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**The Italian Recession of 1993:
Aggregate Implications of Microeconomic Evidence**

by Raffaele Miniaci and Guglielmo Weber



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**THE ITALIAN RECESSION OF 1993:
AGGREGATE IMPLICATIONS OF MICROECONOMIC EVIDENCE (*)**

by Raffaele Miniaci (**) and Guglielmo Weber (***)

Abstract

We use household-level data covering a ten-year period (1984-1993) to investigate the likely determinants of the Italian 1993 recession - the first year since World War II in which private consumption contracted.

Consumption fell for most working-age households and for the self-employed. Our evidence is consistent with the response to permanent negative shocks due to the far-reaching pension reform of 1992 and the introduction of stricter tax compliance measures for the self-employed. This is still true when we control for the role of job losses and the collapse of the retail sector that characterised the early 1990s.

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1 Introduction*

The causes of extreme business cycle fluctuations are hard to assess using aggregate time series data. It is often the case that macro-econometric models produce large forecast errors in particular years, that could be due to a host of contemporaneous changes in exogenous variables. Some of these changes may be short-lived, but others may have a more permanent nature and far-reaching consequences. It is therefore desirable that the likely cause of the forecast error be found. In due course, aggregate data may reveal such cause, but this would normally happen after a long time interval. It is also likely that evidence based on aggregate data might be less than conclusive when different causes have similar short/medium term consequences.

However, if the changes in exogenous variables that are likely determinants of the episode under investigation are such that they affect various groups of the population differently, their relative importance can be investigated by using micro data covering both a previous period of relative stability and the period of interest (boom or recession as that may be).

In this paper we shall address the following question: What might have caused the unprecedented 1993 consumption downfall in Italy? In doing so, we shall look at how the recession affected various socio-demographic groups in the population, and relate these effects to various changes in legislation that were implemented at the end of 1992.

This question is best addressed using household-level data covering a long period of time. Because several changes in legislation took place at the same time, prompted by an unusually serious and unexpected international financial crisis, time series data on aggregate consumption are unlikely to provide an answer: they can only confirm that the consumption shortfall was indeed hard to predict, and provide evidence on the exact timing of the recession. However, disaggregation of total consumer expenditure in individual household expenditures can in this case be highly informative, because the candidate explanations for the recession differ in their predictions on the distribution of losses across consumers.

In general, survey data can be used in two, different ways:

1. to estimate theory-consistent equations (e.g.: consumption growth equations from an intertemporal optimization problem), and test for rejections of the implied restrictions;

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2. to estimate flexible equations (consumption functions), and investigate their predictive ability across groups of consumers.

The former method can be revealing, but requires making assumptions about behaviour, opportunities, expectations formation, etc.. The latter method requires a different set of identifying assumptions and normally leads to less sharp conclusions, but can be useful in providing direct evidence against clearly formulated hypotheses.

We shall look at the evidence obtained using the latter method by pooling Bank of Italy household survey data for several years (1984-93). For the method to be successful, a particular period of likely instability has to be identified and a well-specified equation must be estimated prior to that period. In our case we shall argue that 1993 was an exceptional year, because of the sharp, unprecedented drop in consumption.

The paper is organized as follows: Section 2 presents some aggregate evidence on consumption and income. It also provides a durables/non-durables split, that may help identify and characterise the years of sudden change. Section 3 discusses the methods used in the paper. Section 4 presents the empirical evidence. Section 5 offers some concluding remarks.

2 Booms and Busts in Italy

In this section we shall briefly document what happened in Italy, where the middle of the eighties saw fast income and consumption growth (for instance, in 1988: 4.2% growth in consumption, 4.1% in GDP) while 1993 was the year of the worst recession in the last forty years (-2.6% in consumption, -1.2% in GDP, see Table 1). Most European countries experienced a few years of high consumption growth in the mid-eighties, and negative growth in aggregate private consumption in the early nineties. Particularly in the U.K. this attracted much media attention, and led several researchers to investigate its determinants (see Attanasio and Weber, 1994, and references therein).

The Italian experience was only partly similar to the British. The Italian boom of the 1980s was less marked than the British consumption boom: in Italy private consumption grew steadily between 1985 and 1991 at rates between 2.5% and 4.2%; in Britain, real consumption grew on average 6.5%

Table 1: Growth rates in real household consumption expenditure (total and durables), real GDP, real gross disposable income, Consumer Price Index and Real Exchange Rate; share of durables 1984-94

	GDP	Household Expenditure			Disposable Income	CPI	Exchange Rate
		Total	Durables	% of Dur.			
84	2.69	2.59	5.32	10.05	0.61	10.8	0.85
85	2.60	2.35	9.55	10.76	1.91	9.2	-1.75
86	2.92	3.70	8.10	11.21	1.60	5.9	2.83
87	3.14	4.17	8.77	11.71	4.32	4.7	2.04
88	4.06	4.17	11.78	12.57	3.86	5.0	-2.70
89	2.94	3.54	9.39	13.27	3.27	6.3	2.36
90	2.13	2.48	0.82	13.06	5.04	6.5	4.02
91	1.20	2.75	3.14	13.11	2.65	6.3	0.48
92	0.73	1.09	1.14	13.12	1.13	5.2	-2.11
93	-1.18	-2.55	-12.24	11.81	-5.01	4.5	-13.44
94	2.18	1.61	1.88	11.84	-1.60	4.0	-2.04

Source: "Relazione del governatore", Bank of Italy

on an annual basis between 1986 and 1988. On the other hand, the 1993 Italian recession was much more abrupt than the British recession of 1991-2.

An explanation of the sustained consumption growth by Italian households in the eighties is offered by Rossi and Visco (1994) who underline how the evolution of the public pension system in the seventies implied a remarkable growth of the pension wealth for some cohorts. Their estimates show a high degree of substitutability between private and pension wealth which could also account for a relevant portion of the decline of the private saving rate in the 1980s¹. As we shall see, this interpretation plays a relevant role in the explanation of the 1993 consumption bust as well.

In Table 1 we present data on key macro-variables over the 1984-94 interval. In the first column we report the real growth rate of GDP, followed by the real growth rates in total consumer expenditure and in expenditure on

¹See also Rossi and Visco (1995). These studies, based on aggregate time series or on a mixture of aggregate and individual data, produce higher estimates of the degree of substitutability between private and pension wealth than studies based on individual data only: see Brugiavini (1991) and Jappelli (1995).

durables alone. In the fourth column we compute the share of durables out of total consumer expenditure, followed by the real growth rate of consumer gross disposable income (defined as the sum of all incomes of the household sector net of taxes - no correction is made for inflation effects on interest receipts or for the depreciation of the housing stock and the stock of durable goods). Inflation and a measure of the year change in the real exchange rate close the Table.

The Table reveals that 1993 was indeed an exceptional year: GDP fell only slightly, but consumer expenditure and disposable income fell much more. In line with what happens in most countries during recessions, savings fell in 1993; what is remarkable is that despite this consumption fell by such large amount.

There are a number of important macro-economic events that could have caused the 1993 downfall in consumption. In April 1992 the General Elections were heavily influenced by a wave of prosecutions for political corruption (the '*clean hands*' investigation) - for the first time a large portion of the electorate was in favour of reducing state intervention in the economy. The new parliament elected a government, led by Amato, with a notional mandate for change. However, it was only the September 1992 Lira devaluation (the Italian Lira was forced out of the Exchange Rate Mechanism of the European Monetary System) that made Parliament willing to entertain serious measures to cut both public spending and the budget deficit and to reduce state intervention in a number of areas. As a result of the currency crisis there were a sizable upward shift in the whole term structure on government securities and the Lira overall devalued 18.1% in real terms against a basket of currencies between August 1992 and December 1993 (the real exchange rate fell by 10.25% over the last quarter of 1992). In the Autumn of 1992, the Amato government announced a number of measures to cut public spending and increase taxation, including some long-term reforms:

- the public pay-as-you-go pension system was made much less generous for all workers with less than 15 years of contributions (the Amato reform)²;

²Pensionable age was also to be gradually raised from 60 for men (55 for women) to 65 (60) between 1994 and 2002. The public sector early retirement scheme was made less generous, the whole life time earnings history became the base for the computation of the pension instead of the average of the last five years, and the new automatic adjustment

- the housing market regulations were relaxed - ceilings to the amount payable in rental agreements were dropped, with a remarkable expected rent increase for tenants in the controlled sector (see Miniaci, 1996);
- taxes were to be raised. The tax package included: higher marginal tax rates on employment income, lower limits to tax paid on self-employment income; introduction of a new municipal real estate tax; one-off taxation of bank deposits and real estate. As a result the overall tax burden on households increased by 5% in real terms in 1993;
- a privatisation programme was also announced.

In 1993 the Amato government collapsed under the weight of allegations of corruption for some ministers, and was replaced by a non-party executive led by former Bank of Italy Governor, Ciampi. Both Amato and Ciampi governments successfully pursued incomes policies in agreement with the largest trade unions: gross earnings fell in nominal terms in 1993 (while inflation was 4.5%), but employment also fell 2.8% in terms of Standard Labour Units. This fall in employment is partly due to the 1991 reform of the state-financed temporary lay-off scheme which was made less generous and substituted in part by a permanent lay-off scheme with benefit transfer (see Bertola and Ichino, 1995).

Some further insight can be gained on the likely causes of booms and busts by looking at different sets of commodities. A natural starting point is to distinguish between durable goods and non-durable goods and services. There are several reasons to be interested in durable goods:

1. they are luxuries - we expect them to be more procyclical than the non-durable component of total consumer expenditure
2. they are often (partly) bought on credit, and are therefore more influenced by credit regulations and interest rates
3. they are a long-term investment (this is particularly relevant if second-hand markets are absent - furniture - or imperfect - cars). Consumers increase their purchases of durable goods when they expect income to grow.

mechanism of the pension was made depending on inflation only and not on wage growth.

Table 1 presents also data on the share of expenditure on strictly durable goods (furniture, domestic appliances and motor vehicles) out of total private consumption. The share steadily increased throughout the period, with the noticeable exception of 1993 (and to a lesser extent of 1990). Real expenditure on total durables increased by 21.6% over the boom years (1987-8), on cars by 22.5%. Expenditure on durables fell by 12.2% in 1993: by far the largest drop was in purchases of motor vehicles (-24.2%), while household durables and furniture fell at much smaller rates.

3 The Method

In this paper we use micro-data to specify age profiles for consumption and to test if these profiles are stable over a particular part of the sample period. The sample is split between a “control period” of relative stability and a “treatment period” of relative instability. In this section we summarise the key ingredients of the method used, that draws on MaCurdy and Mroz (1990) and Attanasio and Weber (1994).

The method requires specifying a ‘consumption function’ over the control period: a fifth order polynomial in age plus cohort and year dummies is the baseline specification. Then we add year-cohort dummies for 1993 (the treatment period): this gives an indication of which cohorts depart from their usual behaviour. Such departures could be due to changes in socio-demographic factors, or to changes in available resources, or to further factors. We can then consider richer specifications, including socio-demographic characteristics, housing tenure and labour supply indicators. This way we can control for these factors: any remaining significance of the year-cohort dummies must be due to omitted factors. If some of the year-cohort dummies are still significant, we can conclude that for some households consumption behaviour changed reflecting some unobservable change in the economic environment (expected future income, perceived uncertainty, etc.). The estimated parameters on the year-cohort dummies may provide a clue to what unobservable factors are likely to be at play.

We estimate conditional means of (log) consumption. Consumption is likely to be correlated with several variables, including some that vary over the life cycle and others that vary over the business cycle. We want to try to isolate age effects and identify the main changes in consumption behaviour in

1993. This is not possible without a theoretical framework and some strong identifying restrictions.

There are several conditioning variables which should be considered in studying consumption behaviour. The theoretical model that is in the background of the analysis is the life-cycle model. We characterize the life cycle profile of various groups of individuals in the population and study its movement over time. To identify life cycle effects using a time series of cross sections we construct cohorts. If X_t^{ch} is a generic variable observed for household h , belonging to birth cohort c and observed at time t we can use the following relation to define its mean:

$$X_t^{ch} = \tilde{\delta}_t^c + \epsilon_t^{ch} \quad (1)$$

where $\tilde{\delta}_t^c$ is the cohort mean at time t and ϵ_t^{ch} represents individual heterogeneity. Estimating equation (1) is equivalent to computing means over cells defined by year and cohort.

If we are interested in conditioning on an additional (discrete) variable, say education, we could define cells over combinations of education, year and cohort. In principle, we could do this for many variables. The problem is that even if we start with a large sample, we end up with very small cells. One simple alternative is to add the controls to equation (1) without interacting them with the year cohort dummies. This assumes that the effect of these variables on the variable under consideration is constant across year cohort cells. This specification implies the following regression equation:

$$X_t^{ch} = \delta_t^c + \gamma' z_t^{ch} + \epsilon_t^{ch} \quad (2)$$

where z_t^{ch} are the control variables.

We can think of two different types of z variables: variables that do not change over the life-cycle (race, sex, to a certain extent education and region of residence) and others that do (demographics, labour supply variables, housing tenure, income and wealth).

Controlling for the two different types of variables is conceptually very different. Ultimately, we are interested in estimating and modelling the δ_t^c . Therefore, controlling for variables that do not change over the life cycle should not affect the estimates of the δ_t^c substantially. If the sample is drawn from a homogeneous population and the control variables are indeed relevant for the level of consumption the only effect would be an improvement in the

precision of our estimate. On the other hand, if the composition of the population from which our sample is drawn changes systematically, even though the variables we control for do not change over the life cycle, failure to include them in the equation can bias the estimation of the δ_t^c . If, for instance, there is differential mortality by education classes, controlling for education might prevent some important biases in the estimation of the δ 's.

When we control for variables that change with age, we want to see to what extent the life cycle behaviour of the variable X is explained by those variables. The δ_t^c will then capture that mixture of cohort, time and age effects that is not captured by movements in the z variables. Controlling for this kind of variables changes the interpretation of the δ_t^c and can be useful if we are interested in testing various hypotheses. For instance, if we think that the increase in consumption in a given year (as measured by movements in the δ_t^c 's for that year) is explained by changes in family composition, we would expect that controlling for family composition would explain the observed movements in the δ_t^c .

In what follows we will also assume that, over the control period, the consumption age profile can be represented as a polynomial in age, cohort and year -specific intercepts:

$$\delta_t^c = \alpha^c + \eta^t + f(\text{age}) + u_t^c \quad (3)$$

If we substitute equation (3) into equation (2) we obtain:

$$X_t^{ch} = \alpha^c + \eta^t + f(\text{age}) + \gamma' z_t^{ch} + u_t^c + \epsilon_t^{ch} \quad (4)$$

Equation (4) (with various sets of control variables) constitutes the basis for our analysis.

In the study we consider the left-hand-side variable is the logarithm of real consumption expenditure (net of housing). When we consider data over 1993, we assume that there have been some structural movements in the profile in equation (4). These shifts might differ among different cohorts and to capture this possibility, we add to equation (4) a set of dummies for each year-cohort cell in the "treatment period"

$$X_t^{ch} = \alpha^c + \eta^t + f(\text{age}) + \gamma' z_t^{ch} + \sum_{j=1}^C \beta^j d_{93}^j + u_t^c + \epsilon_t^{ch} \quad (5)$$

where j denotes the cohort and the d_{93}^j 's are the 0-1 dummies described above.³

These shifts might partly be due to the institutional changes occurred in Italy during 1992-93, which affected different households in different ways according to their demographic and labour market status at that time. If information on these characteristics are available they can be exploited to assess the relevance, and the relative weights, of the institutional innovations on the structural movements. This would provide a deeper comprehension of what caused the drop in consumption in 1993 than the simple introduction of a set of dummies for each year-cohort cell in the "treatment period". Therefore we add to the equation (5), adopted by Attanasio and Weber (1994), a set of 1993 specific variables which identifies those households mostly affected by the changes:

$$X_t^{ch} = \alpha^c + \eta^t + f(\text{age}) + \gamma' z_t^{ch} + \beta'_{93} v_{93}^{ch} + \sum_{j=1}^C \beta^j d_{93}^j + u_t^c + \epsilon_t^{ch} \quad (6)$$

The variables v_{93}^{ch} take account of the structural movements in the profile that can be related to observable shocks and we assume that these shifts differ in the population according to v_{93}^{ch} . Any remaining significance of the year-cohort dummies d_j^{93} must be due to omitted factors, suggesting that for some cohorts consumption behaviour changed reflecting also some unobservable change in the economic environment (expected future income, perceived uncertainty, etc.). Given equation (6) the "treatment effect" for household h in cohort c can be computed as the difference between the actual value of X_{93}^{ch} and the predicted value when the 1993 variables v_{93}^{ch} are set to zero. Therefore the average effect for cohort c in 1993 is

$$AC^c = \beta'_{93} E_{93}^c [v_{93}^{ch}] + \beta^c E_{93}^c [d_{93}^c] = \beta^c + \beta'_{93} E_{93}^c [v_{93}^{ch}]$$

Part of this effect is explained by variables related to characteristics which identify those households affected by the institutional changes:

$$BC^c = \beta'_{93} E_{93}^c [v_{93}^{ch}]$$

³Some of the explanatory variables in (5) may correlate with the error term: this is not a major concern if this correlation is stable between control and treatment period. In the case of employment indicators such stability is unlikely to hold, and the equation should also be estimated by Instrumental Variables.

while the remaining portion of the effect $AB^c = \beta^c$ reflects the effects on consumption of some unobservable change.

Age, time and cohort effects are not separately identifiable. A possible way out is to assume that year effects disappear once age and cohort effects are allowed in the equation (i.e.: $\eta_t = 0$). If this was the case, we would expect the u_t^c to be serially uncorrelated. If serial correlation is instead detected, we can follow Attanasio (1993) and Deaton and Paxson (1993), and allow for restricted year effects.⁴ In our application, we impose restrictions on three of the five possible year dummies, 1987, 1989 and 1991: they have to be orthogonal to the linear time trend and to sum up to zero:

$$\begin{aligned} \eta^{87} + 3\eta^{89} + 5\eta^{91} &= 0 \\ \eta^{87} + \eta^{89} + \eta^{91} &= 0 \end{aligned} \tag{7}$$

Because of the different sample size and sampling design of the 1984 SHIW survey and the unavailability of rents and imputed rents for that year we let the 1984 dummy unconstrained. We do not introduce a dummy for 1993 because the coefficients on the year-cohort dummies for 1993 are unconstrained in (3). In equation (6) the β^j measures the shift in 1993 for cohort j from the control period profile.

This specification is still quite restrictive in that it imposes a tight specification on the way cohort, year and age effects are considered. However, one can check if this parameterization is reasonable by plotting the δ_t^c against age over the control period: if the plot is smooth and well fitted by equation (3) there is little need to entertain more complex specifications. Also, the time series properties of u_t^c can be assessed: if u_t^c is serially correlated we can either specify a richer specification for δ_t^c , change the identification assumptions (7) or at least account for its non-zero conditional mean when discussing the time-cohort effects in the “treatment period”.

Therefore, we impose a tight parameterization on the data over the control period but are extremely flexible in modelling the shifts after that date. The implicit assumption in equation (6) is the existence of a stable age profile that is only shifted (in the intercept) by cohort effects and socio-demographic variables.

⁴It is worth noting that such assumptions implicitly attribute any time trend in the period 1987-1991 to cohort and age effects, not to time (see Deaton and Paxson, 1993)

4 The Microeconomic Evidence

We use five waves of the Bank of Italy SHIW (Survey of Household Income and Wealth), covering 1984, 1987, 1989, 1991 and 1993. The SHIW is widely used in applied work because it contains information on income, consumption, wealth, household characteristics and even on individual labour supply. The key features of the survey are documented in Brandolini and Cannari (1994). It is in general believed that the SHIW contains good quality data on consumption, income and wealth, but it is worth noting that there is little detail on specific items of expenditure. This is particularly so in 1984, where imputed and actual rent cannot be deducted from total expenditure.

Table 2 presents cohort definition and statistics on cell size, average cohort income and consumption (both net of housing costs) and the percentage of households with working children aged 18 or more in the 1993 estimation sub-sample. Cohorts are defined on the basis of the year of birth of the head, where the head of the household is always the husband if a couple is present or the child with highest earnings if these are higher than those of the parents and both of them are out of the labour force.

Table 2: Cohort definition and data description for 1993.

Cohort	Median Age	Cell Size	Average Income	Average Consumption	Family Size	% working Child	Saving Rate
1	27	386	33166	23554	2.927	0.00	28.98
2	32	669	33972	25925	3.209	0.00	23.68
3	37	784	35773	25056	3.468	0.89	29.96
4	42	827	39233	28571	3.718	5.20	27.18
5	47	853	40513	28872	3.729	14.30	28.73
6	52	883	44644	30569	3.582	30.12	31.52
7	57	772	39694	26878	3.161	29.92	32.28
8	62	739	34966	23551	2.605	20.70	32.65
9	67	704	29521	20687	2.183	11.93	29.92
10	72	619	24343	17951	1.869	5.65	26.25
11	77	342	19686	14038	1.699	3.80	28.69
12	82	288	19078	13754	1.555	2.08	27.90

Table 2 reveals some familiar and some peculiar features. As documented on US and UK data, consumption as a function of age is hump-shaped and tracks income reasonably well. It is also the case that family size is hump-shaped, but reaches its peak earlier than consumption. In Figure 1 we display cohort profiles drawn from all available surveys for income and consumption, that confirm these patterns. These facts can be explained in a life-cycle framework with uncertainty, as argued by Attanasio, Banks, Meghir and Weber (1995). It is however noticeable that in Italy household saving rates are high, and do not fall after retirement (retirement age was 60 for males in 1993). One further peculiarity revealed by Table 2 is the widespread cohabitation of working children with their parents. This is a fact that may play an important role in determining saving patterns.⁵

Our aim is to study what caused the 1993 drop in consumption: as documented in section 2 consumer expenditure fell by 2.6% in real terms, whilst GDP fell by a more modest 1.2% and disposable income by some 5.1%.⁶

On the basis of the macro evidence described in Section 2, we could think of a few reasons for the drop in consumption of 1993:

- a) the pension reform could have increased the need to save for younger households (headed by workers aged less than 40) and for households with children in working age due to the reduction of their pension wealth (see Beltrametti (1994) and (1995); Attanasio and Brugiavini (1996));
- b) anticipated permanent falls in real disposable income could have induced consumers to cut spending - and even increase savings. These falls might be particularly significant for self employed households due to the introduction of the so called "minimum tax" in 1992 and to the

⁵The saving rate, defined as 1- average cohort consumption/average cohort income, falls with age after retirement age, but then increases again (cohorts 11 and 12). The smaller cell size of the last two cohorts may be responsible for this pattern.

⁶Over the 1980s the SHIW tracks the time pattern of saving rates reasonably well: a discrepancy arises in 1993, because the SHIW saving rate increases while the National Accounts measure keeps falling (see Pagliano and Rossi, 1992 and Rossi, 1995).

Cohort Profiles

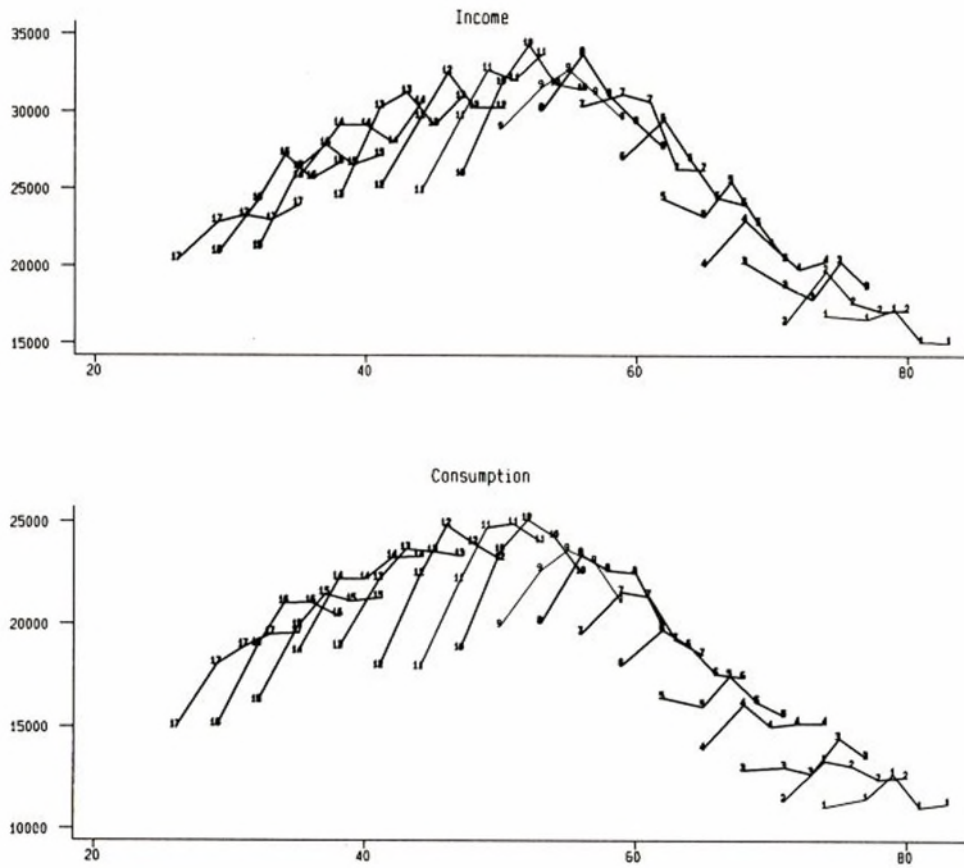


Figure 1

collapse of the retail sector. Self employed who operated in export-orientated sectors, who may have benefited from the Lira devaluation, could have been an exception;

- c) the loss of jobs due to the recession could have affected households with members in working age both directly and indirectly (through fear of losing the job);
- d) the partial liberalization of the housing market could have affected tenants differently according to their type of rental agreement in place, while the introduction of a local real estate tax might have affected homeowners;
- e) the increase in uncertainty due to political instability and anticipated further changes in pension legislation could have affected the need for precautionary savings.

With the exception of e), all other explanations generate testable predictions on the distributional consequences of the shock.

We estimate equations like (6) for the logarithm of total expenditure net of housing and present evidence based on three specifications: from a simple specification where the control variables are simply demographic characteristics, region, education, housing tenure, regional interest rates on bank deposits, to the richest specification, that includes household labour supply characteristics. In all of them we introduced the past regional growth and stock of jobs (corrected for temporary layoffs) and their interactions with the presence of at least one working child (or a child of working age) in the household, in order to assess the relevance of employment dynamics on consumption evolution.

The simplest specification (that explains 50% of the variance of log consumption) underlies column (1) of Table 3 and 4 and Figure 2: all the cohorts aged up to 64 experienced large drops in consumption in 1993. For older cohorts the effects are not statistically significant, with the exception of cohort 11 (aged 75-79 in 1993). This pattern of results is fully consistent with most of the explanations listed above, but rules out the possibility that the general increase in uncertainty may have had a larger negative impact on old-age pensioners. Column (3) shows that conditioning on household specific employment information has significant explanatory power (the \bar{R}^2 increases

to 56%), and remarkably reduces the 1993 consumption drop for younger cohorts.

The estimated parameters show that the “unexplained” 1993 decline in consumption is due to cohorts whose head is of working age, suggesting that the Amato pension reform, permanently reducing the pension wealth of young cohorts, might have played a major role in the 1993 consumption drop. But contrary to what one might have expected in view of the nature of the pension reform, the middle aged cohorts 6 and 7 were remarkably affected. This is surprising because these cohorts (aged 50-59 in 1993) were sufficiently close to retirement age not to be directly hit by the Amato reform, but for the effects of a raised retirement age (this could affect workers in the cohort not already retired nor entitled to early retirement by raising pensionable age from a minimum of zero to a maximum of 4 years. Similar workers in cohorts 1-5 would be subject to the full 5 years increase in pensionable age, though).

The demographic structure of these middle aged households could suggest an alternative interpretation of this result. The SHIW data shows that the cohabitation of grown children with their parents is widespread. As Table 2 reveals, for cohorts 6 and 7 more than 1 in 4 households reports the presence of a working child, and it is likely that a large fraction of these secondary workers might have been directly affected by the pension reform: for a household belonging to cohort 6, for example, employed children are likely to be in their mid-twenties and to have been in work less than 15 years overall.

In order to check for the relevance of secondary workers we run a separate regression where the 1993 dummy is interacted with a zero-one indicator for the presence of grown children (for those cohorts where such presence is sizable). In particular in column (2) we rely on a zero-one dummy for the presence of children aged 18 or more, while in column (4) we rely on a zero-one dummy for the presence of working children aged 18 or more. This set of variables allows us to test if the 1993 effects for cohorts 5 to 9 shown by columns (1) and (3) are in fact due to the presence of two different groups of households: those whose children are of working age (or in work) and therefore are more affected by the pension reform, and those who do not have (working) children living with them (and are therefore less affected by the reform).

Column (4) in Table 4 presents the coefficients on the 1993 indicators when interactions are allowed in the specification. Comparing columns (3) and (4) we see that the negative impact of 1993 for those households in cohorts 5 to 9 with no working children are not significantly reduced, while the parameters of the 1993 - grown children interaction terms are all negative and their joint significance is assessed by an F-test reported at the bottom of the Table. It is therefore clear that 1993 had a different impact on households

Table 3: Estimated coefficients and test statistics

	col. 1	col. 2	col. 3	col. 4	col. 5	col. 6
Δ (Reg.empl) * wh	0.577 (0.259)	0.690 (0.261)	0.977 (0.231)	1.044 (0.231)	1.221 (0.234)	1.223 (0.235)
Reg.empl _{t-1} * wh /1000	0.033 (0.005)	0.032 (0.005)	0.027 (0.005)	0.027 (0.005)	0.026 (0.005)	0.026 (0.005)
Δ (Reg.empl) *wkchld	2.480 (0.327)	2.133 (0.341)	1.379 (0.417)	0.688 (0.450)	0.416 (0.452)	0.406 (0.456)
Reg.empl _{t-1} *wkchld /1000	0.010 (0.005)	0.012 (0.005)	-0.015 (0.006)	-0.013 (0.006)	-0.012 (0.006)	-0.012 (0.006)
interest	-0.009 (0.004)	-0.009 (0.004)	-0.010 (0.003)	-0.010 (0.003)	-0.011 (0.003)	-0.011 (0.003)
$\ln(\text{fam.size})$	0.491 (0.017)	0.493 (0.017)	0.620 (0.017)	0.621 (0.017)	0.620 (0.017)	0.621 (0.017)
$\ln(\text{fam.size})^2$	-0.018 (0.009)	-0.018 (0.009)	-0.039 (0.009)	-0.039 (0.009)	-0.039 (0.009)	-0.039 (0.009)
female head	-0.142 (0.008)	-0.142 (0.008)	-0.102 (0.008)	-0.103 (0.008)	-0.102 (0.008)	-0.102 (0.008)
child/famsize	-0.417 (0.021)	-0.418 (0.021)	-0.160 (0.021)	-0.158 (0.021)	-0.159 (0.021)	-0.159 (0.021)
child1823/famsize	-0.102 (0.029)	-0.086 (0.030)	0.024 (0.026)	0.024 (0.026)	0.022 (0.026)	0.024 (0.026)
child23+/famsize	0.103 (0.029)	0.117 (0.029)	-0.023 (0.028)	-0.025 (0.028)	-0.019 (0.028)	-0.019 (0.028)
pens/famsize	-0.211 (0.012)	-0.214 (0.012)	0.228 (0.015)	0.226 (0.015)	0.229 (0.015)	0.228 (0.015)
tenants	-0.056 (0.009)	-0.055 (0.009)	-0.043 (0.009)	-0.043 (0.009)	-0.044 (0.009)	-0.044 (0.009)
homowners	0.091 (0.009)	0.092 (0.009)	0.076 (0.008)	0.077 (0.008)	0.075 (0.008)	0.075 (0.008)
R-squared	0.5082	0.5085	0.5635	0.5639	0.5652	0.5653
Adj R-squared	0.5071	0.5074	0.5624	0.5627	0.5640	0.5641

Standard errors in parentheses. Number of observations: 34450. A fifth order polynomial in age; year, cohort, educational and regional dummies included in all the specifications.

Table 3: continue

	col. 1	col. 2	col. 3	col. 4	col. 5	col. 6
working head			0.101 (0.012)	0.098 (0.012)	0.099 (0.012)	0.098 (0.012)
working spouse			0.074 (0.008)	0.074 (0.008)	0.077 (0.008)	0.077 (0.008)
workers/famsize			0.484 (0.022)	0.486 (0.022)	0.486 (0.022)	0.487 (0.022)
workchil1823/famsize			0.240 (0.065)	0.237 (0.065)	0.301 (0.065)	0.296 (0.066)
workchil23+/famsize			0.369 (0.063)	0.372 (0.063)	0.413 (0.063)	0.411 (0.064)
working child > 0			-0.006 (0.022)	0.007 (0.022)	-0.004 (0.022)	-0.003 (0.022)
self employed head			0.118 (0.012)	0.119 (0.012)	0.140 (0.012)	0.140 (0.012)
shop keeper			0.055 (0.011)	0.054 (0.011)	0.068 (0.012)	0.068 (0.012)
public sector employee			-0.020 (0.007)	-0.020 (0.007)	-0.026 (0.008)	-0.026 (0.008)
pub.sector * 1984			0.003 (0.019)	0.004 (0.019)	0.012 (0.019)	0.012 (0.019)
shop keeper * 1993					-0.066 (0.029)	-0.068 (0.029)
pub.sector * 1993					0.023 (0.017)	0.025 (0.017)
self employed * 1993					-0.042 (0.022)	-0.040 (0.022)
self employed * 1993 * South					-0.119 (0.034)	-0.117 (0.034)
South * 1993					-0.030 (0.014)	-0.030 (0.014)
(head work exp.< 15)*1993					-0.046 (0.022)	-0.047 (0.022)
(spouse work exp.< 15)*1993					-0.039 (0.020)	-0.040 (0.020)
(# child. work exp.< 15)*1993					-0.312 (0.055)	-0.322 (0.080)

Standard errors in parentheses.

Table 4: Estimates of 1993 effects

	col. 1	col. 2	col. 3	col. 4	col. 5	col. 6
coh1l	-0.217 (0.034)	-0.216 (0.034)	-0.179 (0.032)	-0.179 (0.032)	-0.095 (0.038)	-0.094 (0.038)
coh2l	-0.123 (0.025)	-0.121 (0.025)	-0.107 (0.023)	-0.106 (0.023)	-0.033 (0.027)	-0.033 (0.027)
coh3l	-0.156 (0.023)	-0.154 (0.023)	-0.126 (0.021)	-0.125 (0.021)	-0.069 (0.024)	-0.069 (0.024)
coh4l	-0.151 (0.022)	-0.151 (0.022)	-0.126 (0.021)	-0.126 (0.021)	-0.080 (0.023)	-0.080 (0.023)
coh5l	-0.151 (0.023)	-0.092 (0.031)	-0.134 (0.021)	-0.112 (0.023)	-0.086 (0.023)	-0.077 (0.024)
coh6l	-0.066 (0.022)	-0.070 (0.035)	-0.083 (0.021)	-0.078 (0.023)	-0.015 (0.023)	-0.036 (0.025)
coh7l	-0.108 (0.024)	-0.065 (0.035)	-0.083 (0.022)	-0.064 (0.025)	-0.025 (0.024)	-0.029 (0.026)
coh8l	-0.032 (0.024)	0.024 (0.030)	-0.001 (0.023)	0.032 (0.024)	0.038 (0.024)	0.057 (0.025)
coh9l	-0.014 (0.025)	-0.006 (0.028)	-0.002 (0.023)	0.000 (0.024)	0.022 (0.024)	0.017 (0.025)
coh10l	0.028 (0.025)	0.026 (0.025)	0.020 (0.023)	0.019 (0.023)	0.035 (0.024)	0.035 (0.024)
coh11l	-0.082 (0.033)	-0.083 (0.033)	-0.083 (0.031)	-0.085 (0.031)	-0.072 (0.031)	-0.072 (0.031)
coh12l	0.016 (0.043)	0.017 (0.043)	0.023 (0.041)	0.023 (0.041)	0.035 (0.041)	0.035 (0.041)
coh5ld		-0.108 (0.037)		-0.154 (0.047)		-0.063 (0.052)
coh6ld		-0.001 (0.038)		-0.031 (0.034)		0.063 (0.042)
coh7ld		-0.071 (0.039)		-0.080 (0.040)		0.015 (0.046)
coh8ld		-0.128 (0.039)		-0.176 (0.045)		-0.096 (0.050)
coh9ld		-0.036 (0.044)		-0.041 (0.059)		0.046 (0.063)
$F_1(5, 31182)$	1.63	2.61	1.09	1.21	1.20	1.10
$Prob > F_1$	0.1642	0.0339	0.3587	0.3031	0.3098	0.3562
$F_2(5, 31182)$	2.45	2.18	2.23	2.61	2.90	3.36
$Prob > F_2$	0.0317	0.0537	0.0488	0.0229	0.0127	0.0049
$F_3(5, 31164)$		4.33		5.43		2.23
$Prob > F_3$		0.0006		0.0000		0.0486

Standard errors in parentheses. H_0 for F_1 : $coh1l = coh2l = \dots = coh5l$; H_0 for F_2 : $coh8l = coh9l = \dots = coh12l = 0$; H_0 for F_3 : $coh5ld = coh6ld = \dots = coh9ld = 0$.

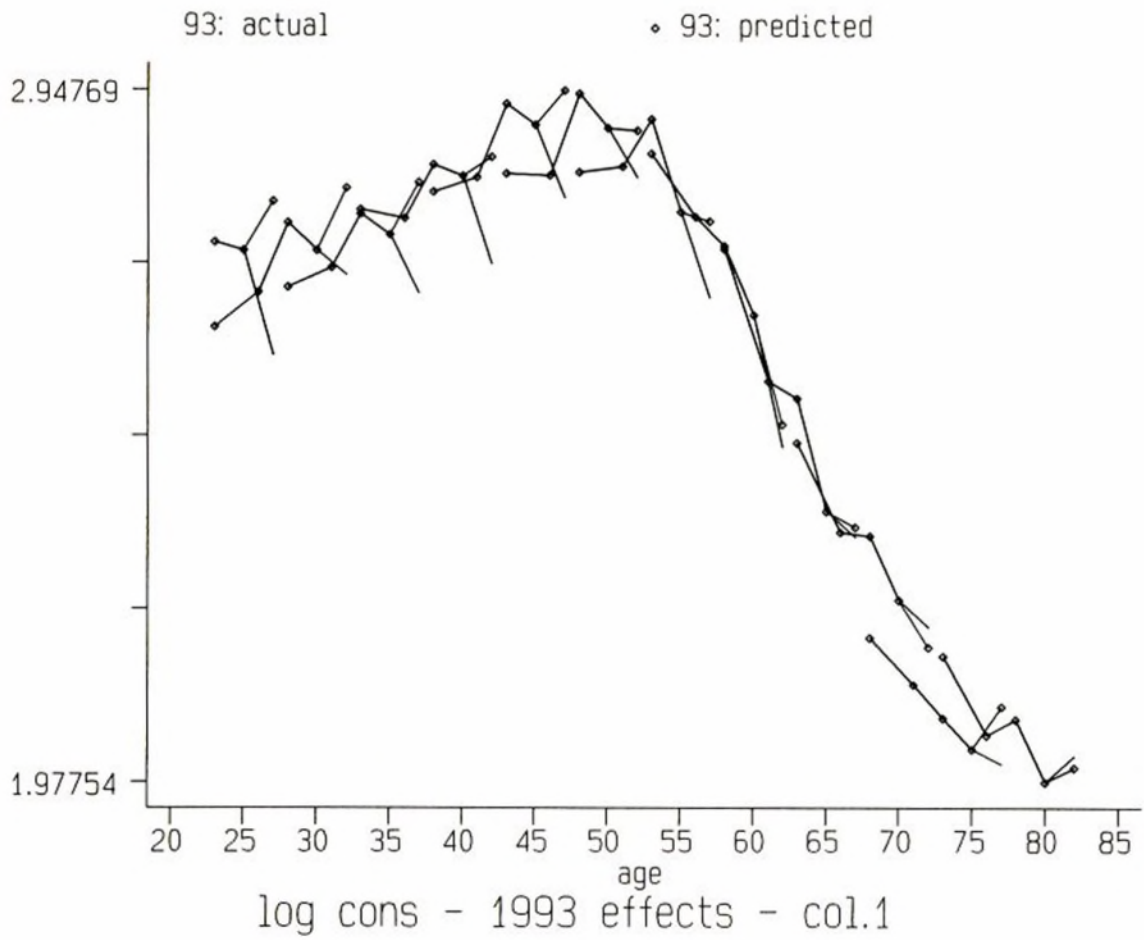


Figure 2

with and without working children.

We control for the introduction of 'minimum tax' on self employment income, the small retail sector recession, the wage freeze in the public sector and the pension reform⁷ in a fourth specification of the model. There we introduce a set of 1993 dummies for the self-employed, shop keepers, public sector employees and the presence of household members with less than 15 years of work experience. We have zero-one indicators for head and spouse in this group and account for cohabitation by adding the ratio of working children with less than 15 years of work experience to the total number of family members.

The introduction of this set of 1993 variables has a remarkable impact on the part of the 1993 fall in consumption that the model fails to explain. In fact the parameters on the 1993 cohort dummies for cohort 1 to 5 are halved in absolute term, as a comparison of columns (3) and (5) of Table 4 reveals. The estimates show that the introduction of a 'minimum tax' and the small retail sector recession badly affected the consumption of the relevant households: shop keepers reduced their consumption by 10.8%; other self employed workers by 4.2%, but self employed in the South by as much as 19.1%. More in general Southern families cut their consumption more than the others. The Amato pension reform greatly affected families with young workers: we predict that for heads who had been working for less than 15 years consumption dropped in 1993 an average 4.6%; 3.9% if the wife was a young worker; a further 7.9% if in a four-member family there was a young working child. Controlling for work experience and self employment status explains all of the 1993 consumption drop for the middle aged cohorts 6 and 7, and only cohorts younger than 50 in 1993 show a statistically significant "unexplained" decline in consumption. Also, we cannot reject the hypothesis that this "unexplained" drop is the same for cohorts 1-5.⁸

It remains to be seen to what extent the average impact of the different cohorts is due to the work experience of their members, i.e. to the Amato pension reform, to the other macro shocks considered and which part of the drop we are not able to explain.

This can be assessed graphically by plotting the average effects as in Figure 4 (based on parameter estimates of column (5)). In this figure each cohort average consumption is a broken line until 1991. In 1993, instead, we have three different points. These points are A (plus), B (diamond)

⁷Attanasio and Brugiavini (1996) stress that the pension reform was particularly harsh on public sector employees, whose generous early retirement schemes were severely curtailed.

⁸Inspection of column (6) in tables (4) and (5) reveals that the interaction terms between the presence of working children and the 1993 cohort dummies become overall insignificant once the work-experience variables are introduced. This confirms the importance of the pension reform.

and C (unmarked). Point A represents what the model predicts when all the 1993 dummies are set to zero. Point C is the true cohort average (this corresponds to the fitted values when the 1993 dummy is set to 1 and the work experience, self employment, shop keeper, public sector employment and South indicators are set to their 1993 sample average). Finally, point B represents the intermediate case of the fitted value when the 1993 dummy is set to 1, the work experience indicators to zero and all the other 1993 specific variables to their sample average. Therefore, the vertical distance AC is the overall 1993 effect (the ‘surprise’); the vertical distance BC is the average effect of the presence in the cohort of young workers; and AB is the residual 1993 effect (i.e.: the 1993 effect for households whose members are not directly affected by the Amato pension reform).

To summarise:

$$\begin{aligned} AC^c &\equiv \beta^c + \beta'_O E_{93}^c [Z_O] + \beta'_P E_{93}^c [Z_P] \\ BC^c &= \beta'_P E_{93}^c [Z_P] \\ AB^c &= \beta^c + \beta'_O E_{93}^c [Z_O] \end{aligned}$$

where β^c is the coefficient of the 1993 dummy for cohort c (see equation (6)); Z_P is the set of three variables relating to the pension reform; β_P their coefficients; Z_O and β_O are the same objects related to the other 1993 specific variables.

Looking at Figure 4 and Table 5 we can see that the statistically significant effect of the work experience indicators explains about 36% of the 1993 consumption fall for cohorts 1 and 2, 20% for cohort 3, 14% for cohorts 4 and 5 and then, as a result of the increased number of working children living with their parents, it rises again to 46% and 40% for cohorts 6 and 7.

A relevant portion of the overall drop is also explained by the other 1993 specific variables. If we consider the effects of the ‘minimum tax’ introduction and the retail sector recession we can compute a new $BC_*^c = \beta'_O E_{93}^c [Z_O]$ similar to BC^c (see Table 5). While for youngest (cohorts 1 to 3) and oldest cohorts (6 and 7) we can argue that most of the explained drop in 1993 consumption is due to the Amato pension reform ($BC^c > BC_*^c$), for cohorts aged 40 to 49 in 1993 the Amato reform plays a minor role ($BC^c \leq BC_*^c$). All the shocks together are able to explain more than 40% of the consumption drop for all but cohorts 4 and 5, with peaks of over 80% (cohort 6).⁹

To summarise: 1993 consumption was below what the model predicts for all cohorts of working age (1 to 7); equal or above for retired cohorts

⁹These results are based on OLS estimates. If employment-related indicators correlate with the equation error, and this correlation differs between control and treatment period, the β coefficients will capture both changes in the relation between the dependent variable and the explanatory variables, and changes in correlation between the explanatory variables and the error term. This affects our ability to interpret them the way we do in the text. However, as we report in the Appendix, our results are robust to the estimation method, at least qualitatively.

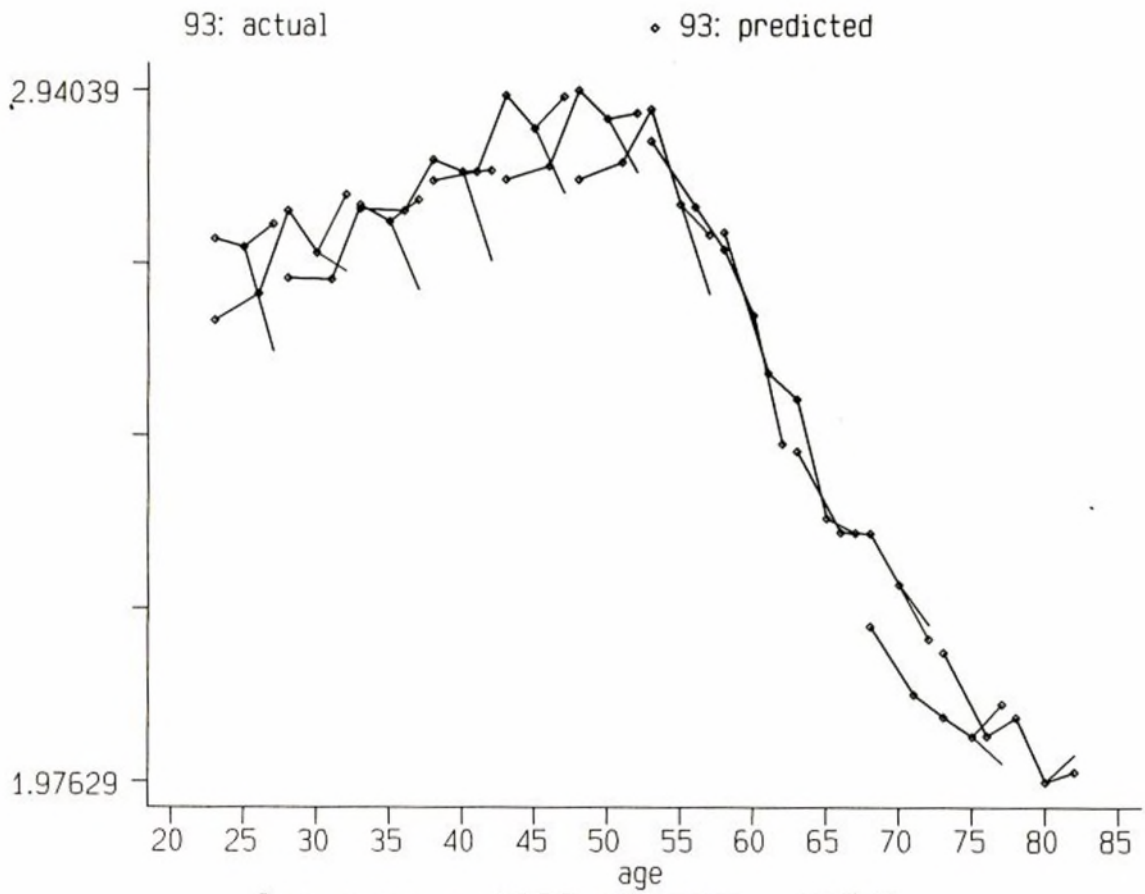
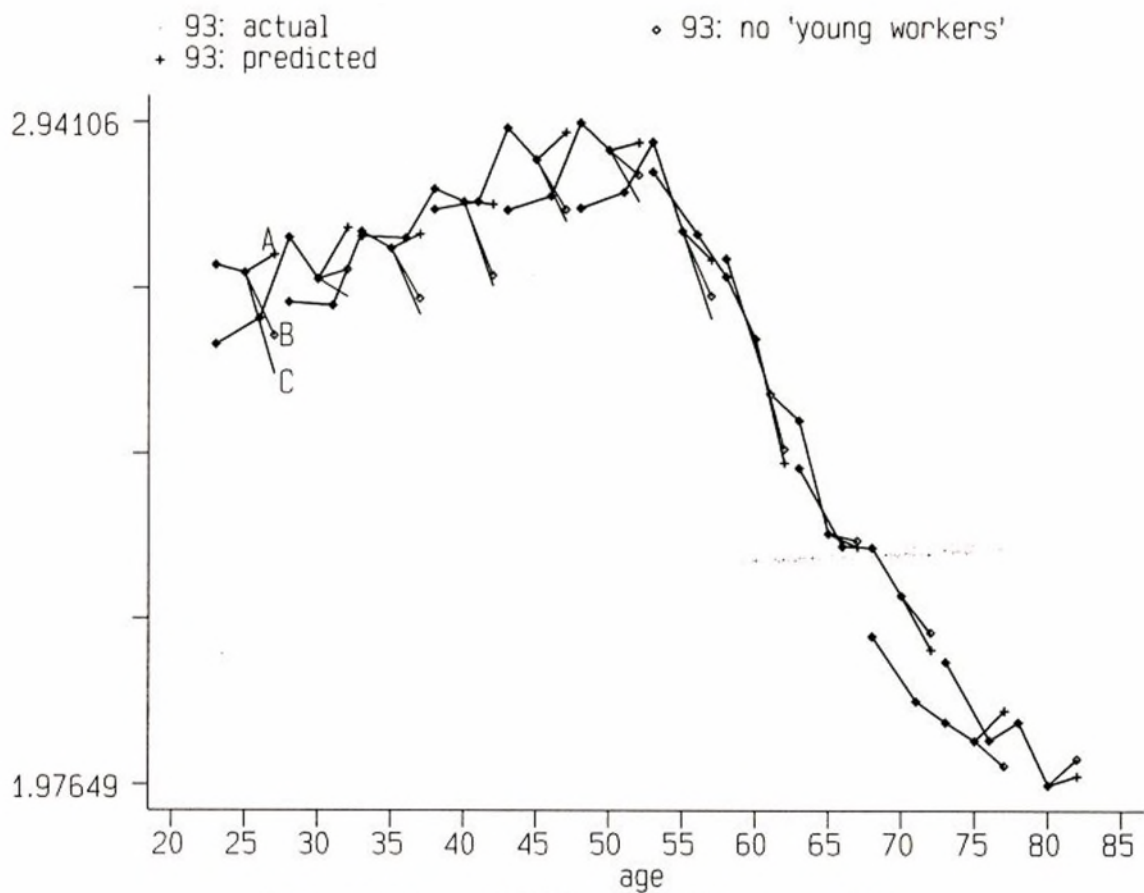


Figure 3



log cons - 1993 effects - col.5

Figure 4

Table 5: Means of Z_P , AC (overall drop), BC (drop due to pension reform)

	Cohorts						
	1	2	3	4	5	6	7
Mid-Age in 1993	27	32	37	42	47	52	57
head young worker	.8922	.5167	.2767	.0525	.0167	.0044	.0051
spouse young worker	.2316	.3336	.2293	.1212	.0377	.0306	.0128
$\frac{(\# \text{young work. child})}{\# \text{ components}}$.0205	.0087	.0061	.0297	.0504	.1214	.1042
AC^c (total drop)	-.1732	-.1001	-.1162	-.1192	-.1303	-.0861	-.0852
BC^c (pension reform)	-.0565	-.0394	-.0235	-.0164	-.0179	-.0393	-.0333
BC_*^c (oth. observ.)	-.0217	-.0272	-.0240	-.0231	-.0262	-.0319	-.0272

Young worker is defined as someone whose work experience is less than 15 years

(with the exception of cohort 11). At least on third of the shortfall for the cohorts aged 25-59 in 1993 can be accounted for by variables that control for the Amato pension reform, the introduction of the 'minimum tax' and the retail sector recession. The relevance of these effects are not constant among cohorts: the pension reform mostly affected younger households and households with working children, while the relevance of the other shocks grows with age.

That part of the 1993 drop in consumption that cannot be explained by the variables listed above is roughly equal to 6% for cohorts 1-5 and zero for the remaining cohorts¹⁰. This 6% drop for working age cohorts could be attributed to a downward revision in expected labour income (possibly related to anticipated further changes in pension legislation, anticipated increases in taxation or the reduced inflation coverage that was agreed upon by the trade unions and the Government in their incomes policy deals). It could also be due to the increased level of uncertainty. It is possible that a role was also played by the increased layoff probability, that is not fully reflected in the region-wide employment indicators used in our specifications¹¹.

When we investigate the differential impact of the recession according to housing tenure, we find that tenants reduced their non-housing expenditure by smaller amounts, other things being equal. We also checked whether the self-employed working in export-orientated areas (such as the North-East) were less affected by the recession, but found little support for this hypothesis. We can therefore rule out important effects of changes to housing rental regulations and of the differential effects of the currency devaluation.

¹⁰This is borne out by the F-test reported at the bottom of Table 5

¹¹We assume here that regional employment indicators have the same impact on households with working head, independently of their age, education and profession, and only capture differential effects for households with working children.

5 Conclusions

The Italian consumption function has been unstable over the last decade. Italy experienced sustained growth in the 1980s, and an unprecedented recession in 1993.

Both these developments could be related to the evolution of the public pension scheme. In the presence of a high degree of substitutability between pension and personal wealth, the growth in pension wealth of the 1980s might have been perceived as an improvement in permanent income leading to an increase in consumption. Also, the 1993 downfall in consumption could find an explanation in the 1992 Amato reform of the public pension provisions. The reform suddenly and remarkably reduced pension wealth for the younger cohorts.

In analysing the impact of the Amato pension reform of 1992, care must be taken to control for other major changes in the economic environment. A relevant part of the population was hit by fiscal innovations (increase in direct tax rates, introduction of a 'minimum tax' for self-employment income) and the crisis of the small retail sector - both contributed to reducing permanent income. Not only: The 1993 recession was the first to exert its full impact on employment, largely because state regulation of labour markets and state-supported employment insurance schemes had been reduced prior to 1993.

In order to assess the contribution of all these factors to the 1993 recession, in this paper we present estimates of a consumption function obtained by pooling several cross-sections of the Bank of Italy survey over a period of relative stability (1984-1991). We then evaluate the average discrepancy between predictions and actual consumption levels for 1993 and find that the families of workers whose pension wealth shrunk most, the self-employed and shop-keepers were worst affected by the consumption downfall.

The relative importance of employment fears *vis-a-vis* the reduction in pension wealth is hard to assess: we show that even in a specification that controls for region wide changes in employment those young households who experienced the largest losses in pension wealth cut their consumption most. This is fully consistent with the explanation that stresses the importance of pension wealth, but could also be explained by assuming that fears of job losses are strongest among young workers.

6 Appendix: Instrumental Variables Results

In the text, we have presented evidence based on the OLS estimates of equation (6), where some of the explanatory variables are employment indicators. In particular, the z_t^{ch} include the employment position of the head, the spouse and the children, as well as sector indicators for the self-employed, civil servants and shop-keepers. Sector indicators are also included in v_t^{ch} , as well as 0-1 indicators based on the work-experience of individual household members (that capture differential effects of the pension reform).

Sector indicators are particularly hard to predict on the basis on non-employment information. For this reason we have dropped them altogether in our comparison of OLS and IV results.

In our IV estimation we treat employment indicators as endogenous, and use corresponding working-age and educational indicators as instruments (because of different female participation between North and South, an interaction term is also introduced for working-age wives who live in the South). We also treat 1993 work-experience as endogenous, and use as additional instruments 0-1 dummies relating to potential experience, computed on the basis of age in 1993 and educational attainment of each adult member.

First stage equations provide a reasonably good fit, and the resulting overidentifying restrictions are not rejected.

Table 6: AC (overall drop), BC (drop due to pension reform)

	Cohorts						
	1	2	3	4	5	6	7
Mid-Age in 1993	27	32	37	42	47	52	57
$AC^c(OLS)$	-.2076	-.1479	-.1083	-.0934	-.1574	-.0807	-.0729
$BC^c(OLS)$	-.0596	-.0465	-.0259	-.0160	-.0181	-.0356	-.0316
$AC^c(IV)$	-.1738	-.1611	-.1144	-.1135	-.1432	-.0807	-.0229
$BC^c(IV)$	-.0799	-.0609	-.0329	-.0154	-.0137	-.0245	-.0220

Even though a formal Hausman test rejects the null hypothesis that all OLS and IV coefficients are the same, the key parameters on the v_t^{ch} variables are close. This implies that the inference we draw on the likely determinants of the 1993 downfall in consumption is largely the same, as shown in Table 6.

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