of the labour market, by structural trends in productivity and external account, and by other economic factors as well. Basically the labour market might be seen as adapting to the macro-economic requisites for long term equilibrium growth in a way to maintain both inflation and unemployment within limits which do not endanger the overall social consensus<sup>(19)</sup>. Similar considerations might be made for  $\alpha$  ( $\alpha_3$  in the estimates); the return of this coefficient to statistical significance in the last period could also be interpreted in the sense of a long-term role for market forces in determining real wages<sup>(20)</sup>.

In addition to these reflections on the long-term role of market forces, we can also derive, from the data of table 4, indications for economic policies. In fact, in the last period, given the reduction in  $G^\circ$  and the recovery in productivity growth, we are experiencing a positive supply shock which is lowering the NAIRU. This is consistent with the deceleration of inflation observed from 1982 onwards and it suggests the possibility, in principle, of lowering unemployment without an acceleration of inflation<sup>(21)</sup>. Actually, in an open economy where exogenous shocks and a more accommodating policy response, have favoured a gap between domestic and international inflation, a prolonged extra-unemployment (respect to the NAIRU) may be necessary to provoke further deceleration in inflation, in order to recover a certain degree

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(19) As a very general guess, one might wonder whether these considerations imply a long term relationship between the TRW and ultimately unemployment. If this were the case, our equation (1) would become the expression of a long run relationship between real wages and unemployment. Hence our estimates would identify, in the three periods, different models of wage determination nested in the long term model.

(20) We are not too confident though, about the possibility of explaining the variation of  $\alpha$ <sup>only</sup> in such a way. Actually, the smaller values of  $\alpha$  observed in the last years, could be considered<sup>also</sup> as a permanent phenomenon connected, perhaps, with structural modifications of the industrial relation system.

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competitiveness. This would not be an unemployment due to excessive real wage growth, but would represent the traditional unemployment cost of restrictive policies in presence of nominal inertia. Such costs may be reduced with more credible government action and, possibly, with policies aiming at turning the formation of expectations (or the implied indexation scheme) from backward to forward looking mechanisms.

## 5. Conclusions

If we think of this paper as a tour around the Italian economy of the last twenty-four years, then we have made it three times. Firstly at a very general level, looking at the long-run process of growth. We identified two different mechanisms of growth working during these years: a phase of effective demand determined growth till the end of the sixties and dating back at least since the beginning of the fifties (in such a phase inflation was just a business cycle phenomenon and worked distributing income between wages and profits mainly in the industrial sector). A second phase, of supply determined growth, resulting from the interaction<sup>of</sup> domestic social and international shocks (in this period inflation mainly distributed income from financial wealth owners to profits and from people non protected by automatic escalator mechanisms to employees). At this very general level what is going on now looks like an attempt to restore the process of growth through the substitution of capital to labour and the consequent reduction of the relative price of labour to capital.

The second time our tour brought us to a lower degree of generality to focus on different stages of economic policies. We have detected three periods of relevant economic policy moves: the reactions to the

inflation upsurge in 1963 and to the two oil shocks.

In the middle sixties restrictive monetary and fiscal policies transmitted their impulses to the labour market which reacted very quickly with a reduction of the real wage growth, a strong recovery of productivity and no relevant change of real interest rates. After the first oil shock restrictive policies were much less effective, the labour market seemed almost isolated from the economy, real interest rates became negative and nominal depreciation of the exchange rate was used to adjust the balance of payments.

In the most recent years, restrictive policies seem to have regained the possibility to transmit impulses to the labour market. Real wages and productivity are reacting to those stimuli, while real interest rates have come back to positive values.

The third time our flight has grazed the ground, with the aim of investigating the data in order to understand the economic roots of our previous observations.

The econometric estimation of a very simple model of wage behaviour allows us to conclude that the following statements are not contradicted by statistical data: a) during the sixties the external and internal conditions for a long-run trade-off between inflation and unemployment existed, hence demand management policies resulted effective; b) during the period 1969-1975 both the short and the long-run trade offs disappeared; c) after 1976 a long-run trade-off is still absent whereas a short run Phillips curve seems to reappear; as a result restrictive demand policies have regained some degree of effectiveness.

But this is not the whole story. Now we have all the elements to attribute the bad performance of the Italian inflation in the seventies to: a) the reduced effects of the transmission mechanisms from aggregate demand to labour market and to prices; b) the real wage rigidity, which induced to use nominal exchange depreciation to adjust the external account; c) the monetary accommodation of both domestic social and

external shocks.

As far as prospects for the second half of the eighties are concerned the impact of these factors is changing: monetary policy seems to regain credibility in pursuing a program of reduction of money growth; the international agreement on EMS causes differentials of inflation to have repercussion on economic activity and the labour market looks more inclined to transmit these effects both on real and nominal wages. The main question is whether the regained degree of wage flexibility, given the past cumulated differentials of inflation, will be sufficient to restore a reasonable rate of growth, avoiding relevant movements of the nominal exchange rate.

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