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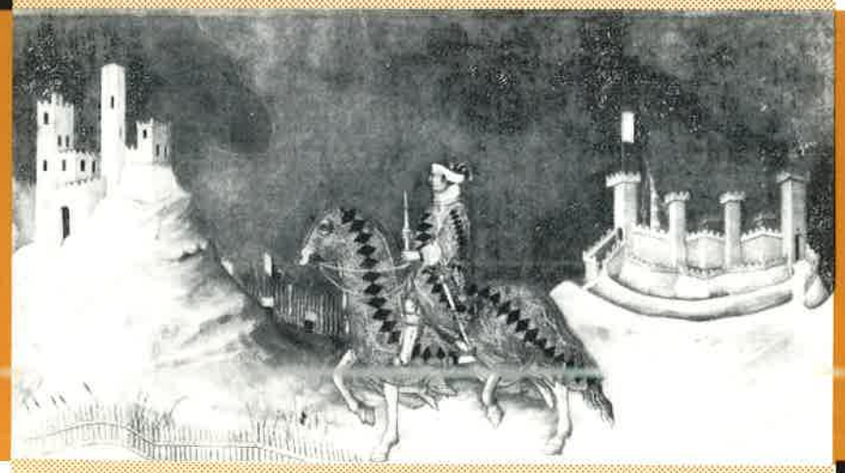
REGIONAL UNEMPLOYMENT IN ITALY: SOURCES AND CURES



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REGIONAL UNEMPLOYMENT IN ITALY: SOURCES AND CURES

Siena, Gennaio 1992

Abstract

A regional model of Italy is presented to analyze unemployment responses to supply and demand shocks in the market for goods and labor. Both supply and demand components of unemployment are endogenous. Employment has low elasticity to output in Southern Italy where labor force increases more because of demographic and participation rate changes. This also makes it difficult to close the gap between this region and the most developed areas of the country.

Keywords: Unemployment,Regional Unemployment,Simulation ,

Title abbreviation : Regional Unemployment in Italy

J.E.L. Classification : E17 , J64 , R23 .

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Regional Unemployment in Italy: Sources and Cures

1. Introduction

While standard microeconomics explains unemployment as a result of labor/leisure choice, the macroeconomic analysis of labor markets usually takes the opposite view, i.e. unemployment is nothing but the negative of labor demand. We consider both these approaches generally incomplete and specifically wrong in those cases where labor supply is permanently increased and labor demand has little response to output fluctuations. The aim of our study is to treat both labor supply and labor demand sources of unemployment in Italy where regional differences are historically large (Allen-Stevenson, 1974; Graziani, 1972 , 1978) despite the fact that several policy actions have been implemented to reduce this gap (Podbielski, 1978). This study extracts a regional labor market model from an aggregate macroeconometric model (Fiorito, 1984) in which both labor demand and supply are endogenous. Taking the national model as a benchmark, we choose a top down rather than a bottom up approach to specify each region. Thus their characteristics are reflected by differences in parameters given the same national structure rather than by different specifications. This limitation, however, has to be compared with those implied by the bottom up approach which can neither compare models having different specifications nor evaluate the aggregation properties of the national models. The regional models refer to three (North, Center and South) rather than two (North-Center and South) regions of Italy since the typical dualistic approach (Lutz, 1962) may obscure the specific pattern of growth followed by Central area (Fuà-Zacchia, 1983). The models are solved for each area to evaluate the response of unemployment to exogenous shocks depending on either the demand or supply side. Each regional model endogenizes both labor demand and supply in industry and private services. The markets for goods, wages and prices are endogenous in the aggregate model but for convenience are left exogenous in this case. The paper is organized as follows. Section 2 briefly reports the main stylized

facts of Italy's national and regional growth. The model is summarized in Section 3 and the estimates of regional equations are presented in Section 4. Unemployment responses to supply and demand shocks are discussed in Section 5 and compared with unemployment responses in a model with exogenous labor force. Section 6 evaluates the policy implications of our results.

2. Stylized facts of Italy's regional growth

The Italian economy has shown high growth rates since the end of World War 2. Nevertheless, this growth occurred in a country where regional differences between the relatively industrialized North and the almost rural South[1] were initially extremely large: indeed the ratio of per capita income in the South to the national value was roughly 0.6 in the 50s. Even when the gap was reduced (60s-70s) the above ratio rose to about 0.7 and did not show any further tendency to be reduced (Sylos Labini, 1985) after the first oil shock. The policy to reduce this gap was twofold: on the one hand, direct government investment was addressed to develop a large scale capital intensive industry in strategic sectors as metallurgy and chemistry. In the meantime several infra- structures were realized in construction and utilities (routes, ports, electicity etc.) that at that time could not be created by private firms because of the high cost and the long horizon of these projects. On the other hand, consumption transfers were allocated to Southern householders to sustain their insufficient income. Moreover , social and political conflicts were managed in the South by encouraging large migration flows abroad and to the rest of the country. These policy interventions, together with the agrarian reform (1950) were the first step of the development program of Southern Italy which was fairly successful in obtaining two important goals: the integration of domestic markets and a higher mobility of production inputs. However, this policy exposed Southern industry - which was very fragile and locally based - to the competition of the Northern and foreign firms. The postwar economic policy supported free trade and gradually abandoned prewar fascist protectionism (autarchia). Despite the large flows of governmental resources to support Southern economy, there had not been a corresponding increase in per capita income. This failure was generally interpreted as a case for increasing - through direct government actions - the process of industrialization in the South, whose economy was - and still partially is - characterized by a large inefficient agricultural sector and by traditional small scale consumer oriented services. In this perspective it is customary (Sarcinelli, 1989) to distinguish two

periods in the pro South policies. The first (1950-60) corresponds to the creation of large plants mainly devoted to the production or transformation of raw materials (e.g. iron, steel and chemical products). These plants allowed Italian manufacturing - mostly concentrated at that time in the Northern or Northwestern area - to obtain the required inputs at lower prices or in a shorter time than from abroad. However, these investments had a limited impact on the expansion of Southern industry because just a few local firms were created. Virtually , no typical Southern firm could provide inputs to large scale state owned firms in the same area while several of them were displaced by the widening of markets and, hence, by importing consumption goods from the North or abroad.

The second period dates from the end of 60s to the first half of the 70s and corresponds to a broader diversification of investment in sectors other than manufacturing. Thus large investments in transport and engineering were realized. The results were not always satisfactory since in some cases they have favored entrepreneurship and employment whereas in others no permanent benefit has been obtained.

Finally, one should consider a third period (1974-?) where the gap between Southern economy and the rest of the country is not longer reduced and where confidence in public action is weakened by the size of the government debt and by frequent episodes of inefficiency and corruption.

However, this last period cannot be fully accounted for in this paper because our data stop in 1984 and are not comparable with the new regional accounts (ISTAT, 1990) which start in 1980 and include estimates of the so-called underground economy. The stylized facts of a shorter period (60-84) corresponding to our sample are presented below. In particular, regional growth components are compared (Tables 1-3) with the national data in terms of both average performance and variability to relate - when possible - differences in growth to differences in cyclical patterns. The first consideration is that the Southern area reduces its growth after the first oil shock along with the rest of the country. However, also its main gaps stop to be reduced as we can see from Table 1.

Table 1 - Percentage gap between South and Center-North of Italy

	GDP	Consumption Per capita	Investment	Employment Rate	Unemployment Rate
1960	-49.2	-38.5	-39.6	-20.9	42.0
1973	-40.6	-31.5	-12.8	-19.8	71.2
1984	-43.0	-31.4	-17.5	-20.1	60.9

Table 2 - Growth rates - Mean values (M) and Variances (V)

	North		Center		South		Italy	
GDP	M	V	M	V	M	V	M	V
1961-84	3.7	12.3	3.7	4.8	4.0	9.5	3.8	8.4
1961-73	5.3	5.5	4.9	2.3	5.7	7.2	5.3	3.9
1974-84	1.9	14.8	2.2	3.7	2.0	5.1	2.0	8.0
Employees								
1961-84	0.7	3.2	1.5	2.8	0.9	2.9	0.9	2.1
1961-73	1.0	4.2	1.8	4.4	0.5	4.0	1.0	3.1
1974-84	0.3	2.0	1.2	0.8	1.3	1.5	0.8	1.2
Self Employment								
1961-84	-1.1	5.5	-1.7	11.2	-1.5	9.3	-1.3	6.7
1961-73	-2.5	3.0	-3.9	5.9	-2.9	10.0	-2.9	4.8
1974-84	0.6	3.4	1.0	4.2	0.2	3.4	0.6	2.4
Employment								
1961-84	0.0	1.4	0.3	1.6	0.0	2.1	0.1	1.1
1961-73	-0.2	1.7	-0.4	1.7	-0.9	1.8	-0.5	0.3
1974-84	0.4	0.9	1.1	0.3	1.0	0.6	0.7	0.4
GNP/Employment								
1961-84	3.7	11.4	3.4	8.2	4.0	11.5	3.7	9.7
1961-73	5.5	4.2	5.3	2.6	6.6	11.0	5.8	3.1
1974-84	1.5	2.0	1.1	4.9	1.0	3.5	1.3	6.4

Source: Fiorito(1990)

The employment evidence is difficult to summarize unless one considers differences between self employment and employees, sectors, regions and the structural breakdown before and after 1973. Despite the fact that in Italy the most spectacular economic and social changes occurred in the 50s, the migration flows and the sectoral shifts of employment from agriculture to industry still continue in the 60s and in the first part of the 70s. After the first oil shock a new phase starts in which industry needs to tackle both the energy and the labor shocks which have occurred in Italy almost together and which were also propagated by specific indexation clauses (Modigliani-Padoa Schioppa, 1978). Thus, most industrial firms try to change their technology and their industrial relations so as to reduce both energy and labor costs. This may perhaps explain why the second part of the sample is everywhere - but especially in the Center - characterized by the rise of new and usually smaller firms using in most cases a labor intensive technology , which was also reflecting less regulated industrial relations.

The stationarity of employment in the overall period (60-84) corresponds in the first part of the sample (60-73) to a strong reduction of self employment. Particularly in the South, this was largely located in agriculture where a huge amount of jobs was lost but not offset by a corresponding job creation in the other sectors. As a result the labor productivity increase was everywhere very high but especially in the South as shown in Table 2. Afterwards ('74-'84), self employment stops decreasing and starts to increase showing over the entire sample a U-shaped pattern similar to that of labor force.

However, self employment was in the first part of the sample mostly characterized by marginal workers , ready to become employers as long as this would imply more stable and sometimes even higher income. In the second part of the sample, the share of marginal workers in self employment is much reduced by migration and sectoral flows. Thus, the increase in independent workers seems to reflect in the second part a tendency to become entrepreneur by starting a usually small or even family run activity not only in commerce - as traditional in Italy - but also in manufacturing.

Bearing in mind how productivity was increased in the first part of the sample by sectoral shifts in the labor force, it is possible to explain the paradox that employment increases only when ('74-'84) the growth rate of the economy is reduced. There are, however, regional differences to point out: while in the North the slow-down in growth corresponds to a reduction of job creation for employees, in the Center there is a 1% growth of self-employment and a 1.2% growth of employees. In the South, the number of employees also increases even though this may to some extent reflect direct job creation by the government or a policy commitment to support employment through subsidizing labor costs in manufacturing .

Table 3 - Growth Rates. Mean Value (M) and Variance (V)

	North		Center		South		Italy	
Investment/GDP (Share)	M	V	M	V	M	V	M	V
1961-84	18.1	7.0	18.3	8.1	24.8	8.3	19.8	6.9
1961-73	20.0	3.9	20.2	4.3	26.9	2.3	21.7	2.8
1974-84	15.8	1.1	15.6	7.4	22.1	2.9	17.3	1.1
Population								
1961-84	0.6	0.3	0.7	0.2	0.5	0.2	0.6	0.2
1961-73	1.0	0.2	1.0	0.1	0.3	0.2	0.7	0.0
1974-84	0.2	0.1	0.4	0.1	0.7	0.1	0.4	0.1

Participation rate

1961-84	-0.4	1.4	-0.3	2.1	-0.2	1.9	-0.3	1.3
1961-73	-1.2	0.9	-1.3	1.0	-1.0	1.4	-1.1	0.8
1974-84	0.6	0.4	0.9	0.4	0.8	0.7	0.7	0.2

Labor Force

1961-84	0.2	0.9	0.4	1.4	0.3	2.7	0.3	1.0
1961-73	-0.2	0.9	-0.2	1.1	-0.7	2.2	-0.4	0.8
1974-84	0.8	0.4	1.3	0.3	1.5	0.6	1.1	0.1

Employment/Population

1961-84	41.4	4.6	37.6	4.2	32.2	2.6	37.4	3.5
1961-73	42.4	5.8	38.3	6.1	32.9	3.5	38.2	4.7
1974-84	40.1	0.2	36.7	0.6	31.3	0.1	36.3	0.1

Source: op.cit.

As we have seen, the reduction in the growth rate of GDP corresponds in the decade 74-84 to an increase in its variability which probably reflects the difficulty encountered by traditional fine tuning policies in facing supply rather than demand shocks. In the meantime the stationarity in the level of employees also corresponds to a reduced variability of the labor stock which reveals a massive labor hoarding and hence a pronounced procyclical productivity. One of the distinctive features of the Southern economy is its higher capitalization (see Tables 1 and 3) .

This fact may be understood in two different ways: the first is that the investment/GDP ratio is higher in the South because of massive government investment in capital intensive industries, the second that the ratio is bigger since in the South GDP is about 40% smaller than the national figure. This also implies that regional comparisons in terms of per capita investment are much closer than those in terms of GDP ratios. The employment rate (i.e. the ratio between employment level and working age population) is also different in the three areas. In particular it seems to be affected by the specificity of demographic patterns: indeed, after the migration flows of the '50s and '60s the South increases its population trend as compared with the other areas. This partially offsets the increase in employment which in the decade 1974-84 characterizes the Southern economy. The labor force trend has also been affected by demographic changes. As mentioned, it displays a U- shaped pattern which in the first part of the sample mostly reflects sectoral shifts from agriculture and a contraction in female participation

rates, it being harder and often undesirable for the uneducated southern housewife with an attachment to agriculture to be reallocated as a manual worker in the North.

Conversely in the 70s the female participation rate rises everywhere, especially in the South because of changes in economic, social and cultural patterns as, say, compulsory education extended since 1962 to 8 years of schooling. In the decade 1974-84 a combination of these effects produces an average increase in the labor force of 0.8% in the North, 1.3% in the Center and 1.8% in the South. This growth rate is everywhere higher than employment rate. Hence, especially in the South the growth of unemployment rate shows, structural rather than cyclical characteristics that make its traditional usage as a short run economic indicator difficult.

Among the structural features of Italy's labor market one of the most important is the ratio of youth unemployment (e.g. people looking for their first job) to total unemployment. This ratio rises in the two periods from 31.7% to 45.4% in the North, from 39.3% to 53.1% in the Center and from 37.1% to 51.5% in the South, dramatically changing the meaning of the Phillips curve.

Let us consider now the role of labor cost in each area. By accounting for regional hourly productivity one can see that the unit labor cost is larger in the North. This reflects two different factors. As far as industry in the North and Center are concerned, the higher labor cost in the North - which should reflect larger and more unionized plants - is not offset by a higher productivity with respect to the smaller units in the Center. As far as Southern industry is concerned, one must bear in mind the role of the special Laws pro Southern economy that allow for payroll taxes deductions which in Italy are a notable part of total labor cost. Nevertheless, this relative advantage of the South is reduced by 19% in 1973 to 7% in 1984 and it is brought about by the reduction of hourly productivity. In tradable services labor productivity in the Northern and Central areas is about the same , while labor cost is higher in the latter. In the South the lower productivity is not offset as in industry by a cheaper labor cost. Therefore the unit labor cost is higher in the South for private services, presumably because most units are very small and have no opportunity to utilize scale economies.

Table 4 - Growth Rates. Mean Values and Variance

	North		Center		South		Italy	
Unemployment Rate	M	V	M	V	M	V	M	V
1961-84	4.8	1.7	6.9	1.6	8.8	6.9	6.4	2.8
1961-73	4.1	0.2	6.1	0.6	7.0	1.4	5.4	0.5
1974-84	5.7	2.1	7.9	1.0	11.0	4.9	7.8	2.5
Unemployment Rate (People looking for first job)								
1961-84	1.9	0.8	3.2	1.3	3.9	3.6	2.8	1.6
1961-73	1.3	0.1	2.4	0.3	2.6	0.4	1.9	0.2
1974-84	2.7	0.7	4.2	0.8	5.6	2.7	3.9	1.2
Hourly labor cost in industry								
1961-84	16.1	37.4	16.7	47.2	17.9	33.8	16.3	38.1
1961-73	13.4	35.1	14.0	51.9	16.3	34.1	13.8	36.2
1974-84	19.3	23.6	19.8	26.4	19.7	30.2	19.2	27.0
Implicit price deflator of household consumption								
1961-84	10.5	47.9	10.3	44.5	10.0	44.2	10.3	46.0
1961-73	4.8	7.8	4.8	6.7	4.8	10.9	4.8	8.2
1974-84	17.2	9.7	16.8	9.3	16.3	8.9	16.9	9.3

Source: op.cit.

3. The model in short

Structure of regional models

(1) UR(i) = (1 - (E(i)/LF(i)))*100
(2) LF(i) = (LF(i)/POP(i))*POP(i)
(3) LF(i)/POP(i) = f_3[SE(i)/POP(i), EE(i)/POP(i),MIG(i)/POP(i)]
(4) E(i) = EE(i) + SE(i)
(5) SE(i) = f_5[PROFITS(i)/SE(i), TIME, UR(i)]
(6) EE(i) = EIND(i) + ESERV(i) + OTHERS(i)
(7) EIND(i) = HOURS(i)/HM(i)
(8) HOURS(i)= HOURS*(i) + HSF(i)
(9) HOURS*(i) = f_9 [VAIND(i), WIND(i), TIME]
(10) UTL(i) = VAIND(i)/VAIND*(i)
(11) HM(i) = f_{11} [CHOURS, UTL(i), VAIND*(i)/HOURS*(i)]
(12) ESERV(i)= f_{12} [VASERV(i), ELAG(i), HSF(i), WSERV(i)]

List of Symbols (*)

UR = Unemployment rate (ILF)
LF = Labor Force (ILF)
E = Employment (ILF)
POP= Population (I)
SE = Self-employment (ILF)
EE = Employees (ILF)
MIG= Index of domestic migration (1960=100) (I)
PROFITS = After tax corporate profits
TIME = Linear trend
EIND = Employees in industry (INA)
ESERV= Employees in private services (INA)
OTHERS = Other employees
HOURS= Worked hours in industry (INA+ML)
HM = Hours per worker in industry (ML)
HOURS* = Optimal hours in industry
HSF = Wage supplementation fund (number of hours) (I)
VAIND= Value added in industry at 1970 prices (INA)
VAIND* = Potential value added in industry at 1970 prices
WIND = Hourly labor cost in industry at 1970 prices (INA)
UTL = Utilization rate in industrial production (Wharton School)
CHOURS = Negotiated weekly hours
ESERV = Employees in private services (INA)
VASERV = Value added in private services at 1970 prices (INA)
ELAG = Excess labor in agriculture
WSERV = Per capita labor cost in private services at 1970 prices (INA)
i = {North, Center, South}
(*) Sources are reported in Appendix 2

Each regional model has 5 stochastic equations and 7 identities. The estimates of stochastic equations are reported in Tables 5-10 , where more details are provided both on specification and testing . A short explanation can be found in section 4 , while the model as a whole is described in Fiorito (1984) . The first equation defines the unemployment rate, which is endogenized through labor force and employment. The labor force is obtained in equation (2) by multiplying the working age population by the corresponding participation rate. The latter is estimated in equation (3) through a modified version of the discouraged worker hypothesis (Tella, 1964). A domestic migration index is introduced to account for regional and sectoral flows. A second characteristic of our version is that the employment variable enters equation (3) with two separate components - self employment and employees - because the first (5) is in fact a supply decision of the worker (labor/leisure choice) whereas the second corresponds to the firm's demand for labor at the given real wage. Therefore self employment depends upon profits[2] and structural variables such as the unemployment rate,which should capture the marginal components of independent workers. Total employment is obtained in equation (4) as the sum of self employment and employees (6). The latter is, in turn, the sum of employment in industry and in private services (both endogenous) and of "other components" such as agriculture, construction and government which are considered exogenous, given the large share in this variable of government employees.

Employment in industry is defined in equation (7) as the ratio between total worked hours (8) and hours per worker (11) , that cyclically fluctuate around the "normal hours" and an index of potential productivity .These "normal hours" are approximated by the hours negotiated between unions and companies . Because of labor hoarding the notional demand for labor (9) cannot be estimated by regressing actual hours (8) - say - on output and factor prices since part of the paid hours exceed the production function requirement. We approximate then the optimal hours (9) by subtracting from actual hours a proxy for labor hoarding.

Hoarded hours are proxied by the number of unworked hours paid by the Wage Supplementation Fund (HSF). By using this proxy for notional hours in a traditional Cobb-Douglas specification (value added, labor cost, exogenous productivity trend) we obtain weakly increasing labor returns. Conversely, when we measure - as usual - labor input by total hours (8), returns increase considerably as typically found in labor demand literature.

In the regional model value added is exogenous in industry and services and enters as a proxy for output in the firm's short run production decision. The capacity utilization index in industry (10) is the ratio of actual to potential value added in real terms. This is obtained by interpolating among peaks (Wharton School). Similarly we obtain the proxies for excess labor supply in industry and agriculture which enter the equation of employees in private services (12) by augmenting the typical production function arguments (value added and factor prices) with proxies of sectoral mobility. In this case labor returns are also found to be weakly rather than strongly increasing as one would obtain by ignoring the sectoral shifts occurred in labor allocation.

4. Estimates

As we said before, our goal is to explain which patterns of Italy's regional growth may determine the corresponding unemployment differences. This is also why we have decided to analyze only a specific subset of the more general macroeconometric model from which the sub-models are extracted. Thus the exogeneity of such variables as sectoral value added, wages and prices (which in the aggregate model are endogenous) can be justified in terms of model manageability and of the possibility of evaluating the regional multipliers of such widely available prospects of the national economy , as , say , overall and sectoral.

4.1 Labor supply

The estimation of the participation rate shows significant coefficients and theoretically correct signs for all regressors. To take into account the structural determinants of the participation rate we have included among the explanatory variables a migration index that enters the equation as a percentage of the population in each area. The negative sign of this variable depends upon the behavior of individuals and of families in each area. In particular, the negative sign in the equation of Southern Italy reflects the reduction of the labor force implied by migration flows. As we previously mentioned, we modify the discouraged worker hypothesis by distinguishing between self employment and employees. Indeed, we

think that the cyclical effect (i.e. discouraged effect) should be larger for the employees since in this case the hiring decision rests on the firm which is affected by business cycle conditions.

The split of total employment into these two components determines a more realistic elasticity of participation rates to employment than that obtained in the aggregate case. Indeed, in this case the estimated elasticities are too close to 1 to reflect the discouragement effect only , while this may depend on the statistical fact that employment is a large component of labor force .

In our estimates , the short run elasticity with respect to employees is higher in the central area where in general labor demand is more sensitive to cyclical fluctuations[3]. Conversely, the elasticity to self employment is higher in the Northern area. This is consistent with the initial hypothesis which considers self employment as a result of a labor supply decision . It is reasonable, therefore, that the higher elasticity of self employment has a larger impact on the participation rate in a more advanced economy such as Northern Italy. In the South this elasticity is almost halved with respect to the North. Thus, in this area self employment emerges as a second best decision of the working age population since it is much more difficult to be offered a job. The lagged dependent variable tries to capture the adjustment process of the participation rate. As expected the speed of adjustment is smaller in the South. This is also consistent with the values of the elasticity of employment.

A less flexible labor maket implies a small probability of entering the labor force and also a bigger inertia of the adjustment process of the labor force. Thus the fact that the estimated discouragement effect is smaller in the South than elsewhere should suggest a different, structural, explanation of the labor force increase in this area . This is also too systematical to be cyclical, exactly as its decrease was too systematical in the first part of the sample. The Central area shows a higher speed of adjustment which corresponds to a labor market where labor supply and demand deal with a flexible, small scale and largerly deregulated environment. Hence the elasticity of participation rate to employees changes is higher too. The second supply equation (SE) shows on the whole parameters which are statistically correct and signs which are those expected. In the South unemployment shows the highest elasticity value; this confirms the prevailing marginal characteristic of self employment in this area, determined by people who are not likely to become employees after a short search.

The earning variable (PROFITS/SE) has the same role as "real wage" in the typical labor supply equation, except that in our case nominal rather than real variables are statistically significant[4] . The

Table 5.

Labor Supply - Participation Rate (LF/POP) GMM Estimates (*)

Regressors	North	Center	South	Italy
$(SE/POP)_t$	0.6768	0.675	0.349	0.381
	(0.0593)	(0.024)	(0.148)	(0.075)
$(EE/POP)_t$	0.5093	0.698	0.390	0.372
	(0.0629)	(0.129	(0.180)	(0.083)
$(MIG/POP)_t$	-7.8978	-2.406	-5.250	-14.321
	(0.7217)	(0.613)	(1.740)	(2.700)
$(LF/POP)_{t-1}$	0.4129	0.334	0.596	0.599
	(0.0493)	(0.113)	(0.128)	(0.0576)
COST.	0.5102	0.028	0.046	0.043
	(0.0172)	(0.024)	(0.027)	(0.0196)
$\alpha(1)$	0.20	0.19	0.12	0.12
	0.33	0.31	0.30	0.29
$\beta(1)$	0.34	0.41	0.26	0.23
	0.57	0.65	0.62	0.58
$\Phi(1)$	-0.07	-0.05	-0.07	-0.06
	-0.11	-0.08	-0.17	-0.15
SE/VM(2)	0.005	0.006	0.009	0.006

Standard errors in in parenthesis.
(1) Short and long run elasticity with respect to :SE/POP , EE/POP , MIG/POP.
(2) Ratio of standard error of regression to mean value of dependent variable.
(*) See Hansen (1982).

Table 6

Labor Supply - Self Employment (SE) - OLS Estimates

Regressors	North	Center	South	Italy
$(PROFITS/SE)_{t-1}$	22.38	16.76	12.14	48.82
	(3.15)	(2.53)	(7.24)	(9.58)
TIME	-47.15	-31.58	-35.21	-101.9
	(9.11)	(7.71)	(11.77)	(23.54)
TMIG	-0.43	-0.26	-0.37	-1.05
	(0.09)	(0.08)	(0.13)	(0.26)
UR_{t-1}	38.59	21.85	47.18	128.81
	(16.85)	(12.25)	(17.86)	(42.53)
COST.	3747.5	1643.7	2544.8	7852.1
	(69.60)	(65.57)	(102.67)	(205.61)
$\alpha(1)$	0.078	0.127	0.04	0.067
$\beta(1)$	- 0.209	- 0.345	- 0.21	-0.23
$\Phi(1)$	-0.157	-0.230	-0.19	-0.18
$\theta(1)$	0.059	0.119	0.19	0.13
SE/VM(2)	0.01	0.02	0.03	0.02
F	437.33	237.52	122.41	338.31
D.W.	2.16	1.39	1.66	2.06
LM(1)(3)	0.22	0.76	0.39	0.16
LM(4)(3)	1.10	1.99	0.44	2.19
F(1,18) (4)	4.60	4.22	2.27	4.71

Standard errors in parenthesis
(1) Elasticity with respect to : PROFITS/SE,TIME,TMIG,UR.
(2) Ratio of standard error of regression to mean value of dependent variable.
(3) Modified Lagrange Multiplier test for first and fourth order autocorrelation.
(4) Lagrange Multiplier test for eteroscedasticity.

estimated parameters display elasticity values which are relatively low, a fact which is consistent with the typical estimates of the substitution effect in panel data (Pencavel, 1987). This value is, however, higher in the North and even more so in the Center, a fact that confirms the view that the Center is an area which may be characterized the spread of its entrepreneurship. The trend variables try to capture the structural changes affecting self employment in the long run.

4.2 Labor demand

4.2.1 Industry

The worked hours equation ($HOURS^{*}$) shows increasing labor returns everywhere. However they are mildly increasing in the North whereas in the Center and particularly in the South they are strongly increasing. This seems to depend on the fact that labor hoarding has not been completely removed from our measure of notional worked hours, except perhaps in the North where international competition pressures are higher. These results can be ascribed both to statistical and economic reasons. Indeed , the worked hours are the product of national account employment (all firms) and a per-worker hours measure reported by a survey (Ministero del Lavoro) of firms with at least 50 employees. Thus, in those areas where there is a majority of smaller firms it is possible that worked hours are seriously underestimated.

An economic explanation of increasing returns is the strong occurrence of labor hoarding which in Italy induces worked hours to adjust quicker than employment. This could be also compatible with the presence of non linear adjustment costs which are proxied in equation (9) by the rate of growth of value added. The real wage - i.e. the labor cost deflated by the value added implicit price - is found to be significant only in the North and in the Center. In the South this variable is not significant. This fact may throw some light on labor demand features in an area where many small private firms coexist with state owned corporations. In this respect, the importance of industrial employment in state owned firms can also explain the non significant effect in the South of the real wage variable (Bodo-Sestito, 1989), since profit maximization may conflict with such policy goals as a minimal industrial employment in the Mezzogiorno The elasticity of the trend variable seems reasonable and shows an

Table 7

Labor Demand-Optimal hours in industry (HOURS*)
OLS-Estimates-(*) (**)

Regressors	North	Center	South	Italy
VAIND	0.930	0.610	0.602	0.683
	(0.145)	(0.760)	(0.087)	(0.163)
DLVAIND	-0.245	-0.158	-0.124	-0.243
	(0.139)	(0.085)	(0.116)	(0.167)
$WIND_t$	-0.486	-0.148	-0.091	-0.358
	(0.126)	(0.051)	(0.09)	(0.130)
TIME	-0.023	-0.023	-0.030	-0.018
	(0.005)	(0.003)	(0.003)	(0.006)
$DUMT_{(1)}$	-0.003	-0.002		-0.003
	(0.001)	(0.0006)		(0.0012)
CONST.	-1.867	1.225	2.273	0.906
	(1.856)	(0.774)	(0.936)	(2.086)
F	103.68	75.74	53.13	46.77
SE	0.024	0.012	0.021	0.027
D.W.	1.46	1.42	2.18	1.51
LM(1)(3)	1.41	1.39		1.35
LM(4)(3)	1.73	1.13		1.00
$F_{(1,17)}$(4)	0.70	0.37		0.54

(*) Natural log
**North and Center ' equations are estimated by OLS. The equation of the South is estimated by GLS (MLE) , AR(2) ; $\hat{e}_1$ = 1.28 ; $\hat{e}_2$ = -0.47 .
The sample of the latter has been restricted to the last 20 observation.
Standard errors in parenthesis
(1) Multiplicative dummy of TREND; 1981,1982,1983,1984 = 1 ; 0 otherwise.
(2) Ratio of standard error of regression to mean value of dependent variable.
(3) Modified Lagrange Multiplier test for first and fourth order autocorrelation.
(4) Lagrange Multiplier test for eteroscedasticity.
DLVAIND = Percentage change of VAIND.

Table 8

Labor Demand - Hours per worker in industry (HM) - GMM Estimates (*)

Regressors	North	Center	South	Italy
CHOURS	0.7389	0.6174	0.4338	0.6796
	(0.0259)	(0.0254)	(0.2972)	(0.0291)
UTL	6.6558	6.1710	3.5918	4.9139
	(0.3276)	(0.5215)	(0.8513)	(0.6089)
VAIND*/HOURS*	-62.130	-79.5396	-116.6868	-75.5265
	(4.9120)	(3.7677)	(5.1816)	(4.2986)
COST.	-173.206	182.2990	874.2265	153.7917
	(64.5252)	(88.7947)	(108.8771)	(72.2574)
α(1)	0.85	0.72	0.50	0.78
Φ(1)	0.36	0.34	0.19	0.26
θ(1)	-0.11	-0.15	-0.20	-0.13
SE/VM(2)	0.014	0.012	0.011	0.016

Standard errors in parenthesis
(1) Elasticity with respect to : CHOURS,UTL,VAIND*/HOURS*
(2) Ratio of standard error of regression to mean value of dependent variable
(*) See Hansen (1982).

exogenous growth of productivity between 2% to 3% with an acceleration starting in the early 80s when the restructuring of industry began.

The equation of per capita worked hours (HM) has to be evaluated taking into account that such an important regressor as the "normal" hours per worker is not observable and must be approximated by available indicators. We have selected as a proxy a linear combination of two different variables: the first is the contractual hours in industry, the second is a Wharton type index of potential productivity which should negatively affect the trend of normal hours per worker . The elasticity of actual per hours per worker (HM) with respect to normal hours has then to be referred to both coefficients. Their sum in absolute value is about one in the North , about 0.9 in the Center and 0.7 in the South.

4.2.2 Tradable services

Labor demand in tradable services (ESERV) displays weakly increasing labor returns and, in the North and Center, a non significant real wage variable. In the South the latter is negative, significant at the usual confidence levels and implies an employment elasticity which is fairly high in absolute terms (0.33) . This result is probably related to the nature of private services in the South which are characterized by minimal units not allowing for the potential disclosing of scale economies. Labor cost becomes then a crucial constraint on expansion as shown also by the corresponding regional estimates of the implicit value added prices for tradable services (Fiorito, 1990). This problem seems less relevant in the Center and in the North , where markets are wider and productivity is higher , so that labor cost becomes relatively less important. Labor demand in services often faces a labor supply which is located in other sectors . Thus , it depends also on intersectoral mobility which enters our equation as a proxy of labor force excess in agriculture and in industry.

It is worth noting that the elasticity of employment to excess labor in agriculture is greater than the corresponding variable for industry which is proxied , as in equations 8 and 9 , by the WSF hours.

However , this result may combine over time two different types of flows , since in the first part of the sample most of the intersectoral flows were starting from agriculture rather than from industry. In the second part the opposite is true . However , this happens in a situation in which the number of

Table 9

Labor Demand – Employees in tradable services (ESERV)– OLS Estimates

Regressors.	North	Center	South	Italy
$VASERV_t$	0.103	0.09	0.103	0.111
	(0.01)	(0.01)	(0.01)	(0.01)
$ELAG_{t-1}$	4897.4	918.91	945.78	6713.7
	(1013.17)	(264.49)	(256.12)	(1187.8)
HSF_t	0.0005	0.001	0.014	0.0008
	($8*10^{-5}$)	($2*10^{-3}$)	($2*10^{-4}$)	($1*10^{-4}$)
$WSERV_t$	-3.718	-2.14	-9.04	-19.834
	(6.35)	(2.72)	(2.71)	(9.22)
COST.	38.963	81.79	110.34	15.870
	(215.71)	(91.43)	(75.86)	(330.63)
$\alpha_{(1)}$	0.825	0.802	0.890	0.904
$\beta_{(1)}$	0.180	0.129	0.190	0.227
$\Phi_{(1)}$	0.034	0.048	0.06	0.044
$\Theta_{(1)}$	-----	-----	-0.33	-0.181
$SE/MV_{(2)}$	0.02	0.02	0.02	0.02
F	428.45	446.6	369.52	607.6
D.W.	1.43	1.73	1.30	1.682
LM(1)(3)	0.92	0.16	2.34	0.07
LM(2)(3)	1.39	0.32	1.62	0.61
F (1,18)(4)	2.79	0.54	0.032	0.10

Standard errors in parenthesis.
(1) Elasticity with respect to :VASERV,ELAG,HSF,WSERV.
(2) Ratio of standard error of regression to mean value of dependent variable.
(3) Modified Lagrange Multiplier test for first and fourth order autocorrelation.
(4) Lagrange Multiplier test for eteroscedasticity.

people involved is much smaller because the big structural changes were already occurred during the 50s and 60s .

5. The model simulation

The three regional models have been simulated dynamically from 1970 to 1984 showing a good forecasting record in terms of the usual statistics or indicators (RMSE, Mincer-Zarnowitz test, Theil's U) reported in Appendix 3. Thus the baseline solution seems a good starting point to evaluate the response of each model to selected exogenous shocks. In particular, we have considered both demand and supply shocks: demand shocks directly affect the level of activity which is approximated in short run models by aggregate or sectoral constant prices value added. Supply shocks affect the level of activity by changing relative prices. Having only one input (labor) in the production function, supply shocks are introduced by changing labor costs while demand shocks are captured by changing exogenous levels of real value added in industry and services. All variables have been shocked one at the time considering a 1% variation which has been held constant over the whole simulation range (sustained multipliers).

5.1 Responses to value added shocks

A unit value added increase in industry (VAIND) raises worked hours (HOURS) , sectoral employment (EIND) and then the total number of employees (EE). However, in industry there is an employment leakage depending on the fact that the increase in capacity utilization (see Equation 10) also raises the number of hours per worker.

Self employment is positively affected by profit increase (procyclical) and negatively by reduction of unemployment rate (UR) for the reasons we have already mentioned. In turn, the increase in employment raises the participation rate and the corresponding labor force level (LF) through the discouragement effect. Since changes in unemployment rate depend on labor supply and labor demand

interactions, it is understood that overall effects on unemployment are mild even in the North, where the most favorable results are found.

Generally, even though to a different extent, demand and supply for labor are procyclical. However the employment response to an increase in the value added always has a declining pattern, whereas labor supply response is generally more persistent. In particular labor supply in the North is more procyclical than in the other regions, presumably because of the higher female participation rate. Therefore, in all areas the reduction of unemployment induced by a higher growth is slight - if not irrelevant (Center and South) - and is confined to the short period. Nevertheless, the increase in employment is not negligible in the North, while elsewhere the demand for labor is much less responsive to business cycle conditions. The sectoral shocks, too, have different patterns in the three regions: in the North no important employment differences are brought about by expanding industry or services while in the Center and in the South services determine most of the increase in employment. The most important difference between the Center and the South lies in the smaller discouragement effect that occurs in the South since labor force changes and participation decisions reflect in this case more structural determinants. However, for at least two reasons this does not imply that in the South it is easier to reduce unemployment: the first is the stickiness of industrial employment and the second is that self employment is much less procyclical than in the rest of the country.

These results show that the typical trade-off between growth and unemployment becomes thin or even disappears when labor supply is strongly procyclical and when labor demand implies increasing rather than constant return. This also suggests that interpretations or models where labor supply is taken as exogenous (Bean-Layard-Nickell, 1986; Modigliani-Padoa Schioppa- Rossi, 1986), cannot understand unemployment dynamics while overestimate the possibility of reducing its level via an expansionary policy. Indeed, these policies can be more or less successful in increasing employment but cannot proportionally reduce unemployment as long as labor supply is procyclical.

In this respect the assumption of a constant (or an exogenous) participation rate in a model of Italian labor market cannot be easily accepted, along with the idea that labor force is changing for demographic reasons only. The evidence of labor mobility in Italy supports this opinion. The flows from the non professional condition towards the labor force are extremely relevant and implicitly bear out the relevance of the discouragement effect (Baussola, 1985, 1988). To explicitly account for this, we have

simulated the model by assuming an exogenous labor force too (Appendix 1 , Tables A10-A12) . As expected the results confirm that unemployment reduction is strongly overestimated under a variety of shocks and policy interventions , which can be contrasted with those where labor force is endogenous (Tables A6-A7).

5.2 Responses to real wage shocks

A unit rise in real labor cost reduces employment in industry (EIND) and private services (ESERV). The former results from the contraction of worked hours in industry (HOURS). In the meantime larger labor costs lower profits (PROFITS) and self employment (SE). Total employment (E) cut determines a contraction of the participation rate and, therefore, of the labor force (LF). Employees are reduced in a way that depends on the sector and the area: the industrial employment response to a labor cost increase is remarkable in the North only , where presumably the amount of hoarded labor is lesser than in the rest of the country.

In the North the impact multiplier of a real wage shock is bigger in absolute terms (-0.5.) than that of value added (-0.3) while in the Center and in the South the opposite holds. Another important difference between the value added and the labor cost shock is that the first does not reach its peak at the beginning but during the second period, since firms seem unable to suddenly recognize transient from systematic demand shocks, being only the latter relevant to hiring of new workers. Conversely , when a labor shock occurs, employment monotonically decreases from the initial peak since wage stickiness perpetuates labor cost increases and does not require that 'surprises' be disentangled from long lasting shocks. By comparing areas and type of shocks one can see that in the Center the value added and the labor cost shocks have, in absolute value, about the same strength. However, this is confined to industry since in services the impact multipliers of the value added and the labor cost are 0.81 and -0.09 respectively. In the South, the industrial value added shock results in a small increase in employment (EIND) which, however, is higher in absolute terms than the labor shock multiplier which again conforms to a decreasing pattern.

These differences in responses characterize the service sector in the South as well. In this case the value added impact multiplier on employees level is particularly high (0.9) and largerly exceeds in absolute value the labor cost one (-0.35), despite the fact that it is not negligible if compared with other regions. Indeed, the relatively low effect of labor cost on employment in the Central area can reflect the exclusion in the worked hours sample of these smaller firms which constitute a large part of local industry. Conversely, the fact that state owned firms have sometimes acted in the South as a last resort employer can explain why in this area employment and real wages are barely related. A second explanation also deals with the effects of special laws that, aiming at subsidizing investment for Southern manufacturing, helped to create in this area an overcapitalized industry with respect to the rest of the country (Siracusano-Tresoldi-Zen, 1986): as a paradox the industrial policy for Southern Italy has not been able to pursue the alleged employment objective while it might have been successful in helping Northern manufacturing to obtain cheaper inputs.

By analyzing model transmission channels, we have already seen the role of income distribution. Because of the increase of labor cost, profits and self employment are reduced. This cumulates with labor cost effects on employees, cutting the level of employment on the whole. The participation rate and, therefore, labor supply are reduced via the discouragement effect. Thus it is not surprising that an increase in real wages may determine a (small) decrease in labor supply as if the income prevailed over the substitution effect. This result also contributes to weakening the link between real wage and unemployment, a fact that should not be welcome since real wages have then to be reduced much more to obtain a notable cut in unemployment.

5.3 Response to government creation of employment

Direct creation of government employment is simulated by shocking the variable OTHERS which refers to the "Other employees", i.e. to goverment employees and, to a lesser extent, to agriculture employees and to construction workers whose activity partly reflects public work programs. The relevant effects of this intervention are transmitted by direct shock to the employees stock (EE) which per se produces an employment increase. As expected, this policy has the highest effects in the

Southern area as it results from the employment and unemployment multipliers. This depends to a large extent on the fact that in the sample mean the variable OTHERS constitutes in the sample mean about 20% of total employment in the North, less than 30% in the Center and about 40.% in the South. The relative shares of employees are 28%, 42% and 63%, respectively, which also correspond to the impact multipliers calculated for each area. The effects on the unemployment rate are also more favorable to the South because in this area labor supply seems more sensitive to structural than to cyclical factors. This also explains also why unemployment multipliers are in this case larger than those found for the North and the Center, even though the benefits in these regions are not negligible if compared with other policies.

A second experiment deals with a unit increase in each region of the working age population. The effect is particularly marked in the South where the impact values on labor supply and unemployment rate are about 0.7 in absolute terms. In this respect it is noted that impulses on labor supply are more persistent than those on unemployment which returns to its original level, as in the other exercises because employment shifts generally decay faster. The demographic impulses on labor supply are weaker in the Central area, with respect not only to the South but also to the North. The impact multiplier for the Center is equal to 0.41 as compared with a value of 0.54 for the North. In the long run the multiplier becomes almost half of the initial value in the North, whereas in the Center the reduction is about 1/3.

The different responses to a demographic shock may be explained by the higher migration flows between South and North and the fact that unemployment in Southern Italy may depend on a combination of inelastic labor demand and a labor supply mostly driven by structural components. These results suggest that the labor market in Southern Italy could receive stimulus both from shifts in the composition of the labor force and from a new spurt of migration flows towards the Center and the North.

6. Combined supply and demand packages

On the basis of previous multiplier analysis we have tried to figure out a possible policy package combining both supply and demand actions. Since Italy is also a small open country we have tried to

take into account a balance of payment constraint on economic growth. In particular we have hypothesized, with respect to the base line solution, a 3% increase in the industrial and service value added and the same reduction of the real labor costs which should correspond - as shown below - to the highest growth of the economy compatible with external equilibrium. The simulation results cannot be interpreted, of course, as standard multipliers since the ceteris paribus conditions do not hold anymore. They can be interpreted, however, as dynamic responses of the model to the implementation of the suggested policy. The sum of the two value added variables is a proxy of the growth of the regional gross domestic product at constant prices. The two corresponding labor cost variables have been deflated by their implicit value added prices , i.e. by industrial and tradable services implicit price deflators. The hypothesized shocks of the value added and real wages try to be realistic i.e. politically feasible and also take into account the impending external constraint to domestic expansion.

In this respect , one of the most accepted empirical regularities in the Italian economy is an import elasticity to GDP which is around 2. Similarly, since the elasticity of physical exports to world demand is believed to be around 1, it is obvious that the GDP growth compatible with the external constraint cannot exceed half of the growth rate predicted for the exogenously given world demand,if exchange rates are supposed to be fixed. Assuming that in the medium term world demand will grow about 5% in real terms, the hypothesized 3% growth of domestic GDP is higher than the rate compatible with the external constraint. To fill this gap in a way that employment is not going to be reduced we have shocked both value added (+) and real wages (-) in industry and tradable services. Assuming that the equilibrium elasticity of domestic prices to unit labor cost is around 0.6 and elasticity of imports to relative prices about 0.5 (Fiorito, 1984), it is easy to show that the values we have chosen for simulating the package are consistent with current trade equilibrium.

However , two other problems are still unsettled: first, because of data limitations the diversification of the external constraint within the three different areas is impossible to evaluate; second, it is impossible to analyze, because of the exogeneity of value added and labor cost, the possible interaction between these variables. The exogencity of value added in the regional models can be perhaps justified if one assumes that income is determined on the demand side as is typical of keynesian models. From this point of view a reduction in real wages determines a reduction of the purchasing power , which implies a lower production and employment level , i.e. a positive covariance between real wages and the level

of activity. However, if the economy lies in the neoclassical regime the covariance between value added and real wages has to be negative since the production decision is independent of the level of demand, while it is affected by cost considerations. In both cases, therefore, real wages and value added cannot be independent but they need to be endogenized in a way related to the dominance either of the demand or of the supply shock. Here we have considered exogenous the market for goods and the wage/price determination. However, this should not strongly bias our simulations if there is a compensation in the sample period between supply and demand shocks such that on the average value added may be considered relatively independent of real wages.

Bearing this is mind, let us present the simulations of our policy package. The effects on unemployment are mild everywhere. This is true in the North too, where the package produces a remarkable increase in industry employees. The response of the unemployment rate is everywhere confined to the short run and implies again a vertical long run Phillips curve. In the model this does not depend on the realization of expectations, but on the fact that the impulses associated with labor supply are more persistent than those of employment. It seems then that this shape of the Phillips curve might also reflect a labor supply inertia which is apparently bigger than labor demand adjustment costs.

In the North self employment is reduced at the beginning of the experiment because of the unemployment cut, while the positive effect of profit increase is limited by the size of the estimated substitution effect. The labor supply increase is also higher in the North because of the larger share of the female work force that amplifies the discouragement effect on the participation rate. As we have seen before, also the employment response is more cyclical in the North even though in the South employment in tradable services is more responsive to real wage changes.

In the Center the simulated policy has a remarkable effect on self employment. In this area entrepreneurship is more sensitive to changes in expected earnings since the substitution effect seems to prevail over that of income. However, the speed of adjustment is relatively low. This is not surprising because starting a self employment career - i.e. deciding in most cases to becoming also an employer - takes more time than simply filling a vacancy. Conversely, if we refer to employees, the increase is relatively low because of the stickiness of employment in the industrial sector where most of the hoarded labor is typically found.

As already mentioned, the policy effects on unemployment are mild in the North but slighter in the Center and in the South. In the South this does not depend, however, on the discouragement effect which instead is more pronounced in the Center. In this area a prominent part of the occupational increase is concentrated into self employment, given the features of an industry in which scale economies do not play an important role because of the semiartisan character of certain finished goods (shoes, dresses, musical instruments etc.) which are typical, even if not exclusive, products of this area. In the South, on the contrary, the decline of state owned corporations and the lack of a widely spread entrepreneurship determines a sticky response of employment. As also shown by our multipliers, employment in the South can significantly increase if either private service or civil service employment are increasing as well. As a result the reduction of unemployment is quite low and is, in any case, bound to the short period only. However, in the South the labor supply adjustment is slower than elsewhere and confirms the view that the increase in the participation rate in Southern Italy depends just to a limited extent on cyclical factors.

Indeed , this is an advantage since discouragement effects constitute one of the typical leakages in any short run policy aimed at reducing the unemployment rate. However, the cyclical response of employment in the South is so small as to nullify this relative advantage so that no fine tuning policy seems successful in reducing the unemployment rate. This happens also because self employment is reducing at the beginning of the shock; afterwards it is growing, but again not enough. As a result the unemployment rate varies slowly because its reduction limits the transition of marginal workers to self employment. At the same time the likelihood of starting an entrepreneurial activity is more limited in the South for several historical and sociological reasons that are beyond our goals and competence. Nevertheless, it is noteworthy that employment in private services responds in the South more than proportionally to the size of the exogenous shocks. Moreover, we found that in the South this increment is more transient. Thus it seems necessary to focus on those policies that seem more capable of reducing unemployment at its frictional level. In general, expansionary policies on the demand side have shown multipliers which are relatively small particularly in the Center and in the South. This is the result of the interaction of two opposite transmission channels, the stimulus on employment and the increase in the participation rate induced by discouragement effect. Quite apart from cyclical factors, an endogenous participation rate is also important in revealing structural determinants which

reflect the composition of population, migration flows and the changing cultural patterns in the sample period.

The responses of supply shocks too do not seem to be immune from the discouragement effect. However, some specific characteristics of the Southern area emerge with respect to the role of tradable services in expanding employment. The interventions we have analyzed separately do not succeed in cutting down on unemployment remarkably and do not take into account the trade balance constraint. A policy package which tries simultaneously to expand aggregate demand and to reduce production cost has some results but the major effects are found in the North only and deal more with the increase in employment than with the reduction of unemployment.

However, we think that an important conclusion emerges. The traditional pro South policies do not seem able to reduce the unemployment rate notably. Our results show that in this area it is more likely to reduce unemployment through the expansion of a modern service sector. In this respect it seems preferable to subsidize tradable services rather than an industrial apparatus , which can survive but not improve by receiving external stimulus.

7. Conclusions

The regional characteristics of labor demand and supply in Italy have been investigated in a model where both components are endogenous. The models in which the labor supply is considered constant or exogenous cannot give an exhaustive explanation of unemployment while they overestimate the possibility of its absorption by simply expanding the economy. The estimates of labor supply and labor demand parameters confirm this consideration and suggest the relevance of both structural factors to labor supply and of labor hoarding to labor demand. As a result unemployment is much less responsive to cyclical fluctuations than expected by any simple textbook analysis. Our results show that the recent upward trend in labor supply depends in the South on structural rather than cyclical factors and reflects both demographic and cultural changes, particularly relevant within the young female labor force. The model simulation evaluates the different response of each region to exogenous demand and supply shocks. The industrial sector in the North seems still able to affect both employment and - to a lesser extent - unemployment. The service sector shows, instead , a relative

homogeneity in the occupational effects all over the country. In the South this is particularly important because the possible creation of a greater number of jobs in private services should dissuade policy makers from continuing to subsidize the industrial sector , merely to maintain the existing employment stock. In this framework it would be preferable to shift incentive policies toward the Southern service sector to, stimulate new entrepreneurial activity that could also help the rise and growth of small and medium industrial firms. The importance of direct creation of employment cannot be denied but in this case it is crucial to evaluate the efficiency of the resource allocation required by each intervention.

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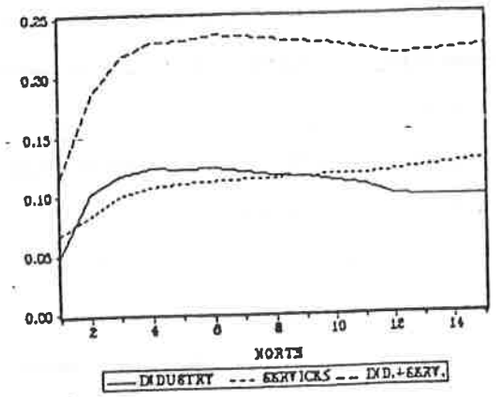
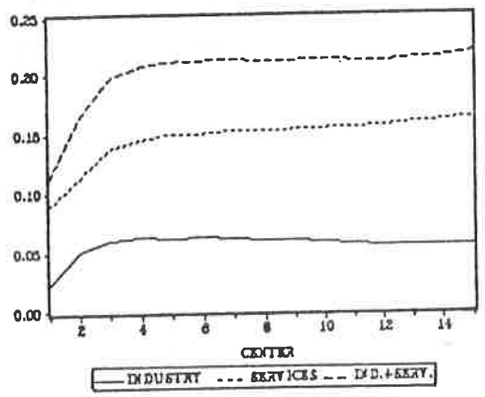
APPENDIX 1 - RESPONSES TO SELECTED SHOCKS

LABOR FORCE RESPONSE TO A UNIT VALUE ADDED SHOCK



LABOR FORCE RESPONSE TO A UNIT VALUE ADDED SHOCK



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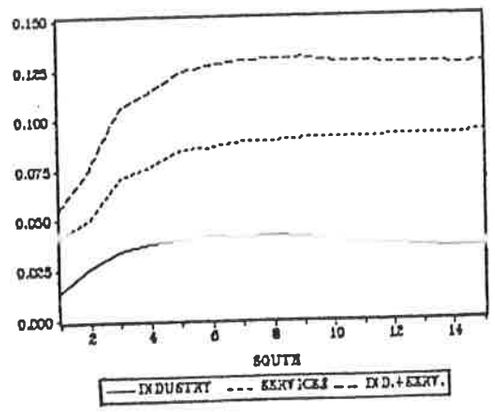
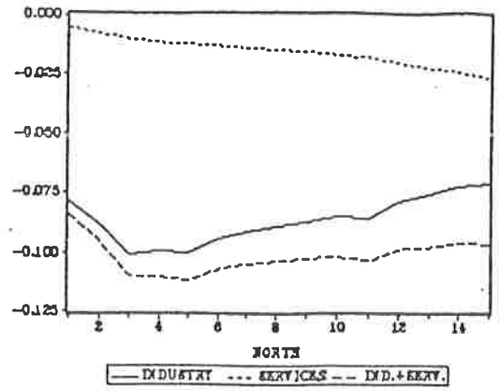
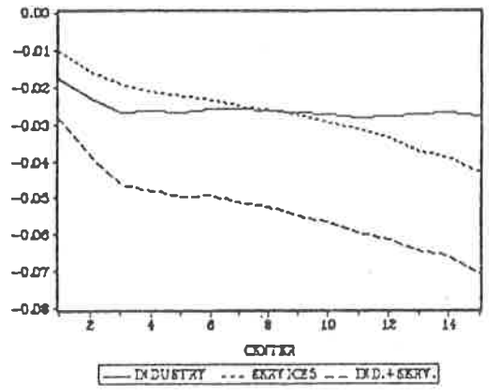


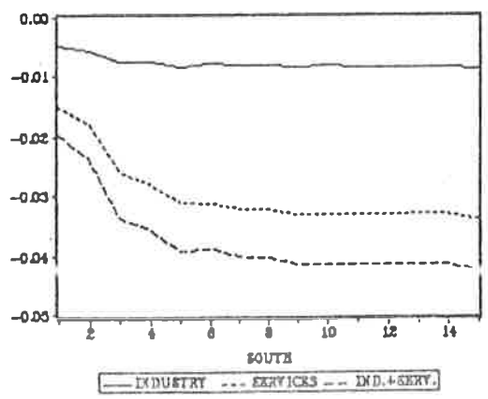
LABOR FORCE RESPONSE TO A UNIT WAGE SHOCK



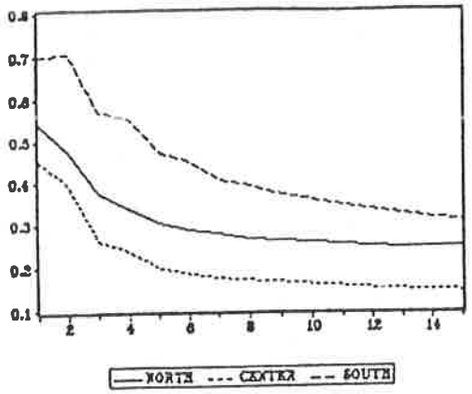
LABOR FORCE RESPONSE TO A UNIT WAGE SHOCK



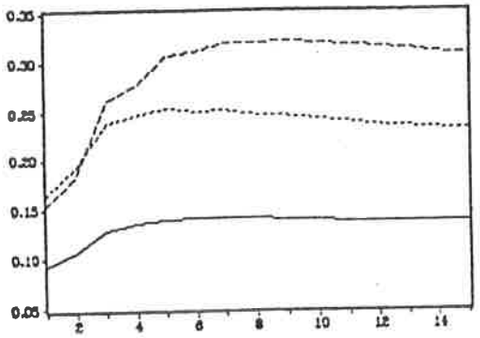
LABOR FORCE RESPONSE TO A UNIT WAGE SHOCK



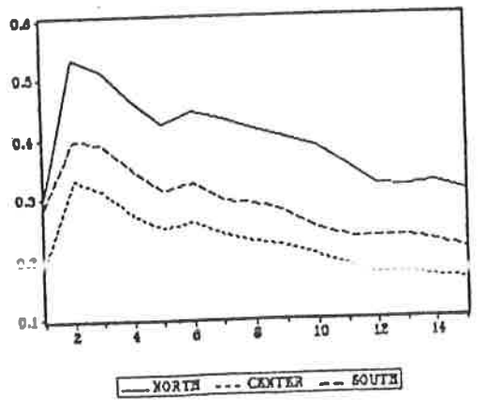
LABOR FORCE RESPONSE TO A UNIT POPULATION SHOCK



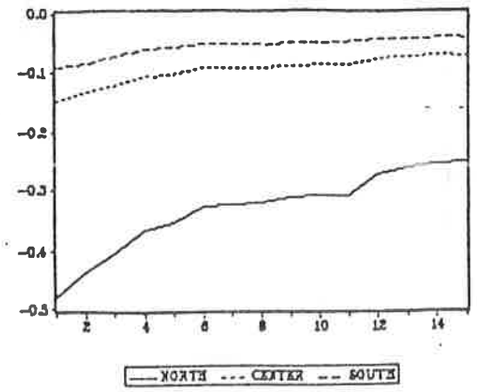
LABOR FORCE RESPONSE TO DIRECT CREATION OF EMPLOYMENT



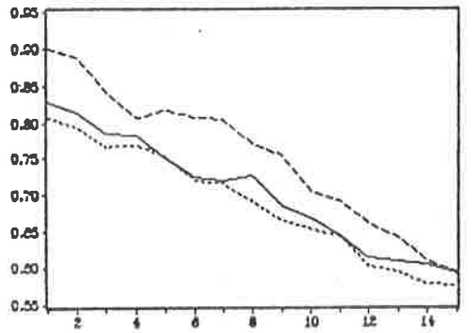
RESPONSE OF EMPLOYEES IN INDUSTRY TO A UNIT VALUE ADDED SHOCK



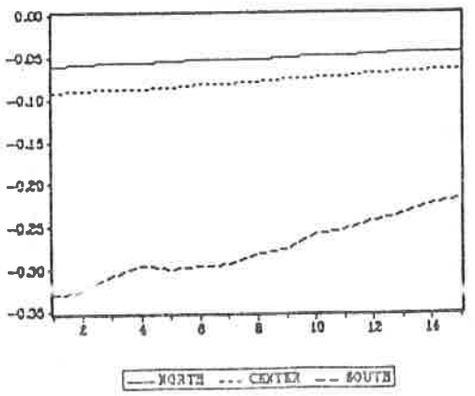
RESPONSE OF EMPLOYEES IN INDUSTRY TO A UNIT WAGE SHOCK

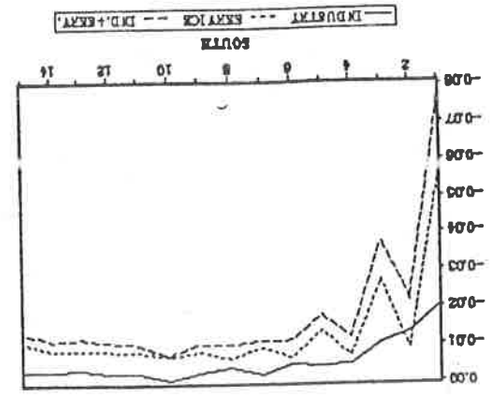


RESPONSE OF EMPLOYEES IN SERVICES TO A UNIT VALUE ADDED SHOCK

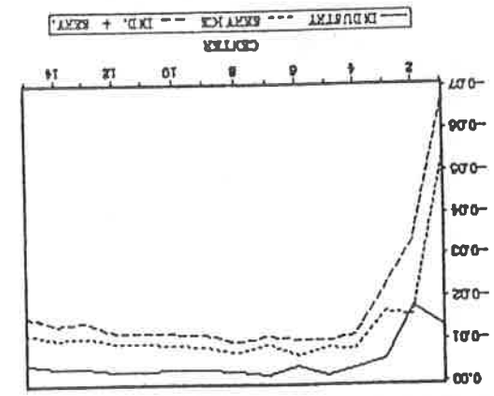


RESPONSE OF EMPLOYEES IN SERVICES TO A UNIT WAGE SHOCK

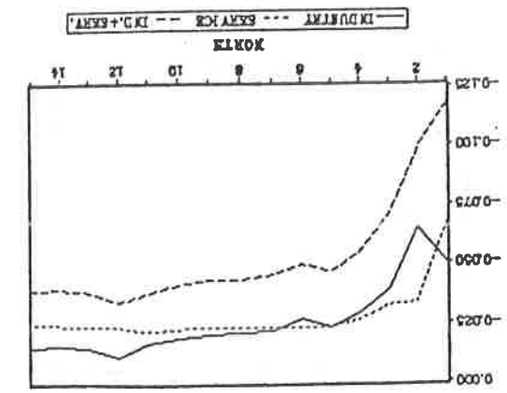




UNEMPLOYMENT RESPONSE TO A UNIT VALUE ADDED SHOCK



UNEMPLOYMENT RESPONSE TO A UNIT VALUE ADDED SHOCK



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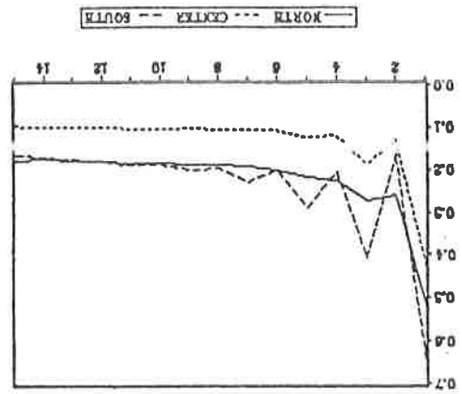
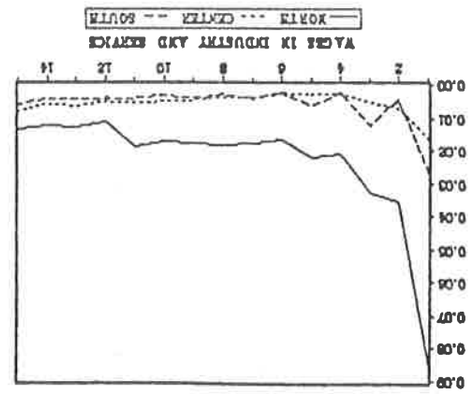


UNEMPLOYMENT RESPONSE TO A UNIT SHOCK IN POPULATION



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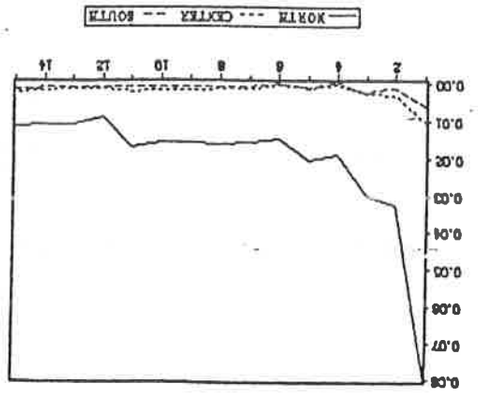
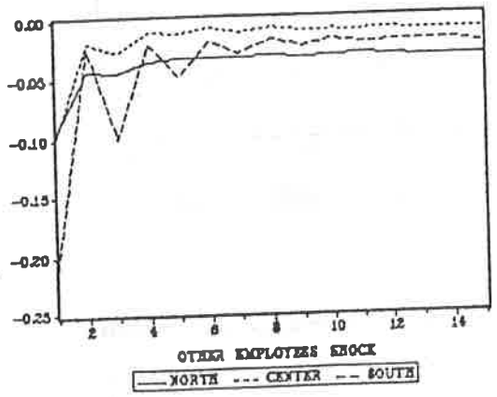
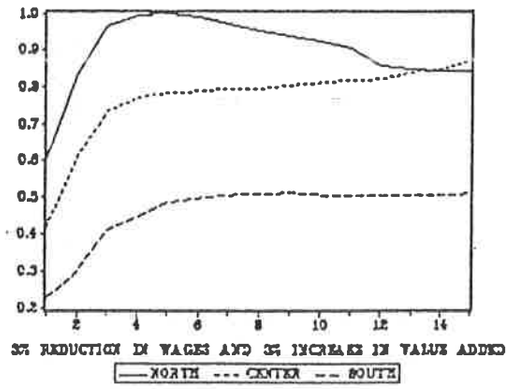


UNEMPLOYMENT RESPONSE TO A UNIT WAGE SHOCK IN INDUSTRY

UNEMPLOYMENT RESPONSE TO DIRECT CREATION OF EMPLOYMENT



POLICY PACKAGE - LABOR FORCE RESPONSE



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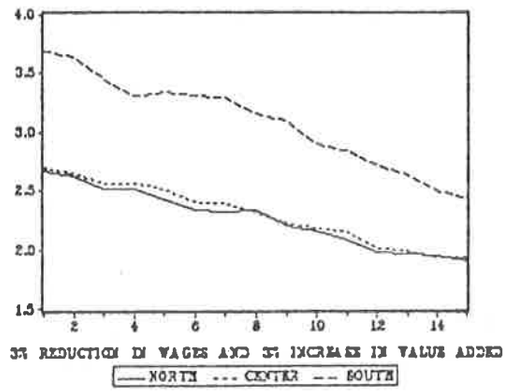

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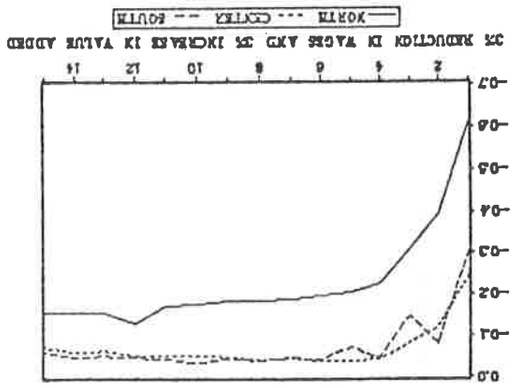

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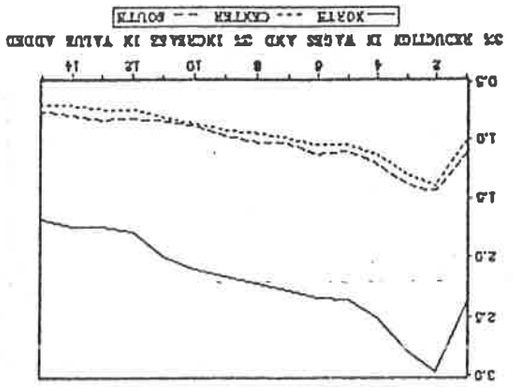
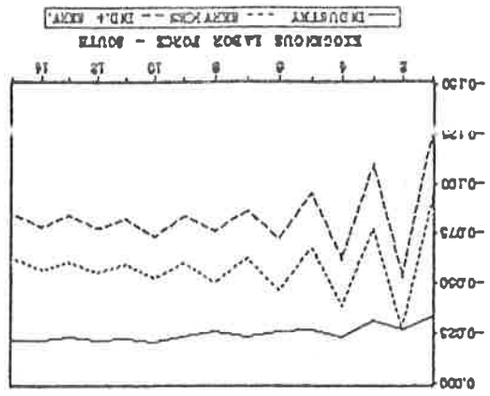
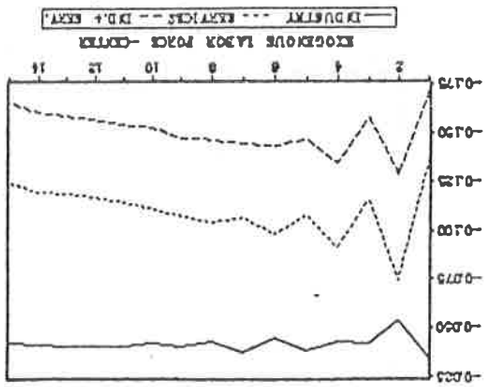


EXOGENOUS LABOUR FORCE - SOUTH



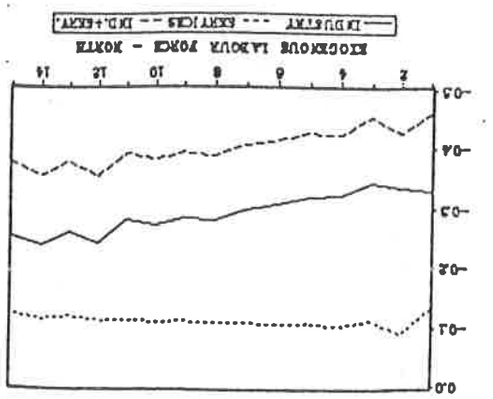
UNEMPLOYMENT RESPONSE TO A UNIT VALUE ADDED SHOCK

EXOGENOUS LABOUR FORCE -CENTER



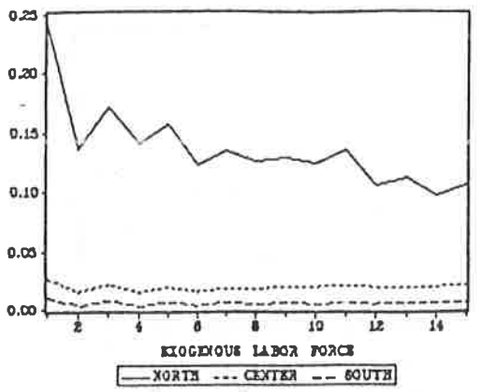
UNEMPLOYMENT RESPONSE TO A UNIT VALUE ADDED SHOCK

EXOGENOUS LABOUR FORCE - NORTH

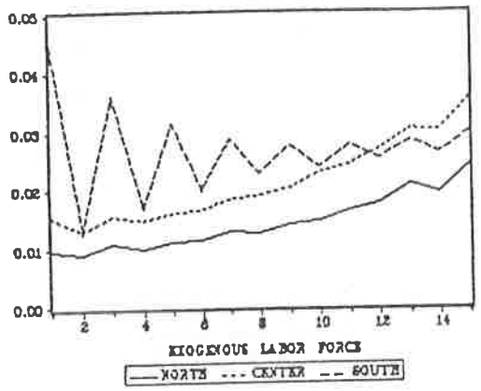


UNEMPLOYMENT RESPONSE TO A UNIT VALUE ADDED SHOCK

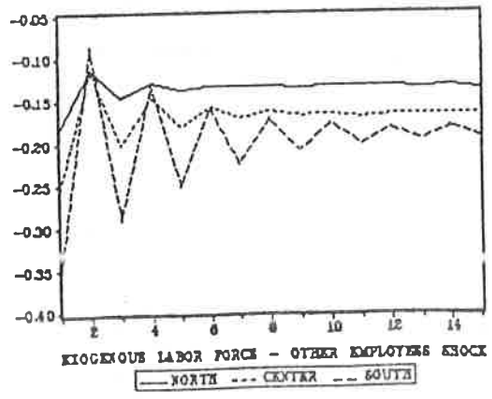
UNEMPLOYMENT RESPONSE TO A UNIT WAGE SHOCK IN INDUSTRY



UNEMPLOYMENT RESPONSE TO A UNIT WAGE SHOCK IN SERVICES



UNEMPLOYMENT RESPONSE TO DIRECT CREATION OF EMPLOYMENT



Appendix 2 -

Data Sources :

I = ISTAT (National Institute of Statistics, Rome)

ILF = ISTAT (Labor Force Survey)

INA = ISTAT (National Accounts)

ML = Ministero del Lavoro (Department of Labor) Survey

All data are annual (1960-84) and define North, Center and South as in ISTAT (1990). National accounts data are prior to the last correction for the underground economy (ISTAT, Annuario di Contabilità Nazionale. Serie 1960-85. Roma, 1987) since the corresponding regional data (ISTAT, 1990) start in 1980 only. All data prior to 1970 except ILF and ML stem from Cananzi- Fiorito (1986) who updated time series originally reconstructed by Cananzi (1985). Proxy variables are discussed in detail in the national model (Fiorito, 1984).

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1 An equivalent expresion for Southern Italy is "Mezzogiorno".

2 To simplify the model description after tax profits are not obtained as a definition (Fiorito 1984), which is used instead to simulate the model.

3 This is less true if one considers industry rather than the overall economy.

4 Here and henceforth at .05 level.

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