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Why is Italy's Saving Rate so High?

by Luigi Guiso (*), Tullio Jappelli (**)
and Daniele Terlizzese (*)

Abstract

We provide an explanation for two features that characterize the Italian saving rate: by international standards, Italy is a high-saving country; the Italian saving rate has declined markedly in the last three decades. We compare the size and characteristics of credit and insurance offered to households in the major OECD countries and argue that the strikingly low development of these financial arrangements in Italy may explain the evidence. In the second part of the paper we present a number of empirical tests to assess the effect of borrowing constraints on households' saving. We consider also the potential roles of the public sector, of informal financial arrangements, of bequests and of the earnings profile, and reject them as explanations of the evidence.

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1. Introduction *

Two features characterize the Italian saving rate. By international standards, Italy is a "high-saving" country; the Italian saving rate has declined markedly in the last three decades. We provide a consistent framework to interpret these facts. According to the life cycle hypothesis, they should be explained mainly by differences in demographics and productivity growth between countries and over time (Modigliani, 1990). However, as we argue in Section 2, the differences in the growth rates between Italy and the other major OECD countries are rather small when compared with the large differences in their saving rates: growth appears to generate more saving in Italy than elsewhere. Thus, growth alone cannot account for the high Italian saving rate and for its sharp decline.

We argue that capital market imperfections provide a plausible explanation of the evidence. An economy in which households are liquidity constrained exhibits a higher saving rate than an economy with perfect markets, even if the two economies grow at the same rate. This implies that an identical reduction in growth leads to a greater reduction in saving in the economy with imperfect markets (Jappelli and Pagano, 1991). Thus, the interaction between growth and capital market imperfections may explain not only why Italy's saving rate is high; it may also explain why the reduction in the rate of productivity and population growth of the eighties was accompanied by a sharp reduction in saving.

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In Sections 3.1 and 3.2 we present evidence to show that the level of development of Italian credit and insurance markets is by far the lowest of the major industrial countries. Regulations, high downpayments for the purchase of durables and housing, wide interest rate spreads and limited competition make it considerably more difficult to obtain access to credit and insurance in Italy than in almost all other industrialized countries of comparable level of development.

One important objection to stressing the role of capital market imperfections as a determinant of household saving behavior is that the public sector and informal financial arrangements may overcome private market imperfections. Italians may borrow less and buy less insurance because the family or the government provides insurance efficiently and helps them to circumvent liquidity constraints. In Section 3.3 we address and reject both explanations on the grounds that: (i) private transfers are not disproportionately targeted towards households that face higher income uncertainty or credit constraints, and (ii) the public provision of insurance is no greater in Italy than in other OECD countries.

Having shown that supply factors, rather than other factors, are the likely explanation for the low level of consumer debt and insurance provisions in Italy, we evaluate the impact of capital market imperfection on households' saving decisions. Given the complex interaction between insurance and credit markets, we provide a number of empirical tests to assess the effect of credit market imperfections and earnings uncertainty on households' saving.

Where capital markets are imperfect, consumption growth can be expected to correlate with income growth. We provide standard tests of excess sensitivity for the purpose of comparing the degree of excess sensitivity in Italian data with that of other countries (for the latter case we rely on existing studies). Using aggregate time-series and panel data, we find a comparatively high level of excess sensitivity in Italy (Section

6

4.1), a result which is consistent with the hypothesis that credit market imperfections are the source of the empirical failure of the permanent income hypothesis. However, these tests have little power to discriminate between liquidity constraints and other competing explanations of Euler equations failures (e.g. myopia, durability of goods). So we turn to more direct evidence on the influence that market imperfections may have on saving, using the 1989 Survey of Household Income and Wealth.

In Section 4.2 we investigate whether downpayment restrictions, transaction costs and other mortgage market imperfections force households to save more than they would in a properly functioning mortgage market. We find that the desire to purchase a house, in conjunction with the inability to borrow, increases the aggregate saving ratio by 2 to 3 percentage points (depending on the specification and sample used). We also summarize the findings of Guiso, Jappelli and Terlizzese (1991) who use direct survey information on the subjective variance of earnings to test for the presence of precautionary saving. Risk is found to affect saving and wealth accumulation in a direction predicted by the theory, but the amount of precautionary saving in response to earnings uncertainty is small.

In Section 5 we evaluate alternative explanations for the high Italian saving rate and for its sharp decline, and reject the role of bequests and the slope of the earnings profiles as possible causes. In Section 6 we summarize the evidence and suggest that the approach used in this study is useful to analyze the inter-country differences in saving rates and the response of the Italian saving rate to the imminent liberalization of European financial.

2. The Italian saving rate in an international perspective

From its peak in the early sixties, the Italian gross national saving rate declined by almost 6 percentage points by the end of the eighties (Table 1, column 1). It would appear that the reduction in national saving was due entirely to a dramatic reduction in public saving, while the private saving rate remained roughly constant, or even increased slightly. However, this measure of saving does not adjust for the erosion in purchasing power of the stock of nominally denominated debt due to inflation or for the depreciation of the capital stock.¹

Owing to the depreciation's increased share of gross national income, net saving declined by 10 percentage points between 1960 and 1988 (Table 1, column 4).² After the maximum reached in the early sixties, corresponding to the peak of the long cycle of the so-called economic "miracle", the national saving rate diminished in the late

¹ In 1985 the Italian national accounts were substantially revised, and no official estimate of depreciation exists. The data for the depreciation of private capital stock are unofficial estimates based, in part, on the old national accounts. In measuring current government saving, the depreciation of the stock of public capital is included among outlays. Given the nature of public capital, this depreciation, as a percentage of the capital stock of the public sector, is considerably smaller than the depreciation of private capital. However, this item is likely to be underestimated in the national accounts reflecting, in part, the difficulty of estimating depreciation of infrastructure and public buildings. If public depreciation is underestimated, government and national savings are actually smaller than those reported in columns (4), (6), (7) and (9) of Table 1.

² Any theory of saving refers to net, rather than gross, saving. Note, however, that the depreciation adjustment is appropriate if the introduction of new capital equipment does not bring new technology into the production process. If the old technology is replaced by new technology, growth could be fast even if net capital formation is zero. For this and other issues regarding the correction of national saving for depreciation, see Lipsey and Kravis (1987).

sixties. In the early seventies saving recovered, but fell sharply after the second oil shock. In the eighties the saving rate continued its long-term decline.

The inflation-adjustment is extremely important in Italy, on account of its high rate of inflation, especially in the seventies and early eighties, and the high level of the stock of public debt in the eighties. In contrast to the unadjusted figures, the inflation-adjusted saving rates indicate that both private and government saving contributed in roughly equal measure to the reduction in the national saving rate (Table 1, columns 8 and 9). This brings us to the first fact: the Italian saving rate - whether national or private - has declined substantially over time.

Table 2 reports the net national saving rates and the net private saving rates adjusted for inflation of the seven major industrialized countries (from here on, G7) and of three Scandinavian countries.³ For each country we also report averages of the rate of growth of gross national product over ten-year periods.

Table 2 indicates that, by all standards, Italy is a high-saving country, with private and national saving rates consistently above both the OECD and the G7 averages. In terms of national saving rates, Italy ranks second in the three decades (after Japan); in terms of private saving, it ranks second in the sixties and seventies (after Japan) and third in the eighties (after Japan and Canada). This is the second fact: the Italian saving rate is high by international standards.

Columns (10) and (11) of Table 2 indicate that saving declined in most OECD countries. But the decline in the Italian rate was more evident: private saving declined by 6.6 points, against a G7 reduction of 3.6 points and an OECD decline of 2.4 points.

³ The unadjusted private saving rates are misleading because Italy has a higher-than-average inflation and stock of public debt. Thus, they are not reported. Since income, consumption and depreciation are not strictly comparable across countries (Hayashi, 1986), some of the differences emerging from Table 2 may merely reflect different accounting practices.

The life cycle hypothesis points mainly to differences in population and productivity growth rates to explain why saving changes over time and why it differs between countries. However, the differences in the rate of growth rate of Italy and the G7 are not sufficient, *ceteris paribus*, to explain the large differences in the respective saving rates. In the sixties the Italian private saving rate, adjusted for inflation, was almost 5 percentage points above the G7 average, but its growth rate was only 0.3 percentage points above average. In the seventies the differences were 3.4 and 0.4 points respectively, while in the eighties private saving in Italy was 2 percent above average, but growth was actually below average (-0.7 points).

Not even the stripped-down version of the Modigliani-Brumberg (1980) lifecycle model, which emphasizes the effect of growth on saving by assuming a flat earnings profile through the entire life of the individual, can explain these large differences in saving only by relying on differences in growth. According to this model, the predicted difference between the Italian and the G7 saving rates is only 0.6 percent in the sixties, 1.1 percent in the seventies and negative in the eighties.⁴

$$s = 1 - \frac{M}{L} \frac{(1+\gamma)^{L} - 1}{(1+\gamma)^{L-M} [(1+\gamma)^{M} - 1]}$$

⁴ In this version of the model individuals live L years, work in the first M years and earn a constant income through their working life. The labor income of each generation grows at at a rate γ . If the rate of interest and the rate of time preferences are equal to zero, the aggregate saving rate s can be written as:

The calculation in the text assumes a value of 53 for L and 40 for M. The values of γ are given in Table 1. For Italy, the simulated saving rates in the three decades are 19.0, 15.9 and 9.9 percent. The corresponding values for G7 are 18.4, 14.8 and 12.6 percent. The model also consistently underpredicts the differences between the Japanese and G7 saving rates. On the other hand, the model consistently over-predicts the saving rates of Finland, Norway and Sweden and cannot account for the their low saving rates.

One way of checking that growth alone cannot explain the difference in saving between Italy and the G7 is to compare the ratios between saving and growth between countries (Table 2, columns 12, 13 and 14). By this measure, Italy ranked first in the sixties and eighties, and second in the seventies.⁵ This ranking already shows that the Italian saving rate was high not only in absolute terms, but also in relation to its growth rate.⁶

Another possibility is that Italy has a higher-than-average private saving rate because it has a higher-than-average government deficit. This would be the prediction of the much discussed Ricardian Equivalence Proposition (Barro, 1974) which asserts that national saving should be referred to, because people incorporate the budget constraint of the government in their own budget constraint. However, as implied by the figures in Table 2, in the last three decades the Italian current deficit (adjusted for inflation) has not been higher than in the OECD. Further, contrary to the proposition, private saving has not risen to offset the increase in government deficit in the eighties (if anything, the opposite is true).⁷

A more formal way of checking that growth cannot explain Italy's high saving rate is to run a pooled regression over countries and (ten-year) periods that excludes

⁵ We have also run pooled time-series and cross-country regressions of saving on growth in the G7 countries, excluding one country at a time. The largest reduction in the coefficient is obtained when Italy is excluded from the sample. For brevity, the results are not reported.

⁶ Also in Japan in the seventies and in the eighties the ratio between saving and growth is high by international standards; in these periods Japan's extraordinary performance is not enough to account for its high saving rate. On the other hand, the Scandinavian countries' private saving rate is low not only in absolute terms, but also with respect to their rate of growth, which was roughly in line with that of the other OECD countries.

⁷ In the context of the Italian economy the issue of Ricardian Equivalence is analyzed by Modigliani and Jappelli (1987) in a historical study and by Nicoletti (1988) in an international comparative study.

Italy to predict its saving rate. In all cases, and even when we add other OECD countries or other regressors - such as the dependency ratio - the coefficients tend to under-predict substantially the Italian private saving rate in all three periods. Two typical regressions for the three decades, both excluding Italy from the sample, are as follows:

$$\begin{split} S_{\mathbf{p}} &= \begin{array}{cccc} 0.092 &+ 2.361 \ \rho &- 0.178 \ S_g &- 0.191 \ \text{Dep} & \text{SE} = 0.038 \\ (0.048) & (0.591) & (0.319) & (0.139) \end{array} \quad & \text{SE} = 0.038 \\ S_{\mathbf{p}} &= \begin{array}{cccc} 0.094 &+ 1.429 \ \rho &- 0.486 \ S_g &- 0.064 \ \text{Dep} & \text{SE} = 0.042 \\ (0.048) & (0.591) & (0.319) & (0.139) \end{array} \quad & \text{SE} = 0.042 \\ \text{Sample: 60 observations} \\ \text{of } 20 \ \text{OECD countries} \end{split}$$

where S_p and S_g are, respectively, net private and public saving adjusted for inflation, ρ is the rate of growth of gross national product, Dep is the ratio of the population under 15 to the total population, and standard errors are reported in parenthesis.

In the first regression the difference between the predicted and the actual Italian saving rates are -3.3 in the sixties, -3.3 in the seventies and -2.5 in the eighties. In the second regression the differences are: -4.8 in the sixties, -3.4 in the seventies and -1.1 in the eighties.⁸ Regressions with the national saving as the dependent variable yield similar results. The data tell us that, by international comparison, the Italian saving rate tends to be high even when differences in growth and other variables are taken into account.⁹

⁸ The data source is Modigliani (1990). The OECD countries not included in the estimation are Italy, New Zealand, Yugoslavia and Turkey.

⁹ A similar Italian saving "puzzle" was discovered by Koskela and Viren (1989). In a cross-country analysis of the determinants of saving, they use a dummy for Italy on the ground that "the household saving rate behaves in a way that cannot be simply accounted for by the explanatory variables specified in the equation."

Since differences in growth cannot explain the evidence, we turn to other factors that can account for the high Italian saving rate as well as for its sharp decline. The issue which we think deserves the closest scrutiny is the possibility that the main difference between Italy and the other OECD countries is the level of development of its credit and insurance markets. When credit markets are imperfect, households are prevented from borrowing to finance flow consumption, and must save to acquire durable goods and homes in anticipation of future borrowing constraints (Zeldes, 1989, Mariger, 1986). And if risks are uninsurable, households accumulate assets to be run down in hard times. In both cases young individuals accumulate more assets than required by the standard life-cycle model with perfect markets.

In the absence of population or productivity growth, capital market imperfections do not, of course, generate positive aggregate saving. But once one allows for growth, an economy with capital markets imperfections exhibits a higher saving rate than an economy with perfect markets.¹⁰ Jappelli and Pagano (1991) illustrate this point in the context of a three-period overlapping generations model where the young are liquidity constrained and productivity growth is exogenous. In a closed economy the saving rate is the product of the growth rate and the capital-output ratio: they show that for any given level of the growth rate, liquidity constraints raise the capital-output ratio and therefore saving. In other words, the effect of growth on saving is greater in an economy with liquidity constraints: an identical change in growth - for instance, from zero to positive growth - generates a greater change in saving in an economy with liquidity constraints.

¹⁰ In a small open economy saving is no longer the product of growth and the capital-output ratio, but the proposition that the saving rate is higher in the economy with liquidity constraints still holds. Liquidity constraints generate higher saving also in a version of the model with endogenous growth a la Romer (1986).

This interaction between saving, growth and liquidity constraints may also explain why Italy's saving rate declined so sharply in the eighties. In the G7 the decline in growth was of the same order of magnitude as in Italy, but the decline in private saving was only 3.2 percent (against 6.6 percent in Italy). Thus, in Italy the reduction in growth has been associated with a greater reduction in saving than in other countries. This pattern is consistent with the idea that in Italy liquidity constraints are more severe than elsewhere.

Besides liquidity constraints, however, there are other factors that may explain the two features of the Italian saving rate: the Italian earnings profile may be flatter than elsewhere, or the bequest motive in Italy may be stronger. As with capital market imperfections, in the absence of growth saving is zero, independently of the bequest motive and the shape of the earnings profile. But allowing for growth, a strong bequest motive, or a flat earnings profile may induce a high saving rate.¹¹ These issues will be addressed in Section 5.

¹¹ In a general version of the life-cycle model, the sign of the effect between growth and saving is a priori ambiguous. For instance, if earnings are upwards sloping, and capital markets are perfect, the young would like to dissave: an increase in the growth rate may then even result in a decline in aggregate saving. Similarly, the permanent income hypothesis with infinite horizon predicts that saving should fall if people anticipate an increase in future income. We do not claim that there is always a positive relation between saving and growth, only that in an economy with capital market imperfections the link between saving and growth is stronger. In such an economy households' behavior is closer to that predicted by the stripped-down version of the life-cycle hypothesis even when the earnings profile is sloping upwards.

3. The Italian capital markets in an international perspective

In the real world there is substantial interaction between credit markets and insurance markets. For instance, most mortgage contracts are signed in conjunction with a life insurance policy, with the insurance company repaying the loan if the borrower dies prematurely. Mortgages and instalment sales of durables are generally linked with fire insurance. The combination of credit and insurance allows maturities to be lengthened and moral hazard reduced. Credit lines and credit cards also serve an insurance purpose, since they protect the consumer against a sudden drop in income. Moreover, credit cards help the consumer face unexpected changes in credit rating and the possibility of being denied loans in the future (Jaffee and Stiglitz, 1990).

The interaction between credit and insurance market imperfections has received considerable attention in the theoretical literature. When insurance is not available, credit provides ex-post insurance: if current income turns out to be lower than expected, the individual can borrow against future earnings. Since future borrowing constraints prevent the individual from buying insurance ex-post, the individual accumulates assets to use in the event of hard time (Deaton, 1991).¹² In this case credit market imperfections reinforce the effect of uncertainty on saving.

Even when insurance is available, it has to be bought in advance. If the individual can only buy a future contingent claim by paying a premium today, he might want to borrow to finance the premium. This feature implies that credit markets must

¹² Deaton (1991) assumes that consumers are impatient, i.e that the subjective discount rate δ is greater than the rate of interest r. If, instead, $\delta < r$, liquidity constraints would almost never be binding because people would quickly accumulate enough assets to avoid having to borrowing altogether. However, if individuals have finite horizons, future liquidity constraints may be binding even if $\delta = r$, provided that there is a low degree of absolute prudence as defined by Kimball (1990).

be unrestricted if the individual is to be able to use insurance markets efficiently. The interaction between saving and the structure of capital markets is considered more closely in Appendix 1.

Although it is hard to devise a framework to account for all possible interactions between saving and capital markets, theory suggests that countries such as Italy with less "perfect" capital markets should be expected to save more than countries where capital markets are more developed and closer to the perfect market paradigm.¹³ In this section we try to establish whether the proposition that Italy has less developed capital markets is also backed by an international comparison of the credit and insurance markets.

Ideally, it would be best to compare direct indicators of rationing in capital markets (such as interest rates differentials or quantity constraints, if any). However, in many cases it is difficult to find reliable and comparable evidence, and in some important areas we lack sufficient information. In these cases, our approach - like that of Jappelli and Pagano (1989) - is to show that Italian credit and insurance markets are small and to establish that it is "supply" factors rather than "demand" factors that affect market performance.¹⁴

¹³ Two recent surveys report that when Italian households are asked about their reasons for saving, one third indicates that the main reason is "emergencies" and more than 15 percent indicate "to acquire a house or to buy a durable good." Only 25 percent indicate that the main reason for saving is to provide for old age or to provide an estate for the family (Censis, 1988).

¹⁴ Even if our indicators are far from perfect, in many respects Italian capital markets turn out to be substantially different from those of all the other main OECD countries. It is therefore unlikely that more refined data or indicators would change the picture greatly.

3.1 Credit markets

In Figure 1 we plot the ratio of total household liabilities to net national income from 1964 to 1989. The ratio overestimates the sum of personal consumer credit and mortgage loans granted to households because unincorporated business are included in the household sector. But even this over-estimation indicates that borrowing has always financed a trivial portion of household expenditure and investment. Table 3 reports figures for consumer credit and mortgages in the main OECD countries and in three Scandinavian countries (see columns 1 and 4). Both markets are between five to ten times smaller in Italy than in most other country listed in the table.

Consumer credit

In 1989 consumer credit was equal to only 4 percent of consumption expenditures (Table 3, column 1).¹⁵ This figure includes outstanding debt on credit cards, which in Italy is far below the G7 average (Table 3, column 2). The number of credit cards is an important indicator of credit market imperfections because it is a gauge of the amount that consumers can borrow if their income falls unexpectedly.

The terms of consumer credit to households are a likely explanation for the small size of this market. In 1987-89 the average downpayment on cars was 25 percent (Table 4, column 5) and that on other consumer durables exceeded 50 percent. In 1989 the average interest rate charged by consumer credit companies was 24.1 percent (Table

¹⁵ While Italy has some 20 percent of the EEC population, its share of credit cards is less than 4 percent. There are more credit cards in Boston or London than Italy !

4, column 2).¹⁶ The average maturity of these loans was slightly longer than one year. In 1989 the after-tax return on a one-year government bond was 10.9 percent, so the spread between the borrowing and the lending rate was 13.2 points (see Table 4, column 4).¹⁷ In contrast, in 1986 the spread was 6.5 points in the U.S. and in 1987 it was 3.5 points in the U.K.

An alternative explanation for the small size of consumer credit is that Italian households have a low propensity to borrow, either because their demographic characteristics and earnings differ from those of other OECD households or simply because they are thrifty. However, simulations by Jappelli and Pagano (1989) suggest that the earnings profiles and the age structure of the population do not exhibit a pattern that should induce Italian households to borrow less than their OECD counterparts.¹⁸

In countries with large consumer credit markets, most household loans finance the purchase of durable goods. An indirect indicator of the potential impact of borrowing constraints on consumption expenditures is provided in Table 3 (column 3), where we report the ratio of outlays on durables to total consumption expenditures. On the one hand, the "preference" for durable consumption is not lower in Italy than in

¹⁶ As there is no standardized way of quoting interest rates on personal loans, the terms of the contracts are very often obscure and households are commonly induced to sign expensive agreements. In 1989 an EEC Directive called on member countries to standardize the way interest rates are quoted on consumer credit. The Directive has not yet been applied in Italy.

¹⁷ The comparison is based on government bonds because interest payments on consumer credit are not deductible in Italy.

¹⁸ A further element at odds with the demand-side explanation is a recent survey reporting that as many as 4 million households - roughly 20 percent of the total - use "high-street" credit. The survey also reports that about 800,000 "loan sharks" operate in Italy (40,000 in the city of Rome) and charge interest as high as 500 percent. These figures are based largely on guess-work and should be treated cautiously. Of course, these loans are not included in the official statistics shown in Table 4.

most OECD countries. On the other, if borrowing constraints exist in Italy, they do not prevent households from acquiring durable goods. Durable shares' of total consumption spending is comparable with that of the other OECD countries. But clearly, if credit finances a very small share of consumption, most durables will be purchased by drawing on accumulated saving rather than by borrowing.

Mortgage markets

Regulation plays an important role in mortgage markets. For all mortgage loans, the minimum downpayment is set at 50 percent. This proportion can be reduced somewhat for new home-buyers, according to their income and other factors. By law, in no case can it be lower than 25 percent for first-time buyers. However, downpayments for new home-buyers are rarely less than 40 percent, so that by a conservative estimate the average downpayment is between 40 and 50 percent, as opposed to 20 percent in the United States and Canada, 15 percent in the U.K., 20 percent in Finland and Sweden, and 35-40 percent in Japan (Table 3, column 4).¹⁹

The effect of inflation on mortgage markets has been very damaging, also in light of the fact that indexed mortgages were introduced only at the beginning of the eighties. The average maturity of mortgage loans declined substantially, from 20 years in the sixties to 10 years in the seventies. It was only after 1984 that mortgage indexing became widespread. Today, the maximum mortgage maturity is set at 25 years, but an estimate of the average mortgage maturity ranges from 10 to 15 years. This contrasts with other housing finance systems. Boleat (1987) reports that in the early eighties the

¹⁹ There is no official estimates for actual downpayments in Italy. The figures in Table 3 are based on Boleat (1987) and our conversations with market operators.

"typical" mortgage had a maturity of 25 years in Canada, 25 to 30 years in the U.S., 20 to 25 years in Germany, and 15 to 20 years in France.

Between 1980 and 1985 the spread between the interest rate wedge on home loans was 3 percentage points.²⁰ This wedge does not include other transaction costs; in the absence of official statistics, these costs are difficult to measure, but we suspect they are not trivial.²¹

In countries like the U.S., Canada and the U.K., loan applications are processed rapidly because specialized credit reference agencies provide information on the credit histories of all potential borrowers and creditors share information about insolvent consumers (Pagano and Jappelli, 1991). Such agencies do not exist in Italy, so the extent of asymmetric information between lenders and borrowers is more severe than in other countries.

In almost all European countries there is direct government involvement in the provision of mortgage loans, either directly or through the tax system (Boleat, 1987). In Italy, by contrast, government intervention in housing finance is very limited, government incentives are hard to obtain and have been reduced over time.²²

²⁰ See Jappelli and Pagano (1989, Table 2, p. 1095). They also report that the spread in Italy is larger than in Sweden, the U.S., the U.K. and Japan.

²¹ There is almost invariably a 6-months waiting period to obtain the loan. In the meantime, a "bridging loan" is offered, but this credit is much more expensive than the regular mortgage because it is a short-term loan without collateral (Beltratti and Fornero, 1989). Banks require up to nine documents to approve a mortgage, including court certificates, reference from the applicant's employer and tax forms. Obtaining some of these documents is costly and time-consuming. Mortgages must be registered in courts, an expensive and lengthy operation. Fire insurance is also charged to the borrower. ²² Until 1976 all interest rates were tax-deductible. From 1976, 3 million lire was deductible (4 million after 1980) for all mortgages. Except for first-time buyers, deductibility was abolished in 1990. The other incentives to housing were those provided by the so-called Goria Law, enacted in 1984 and abrogated in January of 1991. That law set stringent eligibility requirements for incentives:

Because of high downpayments, high interest rate spreads and low maturities, it is not surprising that the Italian mortgage market is one of the smallest in the OECD (see Figure 1 and Table 3, column 4).²³ However, mortgage market imperfections have not prevented Italian households from becoming home owners. The overall incidence of home ownership rate increased from 46 percent in 1961 to 59 percent in 1981.²⁴ The small size of the mortgage market cannot be attributed to a relatively low percentage of owner-occupation; in Italy the latter is actually higher than in several OECD countries (Table 3, column 6). The fact that the mortgage market is so small implies that many households buy homes borrowing very little or not at all.

3.2 Insurance markets

The most direct indicator of the relative importance of the insurance market in the OECD is the ratio of premiums to national income. Column (1) of Table 5 indicates that the average Italian buys less private insurance than citizens of all the other OECD, except Greece. The Italian ratio of 2.4 percent is between 2 and 3 times smaller than

²⁴ Source: Census data.

the head of the household must be less than 45 years old, employed continuously for at least 2 years and not already a home owner. The maturity of the loan was 20 years, the downpayment 25 percent and the mortgage could not exceed 60 million lire, twice the average household income. The interest on the loan was subsidized in proportion to household income and ranged from 5.5 to 13 percent. A strong disincentive to these loans was the fact that the home could not be sold before the entire mortgage was repaid, i.e. before 20 years.

 $^{^{23}}$ An upper estimate of the size of mortgage markets is simply the difference between total household liabilities and short-term liabilities (less than 18 months maturity). This is the series that we have plotted in Figure 1.

that of any other major OECD country.²⁵ Among OECD countries, Italy ranks 23rd in the market for life insurance (Table 5, column 2), and this market is between 5 and 10 times smaller than those of all the other G7 countries. Figure 2 indicates that Italians have always bought little insurance, at least since we have reliable data.²⁶

It is very unlikely that differences in preferences and risks across countries explain the pattern of Table 5 for, under suitable assumptions, the amount of insurance that individuals buy may even be independent of their preferences, even when insurance is not fair.²⁷ And there is no absolute no evidence that Italy is a less risky environment than other OECD countries. On the other hand, a close examination of the Italian insurance market suggests that regulation is a more likely candidate to explain the small size of this market.

In Appendix 2 we show that regulations put severe barriers to entry for firms and strong restrictions on the types of contract that individuals may wish to buy. Premiums are set by a regulatory agency and strictly enforced. Though some progress towards liberalization has been made in recent years, regulation is substantially more pervasive than in any other major European country.

There is one other possible explanation for the small size of the Italian insurance market, i.e. that in Italy there is much more public insurance and/or that Italian families provide more insurance than those of any other OECD country. We shall concentrate on this explanation below.

²⁵ Half of these premiums are represented by compulsory auto insurance, which is strictly enforced.

²⁶ In 1933-37 an estimate of the ratio of all insurance premiums to net national income was 2.1 percent. Life insurance premiums accounted for about half of the market. Source: Annuario Statistico Italiano, 1935 to 1939 editions

²⁷ The assumption that is required to obtain this result is that the utility function is state-independent (Arrow, 1974). While restrictive, it is not unreasonable and widely adopted in the literature.

3.3 Public insurance and informal financial arrangements

Efficient social insurance programmes may substitute for private health and life insurance. In principle, the government may provide the most efficient form of insurance because it has the largest pool of applicants. Thus the fact that Italians buy so little insurance may merely indicate that public insurance covers all types of risk efficiently and at a low social cost. There are three reasons why we think the role of the government cannot explain the failure of the private market: (i) for most programmes, social expenditure in Italy is no greater than in other industrialized countries; (ii) the increase in public insurance in Italy has not been greater than that of other countries and, if anything, the public coverage of most risks is lower; (iii) private insurance markets were small even before the growth of the public provision of insurance actually took place, i.e. in the fifties and sixties (see Figure 2).

Table 6 reports the ratios of the main expenditures on social programmes to GNP for the same set of countries that we have analyzed so far. In most types of social expenditure Italy is not among the OECD leaders, and for unemployment and housing its outlays are actually among the lowest.²⁸ The share of public health expenditure is in line with that of most other European countries.²⁹

On the other hand, the ratio of pension benefits to GNP is one of the highest in the OECD. In the last three decades the social security system has been extended to the

²⁸ In Italy unemployment benefits are negligible. Substantial benefits are provided only for temporary lay-offs (a subsidy equal to 50 percent of the wage rate for three months and sometimes up to a year), but these benefits only cover employed in manufacturing firms with more than 15 workers.

²⁹ However, the coverage is far from complete, particularly for the elderly. For example, very few social programmes finance nursing homes. More generally, the quality of the national health service is poor and people often have to turn to private institutions.

totality of the working population; the ratio of the average pension to the average pretax earnings of employed workers rose from 26 percent in 1960 to 43.7 percent in 1987.³⁰

As far as pensions are concerned, three considerations are important. First, and more importantly, social security is generally advocated to explain a reduction in asset accumulation, not a high saving rate.³¹ Second, theoretically and empirically, it is not clear to what extent social security substitutes for annuities, life insurance and disability insurance (Kotlikoff, 1989). Finally, in Italy it is increasingly being recognized by the working population that pension rights exceed the present discounted value of contributions, and there is fear for the solvency of the social security system.³²

Concern over the future solvency of the social security system is greatest in countries where people rely exclusively on social security, unsupplemented by fully funded pension plans, to provide for old age. In Italy private pension plans cover only 2 percent of all workers, by far the smallest proportion among the countries listed in Table 6.

Even if the public provision of insurance in Italy is not particularly high by international standards, it is still possible that private transfers may serve as a form of insurance against risk. If risks are not perfectly correlated across generations and individuals, then there is scope for implicit contracts based on private transfers (Kotlikoff and Spivak, 1981). A similar argument applies in the case of credit markets,

³⁰ Source: I conti della protezione sociale, ISTAT, various issues.

³¹ Rossi and Visco (1991) find that the increase in retirement benefits accounts for a substantial fraction of the decline in the Italian private saving rate over the past 15 years.

³² According to Censis (1988), the main reasons why people are worried about the future are illness (58 percent) and the deficit of the social security system (20 percent). This may explain Brugiavini's (1987) finding that pension wealth is only a very imperfect substitute for private net worth.

i.e. affluent parents may relieve the borrowing constraints of their children. In other words, a network of informal financial arrangements may overcome credit and insurance market imperfections (Mace, 1991).

To be effective, transfers have to be timed correctly. They have to occur when they are most needed, i.e. in case of emergencies or when credit constraints are binding. Bequests are very unlikely to serve these purposes. Gifts or loans have to occur inter vivos. But all surveys of Italian households indicate that private transfers are not widespread. In a typical survey not more than 2 or 3 percent of households receive either gifts or loans from relatives and friends. This contrasts with the U.S. (the only country where private transfers have received wide attention), where more than 10 percent of households report receiving transfers during a one-year period (Cox, 1990). Guiso and Jappelli (1991) report that some of these transfers in Italy are directed towards liquidity-constrained households, a finding that is consistent with the hypothesis that informal markets help remove borrowing constraints.³³ However, since such transfers are not widespread, most households remain liquidity-constrained even after private transfers have been made. Some transfers are large and are likely to come on "special" occasions, such as marriage and the purchase of a home. Since the role of gifts and bequests in the provision of housing is potentially important, it will be further taken up in Section 4.2.

³³ In the 1989 Survey of Household Income and Wealth 1.7 percent of the households surveyed received gifts or loans from relatives or friends. In 1987 the proportion was 2.6 percent. About 20 percent of these transfers were loans, the other 80 percent gifts.

3.4 Assessment

Italian capital markets are significantly at variance with the paradigm of perfect capital markets that is required by rational consumers to smooth income fluctuations and acquire durable goods and homes without distorting the consumption profile. But more importantly, Italian capital markets are much less developed than those of other OECD countries that are at a comparable level of economic development in several other respects. Our evidence suggests that regulation, transaction costs and adverse selection are the likely reasons for these market failures.³⁴ Evidence on private transfers suggest that the family has a role in overcoming credit market imperfections, but that this role is limited. Overall, the role of the government in providing insurance against risks does not appear any more important than in other OECD countries. Government intervention to circumvent borrowing constraints in the mortgage market is actually much less significant than in the rest of Europe.

To summarize, we list the factors that are likely to inhibit the proper functioning of Italian credit and insurance markets:

(i) the terms of the contracts, in part imposed by regulation, limit credit and insurance availability. In credit markets the most important impediments are high downpayment

³⁴ A possible complementary explanation for the failure of credit markets is that in Italy there are substantial costs of enforcing contracts and of disposing of collateral. Due to the slowness of the judicial process, debt collection and repossession is extremely time consuming. It takes an average of 4 years to repossess a house in case of mortgage foreclosure (EC Mortgage Federation , 1990). So credit grantors have to require high downpayments and high interest rates to compensate for these costs. Credit rationing results when no interest rate that official financial institutions can possibly charge will make expected profits positive.

requirements, large interest rate spreads and the short maturities of loans; in insurance markets severe barriers to entry limit competition (see Appendix 1).

(ii) The pace of financial innovation has been slow. Indexed mortgages and variable rate life insurance contracts were not marketed until the second half of the eighties.

(iii) The extent of asymmetric information between borrowers and lenders is more severe in Italy than in other countries.³⁵

4. Measuring the effect of capital market imperfections

In this section we test for the effect of borrowing constraints and uncertainty on consumption. We first estimate Euler equations for the consumption of non-durables on aggregate time-series and panel data. In this case we are able to relate our evidence to that available in other OECD countries. We then turn to structural estimation of the consumption function on data drawn from the 1989 Survey of Italian Households in order to assess the potential impact of mortgage market imperfections and earnings uncertainty on households' behaviour.

4.1 Excess sensitivity

According to the life-cycle permanent income hypothesis cum rational expectations, in the absence of borrowing constraints consumption growth should not

³⁵ Even if the quality and quantity of the information shared varies from country to country, a rough indicator of the amount of information sharing is the number of credit reports issued, which ranges from 400 millions in the U.S., 60 millions in the U.K. and 18 millions in Germany to none in Italy (Pagano and Jappelli, 1991).

be correlated with either lagged disposable income or anticipated growth in current income. Following Hall (1978) and Hayashi (1982), we have estimated Euler equations for non-durable consumption and tested whether the time-series data and the panel data are consistent with the pure version of the permanent income hypothesis. In both cases we chose specifications that allow an international comparison.

Using aggregate annual data, we regress the growth rate of consumption on the expected growth rate of disposable income, choosing a specification and estimation method similar to those adopted by Campbell and Mankiw (1990) for six OECD countries. We improve with respect to previous studies because we use the series from the revised national accounts. The top panel of Table 7 reports that, contrary to the theoretical predictions, consumption growth - either of non-durables or of non-durables and the imputed flow of services - is very sensitive to expected income fluctuations.³⁶ This result confirms those of other time-series studies reporting high values of the excess sensitivity parameters in Italy (of the order of magnitude reported in Table 7).

The size of the estimated coefficient is consistent with the hypothesis that it is liquidity constraints in the market for personal consumer credit that induce the failure of Euler equations. In fact, there is by now considerable evidence that the excess sensitivity parameter is negatively correlated with the size of the market for consumer credit. Combining the results of three recent studies, it appears that excess sensitivity is highest in Italy and France, reaches intermediate values in the U.K., Ireland and Japan,

 $^{^{36}}$ We have also introduced a measure of the expected real interest rate to the regression, using as instruments one or two lags of the real rate itself. The resulting coefficient is negative (-0.08) and not significantly different from zero. We also find that the excess sensitivity parameter does not show any tendency to change over time. We add a multiplicative dummy on expected income growth. Even when the dummy is chosen as to maximize the likelihood function, it is not significantly different from zero.

is lower in Canada and the U.S., and lowest in Sweden and Denmark.³⁷ The degree of development of the market of consumer credit (Table 3, column 1) is indeed negatively correlated with this ranking of excess sensitivity. On the other hand, there is no evidence that other factors that may induce excess sensitivity, such as myopia, are more important in Italy than in other countries.

To check that the international pattern of results is not affected by aggregation problems, in the lower panel of Table 7 we regress the rate of change of consumption of non-durables on the lagged value of income using panel data. If households wish to borrow but have no access to credit markets, an increase in disposable income increases current consumption relative to future consumption, thus reducing consumption growth. In fact, the income coefficient is negative (-0.17) and significantly different from zero. More importantly, this is larger than the values found in other countries. Zeldes (1989), using the PSID, estimates a coefficient that varies from -0.021 to -0.081, depending on the sample split; Hayashi (1986) finds values ranging from -0.041 to -0.13 using Japanese (pseudo) panel data; Runkle (1991) -- also using the PSID -- finds an insignificant coefficient.³⁸

These patterns are consistent with the hypothesis that Italians react more strongly to current disposable income because they are more likely to be subject to borrowing constraints. However, Euler equations have no power to detect the

³⁷ See Campbell and Mankiw (1991), Jappelli and Pagano (1989) and Giavazzi and Pagano (1990). The latter study reports that in 1988 the ratio of consumer credit to consumption expenditures was 37 percent in Denmark and 11 percent in Ireland. The sample periods of the estimates are 1954-88 for Italy, 1972-88 for France, 1957-88 for the U.K., 1962-87 for Ireland, 1972-88 for Canada, 1953-85 for the U.S., 1972-88 for Sweden and 1966-87 for Denmark.

³⁸ Mork and Smith (1989), using a Norwegian panel data and a different specification from the studies mentioned in the text do not reject the permanent income hypothesis.

behaviour of households that do not conform strictly to the permanent income hypothesis. In fact, while acceptance of the Euler equation is consistent with the permanent income hypothesis, its failure can be induced by several factors, liquidity constraints being only one possibility. This is why in the next two sections we turn to structural estimation of the consumption function, that allows us to isolate the specific role played by liquidity constraints and uncertainty.

4.2 Saving and mortgage markets imperfections

In Section 3.1 we argued that high downpayment requirements, short maturities and high interest rates have been an obstacle to households from borrowing to purchase homes. The stock of mortgage loans to consumption expenditures is estimated to be on the order of 6-7 percent, a strikingly low value when compared to the size of the mortgage market in all the other major developed economies. There is thus a strong presumption that mortgage market imperfections distort households' optimal consumption profile and force them to save when young to finance the purchase of houses.³⁹ With perfect markets, by contrast, households would borrow early in life, and repay the loan over a long horizon which is, in principle, their entire life.

Mortgage market imperfections distort the consumption profile if households desire to own a house, rather than rent it; this requires assuming that a house owned yields a higher utility than the identical house if rented. This can be justified in three ways: (i) owning eliminates the principal-agent relationship if one rents from oneself,

³⁹ The same reasoning also applies to durable goods, the great majority of which are acquired with cash. In this paragraph we concentrate on housing because it is the single major durable good that households buy and because the 1989 Survey of Household Income and Wealth does not contain enough detailed information on other durable goods.

i.e. he can alter the house as desired and is not subject to a risk of rent termination or rent increase in the future (Hayashi, Ito and Slemrod, 1988); (ii) often there are tax incentives to owning; (iii) there may be no alternative as to owning because of imperfections and regulations in the rental market for housing.

Figure 3 plots the incidence of owner-occupied dwellings by age groups in Italy, the U.S. and the U.K.⁴⁰ In Italy the proportion of owner-occupation increases slowly with age, and reaches a peak before retirement.⁴¹ This pattern contrasts sharply with the experience of the other two countries, where the profiles reach an early peak. In 1985 the average age of U.S. and U.K. first-time buyers was only 28 and 29 years respectively, while in Italy it was 41 years in 1988.

The patterns of Figure 3 are consistent with the hypothesis that mortgage market imperfections force Italian households to accumulate more funds when young than they would if the markets were perfect. Italians may desire a profile similar to that of the U.S. or the U.K., but mortgage market imperfections prevent them to do so.

A second possibility is that intergenerational transfers in the form of housing eliminate the need for an organized mortgage market. If young households expect to

⁴⁰ We compute the profiles in Figure 3 using the 1980 Consumer Expenditure Survey for the U.S., the 1986 Family Expenditure Survey for the U.K. and the 1989 Survey of Household Income and Wealth for Italy.

⁴¹ Japan exhibits a pattern of housing tenure that is similar to the Italian one. Hayashi, Ito and Slemrod (1988) suggest that the main explanation for the difference between the U.S. and the Japanese housing systems is the downpayment required by creditors. They show, by means of simulations, that a reduction of 20 percent in the downpayment ratio could lead to a reduction in private saving of 2 percent of national income in Japan, not a trivial figure if one considers that the difference between the Italian private saving rate corrected for inflation and the G7 average was 2 percent in the most period 1981-87 (Table 2, column 8). The effect of mortgage market imperfections on saving in Italy might be even more pronounced than in Japan. In fact, the downpayment in Italy is higher than in Japan, and the size of the mortgage market is much smaller (Table 3, column 4).

receive a house as a bequest, they may choose to rent, rather than buy, while waiting to receive the bequest. This strategy will avoid the need to save large amounts to meet high downpayments and distort the consumption profile: the Italian pattern of owner-occupation by age displayed in Figure 3 is also consistent with the choices of a large group of households who expect to receive a bequest around the age of forty.⁴²

In Figure 4 we plot the proportion of owner-occupation including and excluding households who received their house as a gift or bequest. We note that: (i) only 13 percent of the sample (22 percent of home owners) received the house as a bequest; (ii) the two profiles are very similar, i.e the timing of bequests does not affect the overall pattern of housing tenure. We infer that expected bequests are likely to affect the behavior of only a minority of the population.⁴³

To assess the impact of mortgage market imperfections on consumption, we evaluate how much renters would consume if they were not subject to mortgage market constraints following a strategy similar to that adopted by Hayashi (1985) and Zeldes (1989). We assume that homeowners are not constrained in the mortgage market, estimate their desired consumption and use the estimated coefficients to predict the desired consumption of renters. With either formal or informal perfect markets, the gap between desired and actual consumption of renters should be zero. If the gap is positive, we infer that renters are accumulating assets in excess of those that they would accumulate under perfect mortgage markets.

⁴² Similarly, if it is more common for affluent relatives to subsidize first-time-buyers in Italy, renters would not save more than homeowners, and differences in downpayments and other terms of the loans would not be able to account for the different pattern of owner-occupation (and saving) across countries. ⁴³ Even those who received a house as a bequest may have accumulated to purchase a house. The bequest may not have been anticipated, or have been expected to occur too late in life.

This estimation strategy does not require the sample of renters to be constrained, only that the sample of owners is unconstrained (otherwise the estimates would not be consistent). This assumption is reasonable, because homeowners have accumulated substantial collateral, so they are unlikely to face constraints in the mortgage market, even if they wish to purchase another house. One objection is that owners are repaying relatively short-term loans and are saving in excess of what they would along the unconstrained accumulation path. But the number of these households in the sample is trivial.⁴⁴

Since the choice of becoming homeowner is endogenous to the consumer optimization problem, the coefficients are potentially affected by selection bias. Accordingly, we estimate a probit equation for the choice of owning and desired consumption by Heckman's Generalized Tobit on the sample of owners.

The Survey of Household Income and Wealth contains detailed information on labor income, consumption of durables and non-durables, wealth and several demographic characteristics drawn from a sample of 8,027 households. It also contains a section on housing, with questions about properties, mortgages and house characteristics. The survey defines the household head to be always the male, if present in the household. Only for widows, singles or singles with children it is possible for the head to be a female. All variables refer to the year 1989.

⁴⁴ At the end of 1988, 57 percent of the households whose head was under 55 years of age owned their homes, and 7.8 percent of them owed mortgage debt. Many of these mortgages were small loans that finance housing repairs and additions. Out of 4,564 households, only 60 had mortgages outstanding in excess of 50 million lire. And only 25 households faced annual mortgage payments that exceeded 10 percent of their yearly permanent income. The comparison with the U.S. mortgage market is striking: in 1983, 64 percent of households were homeowners; for these home owning families, 57 percent owed mortgage debt, and 26 percent of them had mortgages outstanding in excess of \$25,000. Source: our computations on the 1983-86 Survey of Consumer Finances.

Theory suggests that tenure choice and consumption are a function of permanent rather than current earnings. Thus, we construct an income variable that purges current earnings from transitory earnings and age effects. This variable is similar to the King and Dycks-Mireaux (1982) concept of permanent income, i.e. normal earnings adjusted or cohort effects; the details of the estimation of permanent earnings are given by Guiso, Jappelli and Terlizzese (1991).

We exclude from the sample households that are not in the labor force and households that report zero labor income. For these households, in fact, permanent earnings are difficult to impute. We also exclude households whose head is over 55 - the peak age of housing tenure - because older households might run down assets accumulated when young and may therefore be over-consuming with respect to their optimal consumption profile.⁴⁵

Table 8 reports sample means of selected variables for the sub-samples of renters, buyers, and those who have received the house as a bequest, as well as for the whole sample. The group of renters exhibits a lower propensity to consume than the group of buyers (0.78 against 0.91). The propensity to consume of those that have received the house as bequest have a propensity to consume is similar to that of buyers (0.89 versus 0.91). But the three groups have different characteristics. For instance, renters are younger, poorer and have permanent earnings that exceed current earnings. Thus, a proper test of the proposition that renters are saving more than home owners requires that all characteristics - income, wealth, and demographics - be held constant.

The first stage probit regression includes permanent earnings, demographics variables and variables associated with the price and quality of housing (regional location, occupation and a constructed price index of housing in different regions and

⁴⁵ A similar issue arises in the analysis of precautionary saving (Skinner, 1988).
urban areas). The results, reported in Table 9, indicate that the conditional probability of owning is an increasing function of age, number of children, family size and permanent income and a decreasing function of the index of house prices. Residents of the Centre and of rural areas are more likely to own their homes.

In the second stage we regress the ratio of consumption of non-durables and services to permanent earnings on beginning-of-period net worth, permanent and transitory earnings, and a set of households' characteristics (age, gender, education and family size).⁴⁶ Transitory earnings are defined as the difference between permanent and actual earnings. The estimated coefficients of the consumption equation for the entire sample of owners are displayed in column (1) of Table 10.

Since the probability of buying a house and that of receiving a bequest might be functions of different sets of variables, we further exclude the 573 beneficiaries of housing bequest from the sample. The results of the probit and Generalized Tobit regressions are reported in column (3) of Table 9 and in column (3) of Table 10, respectively.⁴⁷ In both regressions of Table 10 permanent earnings are found to have a greater effect on the consumption income ratio than transitory earnings. Schooling, age and family size also influence the ratio of non-durables to permanent earnings.

We then evaluate the gap between the desired and actual consumption of renters using the coefficients of Table 10. An upper estimate of the gap can be computed by assuming that all renters are subject to mortgage market imperfections. This is shown in the first two rows of the lower panel of Table 10. Borrowing constraints lower the consumption of non-durables of the constrained households by 18 percent of

⁴⁶ The results excluding households with earnings less than 6 million lire in 1989 are similar to those reported in Table 10.

⁴⁷ For instance, parental wealth and permanent income are likely to be important determinants of the probability of receiving a house as a bequest. These variables are not observed in the cross-section.

permanent earnings (12 percent if the whole sample of owners is used in the estimation). The total sample gap is by 2.4 percent (3.7 percent using the sample of buyers).

These gaps do not take into account the fact that some renters do not have plans to purchase a house. Only those who do not have such plans face borrowing constraints in the mortgage market. There are two reasons why renters may not plan to buy a house: (i) they are life-time poor and cannot afford it; (ii) they have the resources to buy a house, but have chosen not to buy one.

We therefore exclude "extreme" observations from the sample of renters, according to different levels of households' net worth.⁴⁸ The last three rows in the lower panel of Table 10 correspond to different (and somewhat arbitrary) assumptions about the price of the "typical" house that renters desire to buy. We find that even excluding households with net worth of less than 50 million lire and very rich households (with assets greater than 500 million lire), the estimated gap for renters remains sizable (14.7 percent). Since the number and characteristics of renters changes in each case, the overall shortfall in consumption is now smaller. In the aggregate, these gaps range from 1.3 to 2.6 percent of non-durable consumption.⁴⁹

⁴⁸ We have also partitioned the sample of renters according to different levels of permanent income and age. For each sub-sample, the implied gaps for renters are very similar to those displayed in Table 10. ⁴⁹ One objection to our analysis is that the consumption rule for buyers should not be used to evaluate what renters would consume in the absence of borrowing constraints. Owners faced the same constraints in the past, and may now be consuming relatively more than implied by the unconstrained consumption optimization. Households who received a bequest may be a more appropriate sample to evaluate desired consumption of renters, because they are less likely to have faced mortgage market constraints in the past. There are three responses to this objection: (i) we exclude households whose head is over 55 precisely to control for this effect; (ii) those who received a bequest may live in more "connected" families, and their consumption rule may differ from that of more "isolated" consumers,

4.3. Earnings uncertainty and precautionary saving

Since in Italy insurance markets are far less developed than in the other OECD countries (see Section 3.2), Italian households can be expected to engage in substantial precautionary saving. Ideally, we would like to test for the effect of a particular risk that is less insured in Italy than in other countries, such as health risk. The main problem is that health risks are not observed, and there is almost no evidence on the empirical relevance of health risks in any country.

Most studies that have confronted this question have limited the focus to earnings uncertainty which is only one risk that households face, and perhaps not even the most important one. The 1989 Survey of Household Income and Wealth included questions about the subjective probability distribution of earnings in 1990, and allow one to derive a measure of subjective uncertainty and estimate the amount of precautionary saving. However, the self-reported measure of subjective uncertainty is rather small. One third of the sample has point expectations of earnings one year ahead, and for only 12 percent of the sample the subjective standard deviation of earnings exceeds 2.5 percent of current earnings. This contrasts considerably with those often assumed in simulation studies, or estimated from the residuals of the income process using panel data. One possible explanation is that households base their forecasts on a much larger set of variables than those observed by the econometrician.

possibly because the former have a stronger bequest motive; (iii) the sample of young households who received a bequest is too small to obtain precise estimates of their consumption rule.

Guiso, Jappelli and Terlizzese (1991) estimate a consumption function using this self-reported measure of uncertainty. They find that earnings uncertainty raise saving and wealth accumulation; the findings consistent with decreasing prudence (Kimball, 1990). However, evaluated at the sample means, the increase in saving in response to uncertainty is a modest 0.14 percent of current labor earnings. The share of wealth accumulated in response to earnings uncertainty is only 1.8 percent.

One possibility is that families in which both spouses work pool income risks. When the sample was restricted to households with only one income recipient, the effect of uncertainty rises by 40 percent with respect to the whole-sample estimates, which still has a small effect on their saving rate.

These results suggest that earnings uncertainty alone does not explain a large fraction of saving. One possibility is that households that have accumulated substantial amount of assets early in the life-cycle - perhaps, as in the previous section, because they want to buy a house - can largely dispense with precautionary saving. But one should not rule out the possibility that other important - and perhaps even more important - types of risk, such as health risk, are important determinants of saving. If so, one may speculate that these risks generate higher saving in Italy than in other countries.

5. Bequests and earnings profiles

So far we have neglected the potential role of the slope of the earnings profile and of the bequest motive in the explanation of the high correlation between saving and productivity and population growth documented in Section 2. In fact, one objection to our analysis is that the age-earnings profiles is flatter in Italy than in other countries.

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The life-cycle model suggests that in an economy with a flat earnings profile the young save relatively more (or borrow less) than in economies in which resources are more concentrated later in life. As mentioned in Section 2, for any given growth rate, the resulting saving rate is higher than in an economy with a steep earnings profile.

Data on earnings profiles in Italy, the United States and Japan do not support this hypothesis (Table 11). The Italian cross-sectional is similar to the American, but flatter than the Japanese. Once we correct the cross-sectional profiles for the effect of productivity growth, it appears that the U.S. profile is the flattest, i.e. closest to that implied by the stylized version of the life-cycle model. In Italy, households have been confronted with a steep earnings profile, a consequence of the relatively high economic growth rate.

A second possible objection is that the reason Italians save more is that they have a strong bequest motive. In a growing economy in which households pass a fraction of their lifetime resources on to future generations, the saving rate will be higher than in economy without bequests. And an increase in the growth rate leads to an increase in aggregate saving: this correlation will be stronger the stronger the bequest motive (whether voluntary or involuntary).⁵⁰

There is little direct evidence on the role of bequests in Italy. The specific importance of intergenerational transfers in the form of housing has been studied by Barca, Cannari and Guiso (1991), with the finding that in 1987 the bequeathed wealth accounted for 35 to 50 percent of aggregate wealth, a value that is not high if compared with the share of inherited wealth in the U.S. (see, for instance, Kotlikoff and

⁵⁰ This is in fact the main explanation that Hayashi (1986) offers for the high Japanese saving rate.

Summers, 1988).⁵¹ As mentioned in Section 3.3, Guiso and Jappelli (1991) evidence also suggests that few households receive inter vivos monetary transfers in any given year; in the previous section it was noted that only 12 percent of the households received the house as a gift or bequest.

Indirect evidence on the potential role of intergenerational transfers can be inferred from the age-wealth profiles in Italy, the U.S. and Japan. The pattern of wealth decumulation, as shown in Table 12, does not indicate that Italians have a particularly strong bequest motive. If anything, the Italian profile indicates the presence of more wealth decumulation by the elderly than in the other two countries and is much more hump-shaped than in Japan, where bequests are thought to be very important.⁵²

More formal analyses have been made of the pattern of wealth decumulation. King and Dycks-Mireaux (1982) find that in Canada the rate of wealth decumulation between age 65 and age 85 ranges from 0.7 to 1.5 percent per year. In the U.S. Hurd (1987) finds a rate of decumulation of 1.5 percent, and Hubbard (1986) finds even lower values. On the other hand, Brugiavini (1987) replicates these studies and finds a rate of wealth decumulation ranging from 1.5 to 8 percent, according to the model specification. Both the (limited) direct evidence on bequests, and the indirect evidence

 $^{^{51}}$ This estimate is based on direct information on the years in which real estates were received as bequests, and does not include financial wealth.

 $^{^{52}}$ The Japanese age-wealth profile is strongly affected by the presence of extended families, i.e. by the tendency of the elderly to merge with younger households. Wealth decumulation is more evident if one isolates nuclear families, which made up 50 percent of Japanese households (Hayashi, 1986). The Italian profile would look more similar to the U.S. one if extended families were more widespread in the U.S. But the proportion of individuals older than 60 living with younger households is 5 percent in Italy but only 3 percent in the U.S. Sources: our estimate on the 1989 Survey of Household Income and Wealth for Italy and Yoshikawa and Othake (1989, Table 2, p. 1004) for the U.S.

from the patterns of wealth decumulation by the elderly suggest that a strong bequest motive is not a valid explanation of the high Italian saving rate.

6. Conclusions

In this paper we argue that capital markets imperfections are the likely explanation for the high Italian saving rate and for its recent decline. Italian credit and insurance markets are considerably smaller than those of other comparably developed countries. Credit finances a trivial share of household consumption and investment, and Italians buy very little insurance. Public and private insurance do not appear more important than elsewhere in insuring risks or circumventing borrowing constraints. Wealth decumulation by the elderly is actually greater in Italy than in Japan or the United States, implying that Italians do not have any special bequest motive. The evidence suggests that Italians are not "different" in any major respect from other OECD citizens; rather, it is Italian capital markets that are different.

Empirical evidence on the effect of capital market imperfections suggests that the degree of excess sensitivity in Italy is high by international standards. Given the international evidence, it is likely that the under-development of the Italian market for consumer credit is responsible for the high correlation between income and consumption growth. Mortgage market imperfections appear to distort the consumption profile, forcing people to save when young to purchase homes and postponing consumption until later in life. The saving behaviour arising from income uncertainty is consistent with the theory of precautionary saving, but the overall effect of risk on saving is small. We suggest two possible explanations: first, that income risk is only one of several risks that households face, and perhaps not the most important one; and second, that with decreasing prudence households obliged to accumulate substantial amounts of wealth can largely dispense with precautionary saving. Accordingly, credit market imperfections may outweigh imperfect insurance markets in explaining the behavior of Italian households.

The approach taken in this study may prove useful in the analysis of intercountry differences in saving rates. Previous literature has focussed mainly on the role of productivity growth, demographic variables and fiscal policy to explain the crosscountry differences in saving rates (e.g., Modigliani, 1990), but rarely explored the role of capital market imperfections. The international evidence presented in Table 2 suggests that the high degree of development of credit and mortgage markets in Finland, Norway and Sweden may be responsible for their relatively low saving rates. Similarly, as shown also by Hayashi, Ito and Slemrod (1988), mortgage market imperfections may partly explain the high Japanese saving rate. Our results are therefore consistent with those of Jappelli and Pagano (1991), who use the same approach of this study and find that indicators of capital market imperfections, such as minimum downpayment ratios and the volume of consumer credit, account significantly for the inter-country differences in the OECD saving rates.

This study also carries implications for the evolution of the saving rate in Italy. Financial deregulation and European integration will bring more competition to Italian financial markets. Some changes have already taken place; regulation has eased somewhat, particularly in the insurance industry, several financial instruments are now indexed and competition among lenders is intensifying. In 1992 Italy will comply with the EEC Directive on Consumer Credit and apply the Third Directive on Fair Insurance. Minimum downpayments will be lowered to 25 percent for all mortgages, restrictions on maturities will be abolished, legal costs reduced, and second mortgages introduced. A credit reference agency already operates on a very small scale, but is expanding

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APPENDIX 1

The interaction between uncertainty and borrowing constraints

At the theoretical level, credit markets are a constrained version of insurance markets. A complete set of Arrow-Debreau (AD) securities allows individuals to use resources in the desired amount at each point in time and in each of the events that might occur at any point, resulting in perfect insurance and perfect credit markets. If all securities have the same yield in each state, perfect capital markets are available.

A combination of borrowing and insurance replicates the optimal allocation that could be achieved by a full set of AD securities. To show this, let us consider the problem of a consumer who maximizes a separable utility function over a two-period horizon. Income in the second period is uncertain; it can take only two values, y_1 and y_2 with probabilities p and (1-p) respectively. The consumer can buy fair insurance and borrow against future income. Assuming that the real interest rate r is equal to the rate of time preferences δ , the consumer faces the following problem:

$$\begin{array}{ll} \max & u(c_1) + p \ u(c_{21}) + (1 - p) \ u(c_{22}) \\ \text{st.} & c_1 + s + \pi \ q &= y \\ & c_{21} &= y_1 + s + R \ q \\ & c_{22} &= y_2 + s \\ & q &\geq 0 \end{array}$$

where s is saving, q is the amount (non-negative) of insurance that can be purchased paying the premium π , and R is the compensation that the consumer receives if income happens to be low. Fair insurance implies that $\pi = p$ R. Using this condition, the optimal levels of saving and insurance are:

$$s^* = \frac{y - y_2 + p (y_1 - y_2)}{2}$$
 $q^* = \frac{y_2 - y_1}{2} > 0$

Substituting s^{*} and q^{*} in the budget constraint and using the condition $\pi = p R$, consumption is seen to be equal across states and periods:

$$c_{1}^{*} = c_{21}^{*} = c_{22}^{*} = \frac{y + p y_{1} + (1-p) y_{2}}{2}$$
.

These are the same values of consumption that could be achieved with a full set of AD securities. Note that if expected future income is equal to current income, $s^* = p(y_1 - y_2)$

 y_2) < 0 and $\pi q^* = p (y_2 - y_1)$. Total saving, defined as income minus consumption (i.e. $s^* + \pi q^*$), is zero, and the premium is entirely financed by borrowing. In this example, access to credit markets also allows access to insurance markets.

Now suppose that borrowing is not allowed, so that $s \ge 0$. If $y_1 \le y \le y_2 + p$ (y₂ - y₁), the borrowing constraint will bind, so that:

$$s^{**} = 0$$
 and $q^{**} = \frac{y - y_1}{R(1 - p)}$

The consumer will want to buy insurance if the worst outcome of future income is lower than current income. But since he cannot borrow against the good realization of income, the demand for insurance will be lower, as $q^{**} < q^*$. In this case total saving (s + π q) rises. In fact, when the consumer can borrow:

$$s^{*} + \pi q^{*} = \frac{y - [p y_{1} + (1 - p) y_{2}]}{2}$$
 while if he cannot borrow:
$$s^{**} + \pi q^{**} = \frac{p (y - y_{1})}{1 + p}$$

Since $s^* + \pi q^* \le 0$ if, on average, income is not expected to decline, while $s^{**} + \pi q^{**} > 0$ provided that $y > y_1$, it follows that $s^* + \pi q^* < s^{**} + \pi q^{**}$.

Suppose now that the individual has no access to insurance or credit. In this case there is the possibility that total saving declines with respect to the previous case. Accumulating assets to smooth future income fluctuations is an inefficient way of dealing with uncertainty for if future income happens to be high the future resources will have a smaller marginal utility than the current ones. On the other hand, access to fair insurance allows an intertemporal reallocation of resources where income is available when it is most needed. Thus if borrowing is not allowed it might be optimal to save more when insurance is available than when there is no insurance (depending on the form of the utility function and on the stochastic process generating income).

The table below summarizes this discussion. In the table saving is defined as the difference between current income and current consumption (and therefore includes premiums).

Insurance market		Credit market	
	perfect		borrowing is not allowed
perfect only non-negative	s ₁₁		-
quantities can be traded	\$21		s ₂₂
no insurance is possible	s31		s ₃₂

The cell in the upper-right corner is logically impossible, since a perfect insurance market (unrestricted trade of AD securities) can always replicate a perfect capital market. Since the non-negative restriction on insurance can be overcome by borrowing, $s_{11} = s_{21}$. In each of the other cases saving is at least as great as s_{21} . The case s_{31} is the standard case of precautionary saving. The case s_{32} has been analyzed in this appendix: the anticipation of future borrowing constraints increases current saving, so that $s_{32} \ge s_{31}$. If the consumer cannot borrow to finance the purchase of insurance, there will be less purchase of insurance, but total saving will rise, i.e. $s_{22} \ge$ s_{21} . Finally, the comparison between s_{22} and s_{32} is ambiguous a priori, i.e it is impossible to establish if saving in the absence of borrowing and insurance is greater than the sum of the savings obtained by eliminating one market at the time.

However, it is clear that the value of saving in the second column of the table is always higher than that of the first column: borrowing constraints will always increase saving. And with respect to the perfect market case (s_{11}) , each cell in the table indicates that saving rises.

APPENDIX 2

Regulation in the Italian insurance market 53

The Italian insurance market is heavily regulated. Although some rules were changed in 1986, three main factors still severely limit competition. First, there is a rigid distinction between life insurance and other types of insurance. Companies may specify premiums and coverage only for life insurance. For other types of insurance, the premiums are set for at most one year, and may be revised each year. In both branches, new entrants must obtain a license from the Ministry of Industry. The license authorizes the company to sell specific contracts (for example, for auto insurance). Until 1986 this license was granted on a totally discretionary basis, so that in practice only a few insurance companies were authorized to enter the market after World War II. From the mid-sixties and 1985 the insurance companies ranged from 215 to 220. No new life insurance company was licensed. In 1986 licensing was made non-discretionary. Now it is sufficient for applicants to satisfy a number of requisites, such as specified financial ratios. The fact that 36 companies obtained the license to sell insurance between 1986 and 1989 is indirect evidence that the authorization process previously limited entry.

Second, firms are required to turn over to I.N.A., a public sector insurance company, 30 percent of their premium income for the first 5 years, 20 percent for the following 5 years and 10 percent forever.⁵⁴ This regulation, the only one of its kind in

⁵³ We would like to thank Gianpaolo Crenca of the Italian National Insurance Company Association and Dario Focarelli of the Research Department of the Bank of Italy for providing us some of the information contained in this Appendix.

⁵⁴ I.N.A. may even refuse contracts that it does not like. There are two major consequences of this option: (i) I.N.A. indirectly controls all contracts that are signed; (ii) in practice, I.N.A. supervises the operations of all other companies, especially those recently established. Before 1985 the rule was even more severe. Insurers were required to turn to I.N.A. 40 percent of their premiums for the first 10 years of operation, 30 percent and 20 percent for the following 10 and 20 years respectively, and 10 percent forever.

Europe, is extremely damaging to competition, especially since it is a powerful deterrent for potential entrants.⁵⁵

Third, minimum premiums for life insurance and auto insurance are set each year by the Ministry of Industry.⁵⁶ The actual premiums are the sum of three components: a fair premium, a spread to compensate the insurance company and a commission to agents. The first two are set by the central authority and the third by the insurance agents themselves, who are a strong lobby. In principle, if a company sold insurance at a price below that set by the regulating agency, its licence could be revoked. Thus in practice the premiums for any given risk category are virtually identical.⁵⁷

Almost all insurance policies are intermediated by agents. In countries such as the U.K., Germany and the U.S., brokers have an important role, since they search for the best contracts and bid for the client. But in Italy insurance brokers were not allowed to operate until 1985. Today they intermediate 13 percent of total premiums, but operate exclusively on behalf of firms, not households. In other countries, brokers are very active: in Europe, the share of premiums covered by brokers is more than 40 percent, in the U.S. it is 80 percent (Sigma, April 1989).

Life insurance. The great majority of life insurance contracts terminate with the option of collecting the capital. There are tax incentives to collect the capital, which is taxed at 12 percent; on the other hand, 60 percent of the flow of income from the same capital is subject to income tax. Premiums are taxed at the rate of 2.5 percent. Deductibles discourage annuities: since 1986, premiums up to 2.5 million lire a year have been tax deductible, but if one buys a pure annuity there are no further deductions. The deductibility of premiums applies only if the individual does not borrow for the first 5 years of the contract.

⁵⁵ Since this violates EEC rules on fair competition, the Italian government has been repeatedly reprimanded by the EEC court in Brussels.

⁵⁶ The Banking Law of 1936 granted the monetary authority the right to fix the interest rates on all financial instruments. This law was never applied to banks. However, it has always been applied to auto and life insurance companies.

⁵⁷ In 1990, for example, the excess of actual premiums over the fair premiums for life insurance only ranged from 18 percent to 20 percent.

The returns on life insurance contracts have been consistently negative. Until 1973 contracts provided no protection at all against inflation. Starting in 1974 the yield on life insurance was adjusted at a fixed rate of between 3.5 and 4 percent. With inflation at 20 percent, the returns were substantially negative throughout the seventies and early eighties. From 1974 to 1983 very few individuals signed new contracts, and those bound by old contracts continued to suffer tremendous losses: in the early eighties the life insurance market was near collapse. After 1985 life insurance companies started to sell indexed contracts. The yields are only partially indexed to nominal interest rates. Premiums are still indexed at 4%, but 80% of the premium has the same yield as the investment of the insurance company. It is therefore not surprising that even during the eighties the return on life insurance was considerably lower than that provided by other financial investment, such as government bonds.

Regulations and negative real returns explain why the market for life insurance has always minuscule (see Figure 2 in the text). In addition, tax disincentives limit the demand for pure annuities. The number of these contracts has fluctuated between 6,000 and 10,000 in the eighties (0.1 percent of the population over 65), one twentieth of the figure in the U.S., where 2 percent of the elderly hold annuities (Friedman and Warshawsky, 1990).

Health insurance. The market for private health insurance is negligible: the ratio of premiums to GNP has been 0.05 percent throughout the last 30 years. By law, health insurance premiums can be changed every year. In some cases, insurance companies offer an option to buy health insurance for 10 years in conjunction with life insurance, but it is not clear whether this practice is legal. Even in these cases, the insurance company has the right to cancel the contract if there has been a serious illness in the previous year, i.e. when the need for insurance is greatest. These constraints have the following consequences:

(i) with the exception of a few companies that provide health insurance for their employees, only a very few elderly buy health insurance; and even then they are not covered when they need it most, i.e., in case of serious illness;

(ii) since only the very old buy health insurance, the cost is very high; this in turn exacerbates the well-known problem of moral hazard, raising costs still further.



Figure 1: Ratio of Total Household Liabilities and of Medium and Longterm Liabilities to Net National Income, 1964-89.



Figure 2: Life Insurance and Other Insurance Premiums as a Percentage of National Income, 1954-88.



Figure 3: Home Ownership Ratio by Age-group in Italy, the U.K. and the U.S. (age-groups identified by average ages)



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Figure 4: Home Ownership Ratio by Age-group in Italy (age-groups identified by average ages)

Saving and growth in Italy, 1954-1988 a

Period	Gross	saving r	ates ^b	Net sa	ving rates	3 c	Net sav fo	ing rates a r inflation	adjusted 1 ^d	Growth ^e
	NS (1)	P S (2)	GS (3)	NS (4)	PS (5)	GS (6)	NS (7)	PS (8)	GS (9)	ρ (10)
1954-60	26.7	24.4	2.3	19.7	17.2	2.5	19.7			5.8
1961-65	27.9	25.8	2.1	21.0	18.7	2.3	21.0	17.0	4.0	4.6
1966-70	26.6	26.0	0.6	19.6	19.0	0.6	19.6	17.6	2.0	5.9
1971-75	25.4	28.7	-3.3	17.1	20.8	-3.7	17.1	15.4	1.7	2.7
1976-80	25.8	30.1	-4.3	16.2	21.0	-4.8	16.2	13.7	2.5	4.7
1981-85	22.2	28.6	-6.4	11.2	18.5	-7.3	11.2	10.4	0.8	1.6
1986-88	21.0	26.7	-5.7	10.3	16.7	-6.4	10.3	12.3	-2.0	3.1

NS = national saving;

PS = private saving;

GS = current government saving;

 ρ = average rate of growth of gross national product.

a. In 1985 the national accounts were subject to major revisions. Official statistics exist for a few main aggregates only after 1970. The data for earlier years have been estimated on the basis of the old national accounts. Source: Pagliano and Rossi (1990).

b. Gross saving as a percentage of gross national product.

c. Net saving as a percentage of net national product.

d. The adjustment for inflation is the product of the inflation rate and the net stock of the public debt at the beginning of each year.

		Average 1960-1970		-	Average		- 51	Average 381-1987		Diff 1980)	lerences v - 1960's		Ratio of pr the prowt	ivate savi rate of (ng to
	SN (E)	PS (2)	٩٤	NS (†)	PS (5)	d.(9)	SN (E)	PS (8)	م (6)	ANS (10)	APS (11)	Δρ (12)	1960's (13)	1970's (14)	1980's (15)
Canada	11.3	8.0	4.7	13.3	11.5	3.8	9.4	12.1	3.1	-1.9	4.1	-1.6	1.7	3.0	3.9
U.S.A	10.6	8.3	3.5	8.9	8.2	2.9	3.9	6.8	3.1	-6.7	-1.5	-0.4	2.4	2.8	2.2
Japan	25.6	18.1	9.5	24.6	20.0	4.9	20.2	15.4	3.7	-5.4	-2.7	-5.8	1.9	4.1	4.2
France	19.3	14.5	5.0	16.3	11.5	3.4	8.0	5.4	1.8	-11.3	-9.1	-3.2	2.9	3.4	3.0
Germany	19.9	13.8	4.1	14.3	11.0	2.8	10.7	8.8	1.6	-9.2	-5.0	-2.5	3.4	3.9	5.5
Italy	20.4	17.6	5.2	16.7	14.5	3.7	10.9	11.0	1.9	-9.5	-6.6	-3.3	3.4	3.9	5.8
U.K.	11.2	6.1	2.6	8.2	0.8	1.8	6.2	4.7	3.2	-5.0	-1.4	0.6	2.3	0.4	1.5
			ł												
G7 average	17.0	12.3	4.9	14.6	11.1	3.3	6.6	9.1	2.6	-7.1	-3.2	-2.3	2.5	3.4	3.5
Finland	15.7	7.4	4.8	14.2	7.8	3.8	10.7	<i>T.T</i>	3.3	-5.0	0.3	-1.6	1.5	2.0	2.4
Norway	16.1	8.5	3.8	14.0	5.5	4.8	15.8	2.4	3.9	-0.3	-6.1	0.1	2.2	1.1	0.6
Sweden	16.6	7.6	4.2	11.8	8.0	2.1	6.0	5.5	2.4	-10.6	-2.1	-1.8	1:8	3.8	2.3
OECD averag	e 16.6	11.4	4.9	15.3	11.9	3.4	10.3	0.6	2.4	-6.3	-2.4	-2.5	2.3	3.5	3.8
o Mat notions	مرينيون ار م	t pue (SN)	net mi vate cav	ina adine	ted for infl	lation (PC) are c	haorante	acted c sc	intare of net n	ational nr	dire t	te inflation	adinetment	ie tha nr	June

a. Net national saving (NS) and net private saving adjusted for inflation (PS) are expressed as a percentage of net national product. The inflation adjustment is the product of the rate of the rate of the rate of the private consumption deflator and the stock of outstanding government debt at the beginning of each year. Growth (p) is the average rate of growth of GDP. Source: Modigliani (1990).

Table 2 Net saving rates and growth in the OECD countries ^a

	Cons. credit in 1988 ^a	Number of credit cards b	Durables' % share of total consumption ^C	Mortgages in 1982 ^d	Average downpayment as a percentage of the ^e the sale price	Ownership (percent) f
	(1)	(2)	(3)	(4)	(5)	(6)
Canada	22	-	14	60	20	62
United State	es 23	200	10	61	11-33	65
Japan	18		5	25	35-40	60
France	8	20	12	44	20	47
Germany	15	26			30	37
Italy	4	4	11	6	40-50	59
U.K.	10 ·	30	9	45	15	59
G7 average	g 14		-,- 56	44	~	56
Finland	39		11	42	20	61
Norway	48		12	60	-,-	67
Sweden	39		10	61	20	57

Table 3Household liabilities in the OECD countries

a. As a percentage of private consumption expenditures in 1988 (for Japan and France in 1987, for Sweden in 1986). Consumer credit sources: OECD Financial Accounts. For Italy, Annual Report of the Bank of Italy, 1990. Data for Finland, Norway and Sweden and Japan have been provided by Suomen Pankki - Finland Bank, Norge Bank and Sverige Riksbank and the Japan Information Centre Corporation.

b. In millions, at the end of 1988. Source: Annual Report of the Bank of Italy, 1989, p. 290.

c. All figure refer to 1980. The "durable" aggregate excludes semi-durables. Source: OECD National Accounts.

d. As a percentage of private consumption expenditures in 1982. Sources: Boleat (1987), Table 21.8, p. 218. For Italy, Annual Report of the Bank of Italy, Appendix, Table aD29. Data for Finland, Norway and Sweden have been kindly provided by the Finland Central Bank, the Norge Bank and the Sverige Riksbank.

f. For Canada, Japan, France and Germany the figure refer to 1978; for the U.S., Italy, the U., K. and Sweden to 1981; for Finland and Norway to 1980. Source: Boleat (1987), Table 29.1.

g. Average figures are unweighted averages of all countries.

e. The average downpayment is the amount of personal funds required to buy a home even when individuals borrow from different institutions. For the U.S., the figure refers to 1985. The two numbers refer to the down payments of first-time buyers and repeat buyers, respectively (Summers and Carroll, 1987, Table 7). For Canada, Finland, France, Germany, the figure refers to 1982-3 (Boleat, 1987, p. 102-3). For Japan, Hayashi, Ito and Slemrod (1988, p. 223-4) report 35-40 percent for the down payment of first-time and repeat buyers in the eighties. For Italy, the numbers are our own estimates based on conversations with market specialists. The figure for the U.K. is the average ratio of mortgage advances to house prices for first-time home buyers in 1988 (Muellbauer and Murphy, 1990, p. 366).

Consumer credit in Italy, 1986-89

io of consumer credit to sumption expenditures a	Borrowing rate ^b	Lending rate ^c	Spread	Downpayment on cars
(1)	(2)	(3)	(4)	(5)
3	25.3	11.2	14.1	
3	23.8	9.7	14.1	24.9
4	23.1	9.6	13.5	26.1
4	24.1	10.9	13.2	23.4
	io of consumer credit to sumption expenditures ^a (1) 3 3 4 4 4	io of consumer credit to sumption expenditures ^a (1) Borrowing rate ^b (2) 3 3 25.3 3 23.8 4 23.1 4 24.1	io of consumer credit to sumption expenditures a rate b rate c (2) (3) 3 25.3 11.2 3 23.8 9.7 4 23.1 9.6 4 24.1 10.9	io of consumer credit to sumption expenditures a (1)Borrowing rate b (2)Lending rate c (3)Spread325.311.214.1323.89.714.1423.19.613.5424.110.913.2

^{a.} Figures for consumer credit refer to both banks and finance companies ("Società di credito al consumo"). The loans made by the latter are imputed from a sample of 25 institutions estimated to cover 80 percent of such loans. Source: Bollino and Casini (1989) and D'Alessio (1990).

loans. Source: Bollino and Casini (1989) and D'Alessio (1990).
b. Average annual interest rate, inclusive of all transaction costs. The figures refer to finance companies only.
c. After-tax rate of return on one-year government bonds. Source: Annual Report of the Bank of Italy (1990), Appendix, Table aD30.

					_
Insurance	premiums as a	percentage of	gross	national	product
	in the	OECD in 198	7 a		

	Total premiums (1)	Life insurance premiums (2)	Other premiums (3)
Canada	5.41	2.62	2.79
United States	9.07	3.69	5.38
Japan	8.69	6.43	2.26
France	5.06	2.15	2.91
Germany	6.40	2.86	3.54
Italy	2.36	0.51	1.85
U.K.	8.35	5.25	3.10
G7 average ^b	6.47	3.36	3.12
Finland	5.31	3.33	1.98
Norwáy	5.08	2.03	3.05
Sweden	4.49	2.50	1.99
Australia	5.31	1.79	3.52
Austria	4.75	1.44	3.31
Belgium	4.17	1.23	2.94
Denmark	4.30	1.67	2.63
Greece	1.24	0.40	0.84
Ireland	12.24	7.60	4.64
Luxembourg	3.35	0.84	2.51
Netherlands	6.29	2.92	3.37
New Zealand	5.64	3.30	2.34
Portugal	2.69	0.35	2.34
Spain	3.31	1.27	2.04
Switzerland	8.02	4.45	3.57
OECD average ^b	5.52	2.67	2.85

a. Sources: Sigma, Zurich, March 1990 and Annuario Italiano di Statistica, Rome, 1989, Table 16.18. b. Average figures are unweighted averages of all countries.

Public expenditure on the main social programmes and number of workers in pension funds in 1985 ^a

	Health	Unemployment	Housing ^b	Pensions	Workers in private pensions funds ^c
	(1)	(2)	(4)	(5)	(6)
Canada	6.4	3.3		5.4	
U.S.A.	4.4	0.4		7.2	52
Japan	4.8	0.4		5.3	55
France	6.8	2.8	0.7	12.7	86
Germany	6.4	1.5	0.2	11.8	87
Italy	5.4	0.7	0.1	12.8	3
U. K.	5.2	1.8	0.9	6.7	51
G7 average	5.6	1.6	-,-	8.8	-,-
Finland	5.6	0.5 a		7.1	
Norway	6.2	0.7 ^a		8.0 a	
Sweden	8.5	0.7	-,-	11.2	-,-
OECD average d	5.6	1.8		8.9	

a. All data are percentages of gross domestic product. Sources: Duskin (1987) and OECD Social Data Bank. The data are not strictly comparable because they are provided by the OECD on the basis of national accounts and OECD own estimates. For Italy the data have been updated with the figures available from the new national accounts. b. 1984 figures.

c. 1980 figures as a percentage of the working population.

d. The OECD average figures are unweighted averages of all OECD countries excluding Portugal and Greece.

Table 7 Excess sensitivity tests: aggregate time series and panel data

Aggregate data: anr	nual data, 1954-8	38 a	Dependent v	ariable: ∆lnC _t	
Dependent variable	constant (1)	ΔlnY _t (2)	R ² (Y) (3)	R ² (C) (4)	R ² (INST) (5)
1. ND ^b	0.016 (2.99)	0.566 (4.03)	0.16 (0.09)	0.21 (0.05)	-0.09
2. ND + IFD ^b	0.013 (2.72)	0.608 (5.23)	0.41 (0.00)	0.37 (0.00)	0 .10
3. ND °	0.013 (1.71)	0.650 (3.22)	0.04 (0.40)	0.13 (0.12)	0.02
4. ND + IFD ^c	0.011 (2.30)	0.652 (5.41)	0.38 (0.00)	0.37 (0.00)	0.30

 R^2 (Y): adjusted R^2 of the regression of $\Delta \ln Y_t$ on the instruments;

 R^2 (C): adjusted R^2 of the regression of ΔlnC_t on the instruments;

 R^2 (INST): adjusted R^2 of the residuals of the 2SLS regression on the instruments;

ND: consumption of non-durables and services;

IFD: imputed flow of the consumption of durables.

a. Data source: see notes to Table 1.

b. In regressions 1 and 2 the instruments are the first and second lags of the growth rate of disposable income and consumption, and the first lag of the consumption-income ratio.

c. In regressions 3 and 4 the instruments are the second and third lags of the growth rate in disposable income and consumption, and the second lag of the consumption-income ratio.

Panel data: 820 observation	s d	Ĩ	Dependent variable: ^e AlnO	ો
Dependent variable	constant (1)	Y _{d87} (2)	R ² (3)	
Non-durable consumption	0.019 (7.92)	-0.17 (8.50)	0.07 (0.00)	

d. In 1987 the Bank of Italy interviewed 8,026 households. Of these, 1,268 were interviewed again in 1989. After excluding households with missing observations for the relevant variables and those that experienced a major change in family status between 1987 and 1989, a sample of 820 observations remains.

e. The dependent variable is the growth rate of the consumption of non-durables and services between 1987 and 1989. The regression also includes a set of demographic variables in 1987 (age, occupational dummies, gender and regional location).

Sample means for owners and renters

Variable ^a	Renters	Buyers	Received the	Total sample
	(1)	(2)	(3)	(4)
Consumption of non-durables	22.389	29.731	27.151	26.257
Total consumption	24.828	32.877	29.979	29.065
Current earnings	27.976	34.205	29.930	30.996
Permanent earnings	28.741	32.577	31.182	30.756
Net worth	70.952	261.610	244.890	177.720
Age	37.99	42.58	40.58	40.35
Family size	3.22	3.63	3.47	3.43
Gender	0.87	0.93	0.91	0.90
Education	10.08	10.06	10.22	10.09
Ratio of non-durable cons. to current earnings	0.80	0.87	0.91	0.84
Ratio of non-durable cons. to permanent earnings	0.78	0.91	0.89	0.85
Sample size	1,958	2,033	573	4,564

a. Consumption, income and wealth are in millions of 1989 lire. Observations excluded are: (i) households where the head is not in the labor force; (ii) households with zero disposable income; (iii) households with head older than 55. The dummy for gender takes the value of 1 if the head is male, 0 if female.

Probit estimates

Dependent variable: probability of ownership a

Variable ^b	Coefficient (1)	t-statistic (2)	Coefficient (3)	t-statistic (4)
Permanent earnings	0.144E-04	4.66	0.155E-04	4.73
Education	-0.0021	-0.09	-0.008	-0.33
Resident in the North	-0.257	-4.81	-0.225	-3.96
Resident in the South	-0.049	-0.86	-0.064	-1.06
Price index of housing	-0.452E-03	-7.14	-0.355E-03	-5.31
Demographics				
Age < 25	-0.824	-10.53	-0.898	-10.69
25 < Age < 35	-0.591	-9.57	-0.633	-9.70
35 < Age < 45	-0.191	-3.24	-0.189	-3.08
Number of children	-0.246	-4.45	-0.219	-3.68
Married	-0.053	-0.68	0.019	0.09
Family size	0.229	4.32	0.211	3.69
Gender	-0.039	-0.48	-0.018	-0.21
Occupation				
operative	-0.121	-0.82	-0.029	-0.18
clerical	0.059	0.41	0.118	0.75
precision craft	0.152	1.00	0.196	1.19
professional	0.046	0.25	0.089	0.51
manager	0.039	0.25	0.118	0.60
self-employed	0.192	1.32	0.267	1.70
Sector				
agriculture	0.394	3.36	0.304	2.37
industry	0.047	0.81	-0.001	-0.01
services	-0.012	-0.24	-0.025	-0.45
Constant	0.375	1.40	0.005	0.02
Observations	4,564		3,991	
Number of owners	2,606		2,033	
Likelihood at binomial	-3,117		-2,909	
Final likelihood	-2,861		-2,523	

a. In column (3) the sample excludes households who have received the home as bequest.
b. Excluded attributes are: Resident in the Centre, Age > 45, non-married, females, working in the Public Administration. Dependent variable = 1 if owner, 0 otherwise.

	All owners		Buyers only	
Variable ^a	Coefficient (1)	t-statistic (2)	Coefficient (3)	t-statistic (4)
Permanent earnings	0.566	21.58	0.602	19.21
Transitory earnings	0.341	27.6	0.349	25.50
Net worth	0.008	14.18	0.007	11.59
Age	0.73E-04	2.62	0.72E-04	1.99
Family size	0.99E-03	6.74	0.86E-03	4.82
Gender	-0.57E-3	-0.99	-0.68E-3	-0.98
Education	0.23E-3	4.81	0.25E-3	4.49
Constant	-0.14E-3	0.08	0.99E-3	0.44
Mill's ratio	-0.010	0.29	-0.059	1.26
Adjusted R ²	0.358		0.352	
Sample size	2,606		2,033	

Table 10 Generalized Tobit estimates

a. All variables are divided by permanent earnings.

Gap between desired and actual consumption as a percentage of non-durable consumption

Sample of renters	Observations (1)	Gap for renters (2)	Total sample gap (3)
No exclusions ^b	1,958	11.7	2.4
No exclusions ^c	1,958	18.1	3.7
Excluding W < 20 and W > 200 $^{\circ}$	1,269	19.5	2.6
Excluding W < 30 and W > 300 $^{\circ}$	1,048	17.9	2.2
Excluding W < 50 and W > 500 ^c	606	14.7	1.3

b. The gap is computed using the coefficients estimated on the sample of all owners (column 1).c. The gap is computed using the coefficients estimated on the sample of buyers only (column 3). Net worth (W) is in millions of 1989 lire.

Earning profiles in Italy, the United States and Japan (Age group 40-49 = 100)

Age	Cross-sectional profiles ^a			Profiles adjusted for productivity growth b		
	Italy (1)	U.S.A (2)	Japan (3)	Italy (4)	U.S.A. (5)	Japan (6)
20-29	65	65	32	30	50	11
30-39	87	92	7 9	59	81	47
40-49	100	100	100	100	100	100
50-59	83	85	104	9 7	97	174
60-69	25	42	45	54	54	126

a. Sources: Italy: 1989 Survey of Household Income and Wealth. United States and Japan: Hayashi (1986, Table 3, p. 170). Data for Japan refer to 1980; data for the United States to 1972-73.

b. The adjustment for the cohort effect is the average annual rate of growth of GNP per employed worker between 1960 and 1988, i.e. 3.9 percent in Italy, 1.3 percent in the United States and 5.3 percent in Japan.

Table 12Wealth profiles in Italy, the United States and Japan(Age group 56-65 = 100)

Äge	Cross-sectional profiles ^a			Profiles adjusted for productivity growth b		
	Italy (1)	U.S.A (2)	Japan (3)	Italy (4)	U.S.A. (5)	Japan (6)
< 25	26	20	11	6	12	2
26-35	41	52	41	13	35	9
36-45	-75	87	81	35	67	29
46-55	99	89	94	68	78	56
56-65	100	100	100	100	100	100
66-69	63	74	99	82	81	122
70-74	62	73	98	102	86	136
75 -79	45	86	65	86	107	104
> 80	31	40	74	67 ·	52	134
Amount ^c	154	86	17	599	136	106

a. Sources: Italy: 1989 Survey of Household Income and Wealth. United States: 1979 Household Pension Survey, Ando and Kennickell (1987), Table 7.1, p. 163, line NW79). Japan: 1979 National Survey of Family Expenditure, Ando and Kennickell (1987), Table 7.9B, line ARM, p. 195.

b. The adjustment for the cohort effect is the average annual rate of growth of GNP per employed worker between 1960 and 1988, i.e. 3.9 percent in Italy, 1.3 percent in the United States and 5.3 percent in Japan. In each case we assume that the average age for individuals in the first age-group is 20.

c. Wealth is the sum of real and financial wealth, net of liabilities. The last row of the table indicates the values of net worth in the age class 56-64. For Italy this number is in millions of 1987 lire, for the United States in thousands of 1979 dollars, for Japan in millions of 1979 yen.
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