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Italians Are Late
Does It Matter?

Francesco C. Billari and Guido Tabellini

10.1 Introduction

In the discussion of the link between demography and the economy, the main focus of existing research is on population aging and its consequences. The determinants of population aging—below-replacement fertility above all others—are investigated as areas of potential policy concern. For these reasons, societies that age faster, that is, those that experienced particularly low levels of fertility for some decades, are ideal laboratories for studying the demography-economy link. Italy (together with Spain) has been the first country in which fertility reached levels that had not been reached earlier, that is, total fertility rates below 1.3 children per woman. This level, which has been termed "lowest-low fertility" (Kohler, Billari, and Ortega 2002), has appeared during the 1990s and has spread thereafter toward Central and Eastern Europe as well as toward rich countries in East Asia. Italy has become the most aged country in the Organization for Economic Cooperation and Development (OECD), even if the rapid rise in immigration, together with a small increase in fertility, have prevented the total and working-age population from falling during the early 2000s (Billari 2008).

One of the key features of Italy's low fertility is its connection with a late transition to adulthood. In order to get a comparable tertiary degree, young Italians tend to study longer than their counterparts in other nations. They enter the labor market later. They live with their parents longer than their

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peers elsewhere. They form a partnership via marriage or cohabitation later, and now they also tend to have their first child later. For instance, for Italians born between 1966 and 1970, the median ages at various events were as follows, for men and women, respectively: for completing education: 19.2 and 19.3; for first job: 21.4 and 24.0; for leaving home: 27.2 and 25.1; for first birth: 33.4 and 29.3 (Mazzuco, Mencarini, and Rettaroli 2006). This pattern has been defined as the "latest-late transition to adulthood." In the following, we discuss more in detail how Italy compares to other countries in Europe.

Such late transition to adulthood of Italian youth did not go unnoticed. In October 2007, the Italian Minister of the Economy Tommaso Padoa-Schioppa defined youths who continue to reside in the parental home as *bamboccioni* (big babies); according to the *International Herald Tribune* this is "an Italian word that evokes images of clumsy, overgrown male babies." The Minister also advocated financial incentives to induce youths still living with their parents to abandon their nest.[1]

What are the economic consequences of such late transition to adulthood, besides the immediate implications for fertility? In particular, could this late transition contribute to explain the disappointing performance of the Italian economy over the last decade? These are the general questions motivating this chapter.

Our main contribution is to study how the timing of specific events, such as leaving the parental home, is associated with individual income later in life. Our evidence comes from a survey of Italian men in their 30s, on which we have detailed retrospective information on the (earlier) timing of specific events as well as economic outcomes at the time of the survey. The main finding is that a late transition to adulthood, measured by the date of leaving the parental home, is associated with lower income later in life. Of course, both income and transition to adulthood are jointly determined, and our estimation strategy attempts to infer causality by relying on instrumental variables.

Other recent papers have studied the consequences of the prolonged coresidence between parents and their children. Alessie, Brugiavini, and Weber (2005) focus on the link between coresidence and savings, comparing Italy and the Netherlands. Aassve et al. (2007) study the effect of leaving home on poverty without, however, finding explicit links with coresidence rates (they find that departure from the parental home has a significant short-term impact on poverty in thirteen European countries, with the highest impact in Scandinavia). Finally, Alesina and Giuliano (2007) argue that the strength of family ties (including those between parents and children)

1. See, for instance, "Italian Economics Minister Causes Uproar with 'Big Babies' Tax Proposal," *International Herald Tribune,* 5 October 2007, or "Observer: Flowers and Taxes," *Financial Times,* 10 October 2007.

has important consequences for the economy and that the family is a more important economic unit in societies in which family ties are stronger, as in Italy.

The remainder of this chapter is organized as follows. Section 10.2 describes the peculiarity of the Italian case, showing stylized evidence and reviewing studies that have tried to explain this peculiarity mostly with reference to culture or institutional factors. Section 10.3 addresses the link between the delay in the transition to adulthood and the economy through a review of the literature on the demography-economy nexus and cross-country analyses. Section 10.4 is the main contribution of this chapter: it presents a microeconometric evaluation of the effect of delayed home-leaving on individual income in a sample of Italian youths. Conclusions and policy implications are drawn in section 10.5.

10.2 The Italian "Latest-Late" Pattern of Transition to Adulthood

What makes a person an adult? There is no straightforward answer to this question, which has long been studied, especially by historians and sociologists. Certainly, age plays a role: in every society, there are specific ages at which individuals are given specific rights or responsibilities, or under which it is not legal to perform certain behaviors. Examples include lower age limits for working, for drinking, for marrying, and age threshold that entitle individuals to vote or to carry a driving license. During the 1970s, a series of authors in the fields of sociology and social history pointed out explicitly that becoming an adult is a process characterized by a series of events that mark passages from roles that are typical of youth to other roles. In contemporary societies, these events include completing education, entering the labor market, leaving the parental home, marrying (or, having recent trends in mind, cohabiting), or becoming a parent (Elder 1975; Modell, Furstenberg, and Hershberg 1976; Neugarten and Datan 1973). A whole literature on the "transition to adulthood" has flourished since then, exploring the factors that shape the timing of these events and the order in which they appear in life (Hogan and Astone 1986; Settersten, Furstenberg, and Rumbaut 2005; Shanahan 2000). The relevance of these events for the perception of adulthood in the 2000s has also been investigated for the United States, through the General Social Survey (Furstenberg et al. 2004). As we have already noticed in the introduction, research on the consequences of the transition to adulthood has been much more limited.

A general feature of transitions to adulthood in contemporary developed societies is that, overall, its timing has become later (Liefbroer 2005; Settersten, Furstenberg, and Rumbaut 2005). Young adults tend to study longer; enter the labor market later; leave the parental home, cohabit or marry, and become a parent later. Italy, followed closely by Spain, ranks first as far as a late transition to adulthood is concerned. Indeed, Italy and

Spain have been labeled as following a "latest-late" pattern of transition to adulthood (Billari et al. 2002; Billari, Philipov, and Baizán 2001). This pattern is linked to an increasing age at leaving education and entering the labor market, with levels, however, comparable to those of other countries. What is peculiar is the particularly high age at leaving home, union formation, and first birth. Moreover, leaving home is more frequently associated with marriage (and union formation in general) compared to other societies. Table 10.1 documents the latest-late pattern of transition to adulthood using data from standard demographic surveys: Italy has the highest median age at leaving home. It is not a surprise that also the median age at parenthood is the highest for men and the second highest for women; indeed, Italy tops the rankings of late fertility (Billari et al. 2007). Moreover, there is a clear trend toward further postponement, which is confirmed by the most recent research results (Mazzuco, Mencarini, and Rettaroli 2006).

Consistent with the picture on the timing of events, there is clear evidence that young Italians tend to financially depend more on their parents, with respect to their counterparts in other developed countries. Table 10.2 shows comparative data on Europe: in 2001, 74 percent of young Italians aged fifteen to twenty-four declared to be financially dependent on their parents, while this was true for only 19 percent for young Danes and 21 percent of U.K. youth. This trend continues when more recent data are taken into account.

How has this peculiarity of the Italian pattern of transition to adulthood come about? We briefly survey some of the research results concerning the attempt to explain this peculiarity. We roughly distinguish between two lines of explanation: one emphasizes culture or cultural change, the other focuses on economic and, especially, institutional factors that are peculiar to Italy. We mainly consider the age of home leaving, given its key role as a marker of the age at which youth reach a sufficient degree of individual autonomy and responsibility in the transition to adulthood and given that the peculiarity of the latest-late pattern identified in the literature lies on the delayed departure from the parental home.

10.2.1 The Role of Culture

A series of contributions by scholars from different disciplines focus on the role of culture as the key explanation to the peculiarity of the Italian pattern. The late transition to adulthood of young Italians is explained essentially by their preference to coreside with parents, or by their parents' to coreside with children, or both.

In the demographic literature, several authors have emphasized that the Italian (and Southern European) pattern is historically rooted. Coresidential links between parents and children have been strong also in the past, and they pervade all ages. Reher (1998), for instance, distinguishes two basic patterns of family ties and transition to adulthood. The Northern European

Table 10.1 **The timing of events in the transition to adulthood: An international comparison**

	End of education		First job		Leaving home		First union		First birth	
Country	1950s	1960s	1950s	1960s	1950s	1960s	1950s	1960s	1950s	1960s
					A. Males					
Australia	16.6	16.9			20.6	20.0	23.5	24.9		
Austria	18.4	18.6	18.7	18.3	22.9	21.4	24.0	23.6	27.2	28.3
Belgium (Flanders)	18.2	19.0	18.7	19.8	22.7	23.7	24.3	23.2	26.5	28.4
France	18.2	18.2	18.2	18.5	21.7	22.1	23.7	23.8	27.3	29.5
Italy	17.7	18.5	17.5	18.9	24.9	27.2	25.8	28.8	29.2	33.3
The Netherlands			17.0	18.5	21.3	21.8	23.0	23.0	28.0	
Norway		19.2		18.1		22.0		23.7		28.3
Poland	18.2	18.2	19.7	19.6	24.6	26.6	24.6	25.1		
Spain	14.3	15.7	15.6	17.4	25.1		25.6		27.7	
					B. Females					
Australia	16.2	17.0			19.6	19.2	21.3	21.9		
Austria			18.3	18.2	20.0	19.1	21.0	20.7	22.8	24.0
Belgium (Flanders)	18.0	19.2	18.4	20.2	21.2	21.7	21.4	22.3	24.2	26.4
Canada	20.7	21.0	20.0	20.4	19.9	20.9	21.5	22.7	25.6	27.8
France	18.2	18.2	19.3	20.2	20.3	20.0	21.4	21.7	24.2	26.4
Italy	16.5	18.5	20.2	21.2	22.2	23.8	22.5	24.2	24.8	27.2
The Netherlands			16.5	17.5	19.6	19.5	20.0	21.0	25.0	28.0
Norway		18.9		18.6		20.2		21.1		25.7
Poland	19.2	18.9	18.6	18.8	22.4	22.8	22.3	22.4	23.6	23.2
Spain	14.0	15.1	17.6	19.5	23.2		23.2		25.3	

Sources: For European countries, Corijn and Klijzing (2001); for Australia, Flatau et al. (2007); for Canada, Ravanera, Rajulton, and Burch (1998).

Table 10.2 **Share of young adults who declare to be financially dependent on their parents or who get most of their money from relatives/partner (%)**

	Youth aged 15–24		Youth aged 15–30
Country	1997 (parents)	2001 (parents)	2007 (relatives and partner)
Austria	41	43	24
Belgium	48	58	32
Denmark	19	19	5
Finland	41	40	17
France	48	61	30
Germany	38	46	26
Greece	51	71	49
Ireland	38	32	19
Italy	68	74	50
Luxembourg	58	66	40
Portugal	51	54	44
Spain	62	67	34
Sweden	34	39	6
The Netherlands	33	43	17
United Kingdom	17	21	14
EU-15 (average)	45	54	29

Sources: Billari (2004) on Eurobarometer data for 1997 and 2001; The Gallup Organization (2007) for 2007.

pattern of *weak family ties* and early transition to adulthood is linked to the medieval habit of leaving the parental home early for agricultural work or to become a servant. On the contrary, in Southern Europe, the *strong family ties* pattern was characterized by extensive periods of coresidence between parents and adult children, in some areas extending to the whole life for at least some of the children; the roots of this Southern European pattern could be found in the meeting between the Roman and the Arab traditions of kinship. Families (and not communities) have historically taken care of vulnerable individuals in the south. Starting from the point of view of historical continuity, nothing is new under the sun concerning the strength of ties between parents and children; nevertheless, increasing economic well-being is allowing to relax constraints, and the delayed transition to adulthood is seen as a results of free choice. Parents from strong family ties societies do not encourage their adult children to leave home. This delay can become a problem from a demographic point of view as the low levels of fertility that arise as a consequence can undermine the survival of the pattern itself (Dalla Zuanna 2001).

Still linked to the specificity of the Italian pattern are the findings of Manacorda and Moretti (2006), who put a key emphasis on the preferences of parents. They see living arrangements as the outcome of a noncooperative game between parents and children. If coresidence is a "good" for

parents and a "bad" for children, parents will be willing to trade off some of their consumption in order to "bribe" their children. In other words, children who remain at home are compensated with higher consumption. Therefore, when parents have a preference for coresidence, parental income has a positive effect on coresidence (of course, if children have the same type of preference, there is no need to bargain). They then test this prediction exploiting exogenous changes in parental income induced by a reform in the Italian pension system. As expected, an exogenous rise in parental income increases the likelihood of their children coresiding and reduces the childrens' labor supply.

Manacorda and Moretti (2006) explain the Italian peculiarity of a late departure from the parental home to the extent that Italian parents differ in preferences from other parents. Indeed, U.S. evidence suggests that parents have opposite preferences for coresidence with children, suggesting that for U.S. fathers, privacy is a normal good (Rosenzweig and Wolpin 1993). Manacorda and Moretti also provide descriptive evidence on the positive association between parental happiness and coresidence in Italy. Using data from the World Value Survey (WVS), coresidence with children has a high and positive effect on parental happiness in Italy (with the highest coefficient), followed by Spain and Portugal; in other countries, coresidence with children is negatively associated with parental happiness (the highest negative coefficient being that of the United States, followed by France, Great Britain, and West Germany). Consistent with this, Mazzuco (2006) compares the causal impact of children leaving home on the well-being of parents in France and Italy using data from the European Community Household Panel, where well-being is measured through subjective life satisfaction and health status. He finds that when Italian children leave the parental home, the well-being of parents (their mothers in particular) worsens, while the opposite is true when French children leave the parental home. Finally, according to Manacorda and Moretti, results for the happiness of children go in the opposite direction: they find a positive association between youth happiness and leaving in the parental home in France and the United States, and a negative association in Italy (with the largest coefficient), West Germany, Portugal, the United Kingdom, and Spain.

In table 10.3, we show some results from our own elaboration on the WVS on parents and their relationship with children. Column (1) replicates the findings by Manacorda and Moretti (2006) on earlier waves (although the magnitude of the estimates is different). The association between coresidence with children and parental happiness is higher in Italy than in any other country considered. In column (2) Italy ranks high on values concerning the responsibilities of parents toward children although differences between countries on this item do not seem very relevant.

Table 10.4 documents that, unlike in Manacorda and Moretti (2006), Italian children also score the highest on the association between coresi-

Table 10.3 **Happiness of parents and coresidence with children and values concerning the attitudes of parents toward children**

Country	Parents' happiness and co-residence	Parents' responsibilities are to do the best for their children
Denmark	3.017	0.408
	(1.719)	(0.038)
France	0.446	0.681
	(1.706)	(0.037)
Germany (West)	1.728	0.418
	(1.056)	(0.037)
Italy	5.964	0.645
	(1.714)	(0.037)
Portugal	–3.285	0.763
	(2.940)	(0.037)
Spain	0.159	0.674
	(0.888)	(0.036)
The Netherlands	–1.298	0.563
	(1.949)	(0.038)
UK (Great Britain)	–0.509	0.662
	(1.872)	(0.038)
United States	–0.181	0.644
	(1.628)	(0.036)

Notes: Standard errors in parentheses. Own elaborations on data from the World Value Survey (WVS). First column refers to the 1989 to 1993 wave of the WVS and contains, in a regression on a variable of happiness on a 0 to 1 scale (from not at all happy to very happy), the coefficients (per 100) of a dummy variable that is equal to 1 when parents coreside with children. Regressions are performed separately for each country; controls include gender, age, age squared, health status, marital status (five statuses), employment status (five statuses), family income for men aged forty to seventy-four and women aged thirty-seven to seventy-one who are parents (a similar analysis is in Manacorda and Moretti 2006). Second column refers to all available waves and contains, in a pooled cross-country regression of a dummy variable that is equal to 1 when respondents answer that "Parents' responsibilities are to do the best for their children," the country coefficients. Controls include gender, age, age squared, health status, marital status (five statuses), employment status (five statuses), family income.

dence (with parents) and happiness (column [1]) although here the estimated coefficients are generally not statistically significant.[2] Moreover (column [2]), Italians score the highest on values related to respect toward parents. These data are, therefore, in accordance with a cultural peculiarity of the Italian setting.

Starting from Reher's historical account, Giuliano (2007) explains late home leaving in Italy by focusing on cultural change rather than continuity. She points out that in the early 1970s, the date of home leaving was fairly early in all advanced countries, except that the cultural norm for

2. We are not sure why our results differ from those reported by Manacorda and Moretti (2006). One reason could be that we focus only on youth aged eighteen to thirty-four, which we believe is the relevant focus when studying children.

Table 10.4 **Happiness of children and coresidence with parents and values concerning the attitude of children toward parents**

Country	Children's happiness and coresidence	Children should always respect parents
Denmark	2.454	0.357
	(3.242)	(0.039)
France	2.074	0.717
	(2.515)	(0.039)
Germany (West)	1.275	0.472
	(1.618)	(0.039)
Italy	3.926	0.767
	(3.155)	(0.038)
Portugal	–1.352	0.688
	(3.262)	(0.040)
Spain	0.820	0.713
	(1.670)	(0.037)
The Netherlands	1.504	0.387
	(2.732)	(0.039)
UK (Great Britain)	–2.353)	0.600
	(3.048)	(0.039)
United States	0.025	0.688
	(2.231)	(0.038)

Notes: Standard errors in parentheses. Own elaborations on data from the World Value Survey (WVS). First column refers to the 1989 to 1993 wave of the WVS and contains, in a regression on a variable of happiness on a 0 to 1 scale (from not at all happy to very happy), the coefficients (per 100) of a dummy variable that is equal to 1 when children coreside with parents. Regressions are performed separately for each country; controls include gender, age, age squared, health status, marital status (five statuses), employment status (five statuses), family income for individuals aged eighteen to thirty-four. Second column refers to all available waves and contains, in a pooled cross-country regression of a dummy variable that is equal to 1 when respondents answer that "Children should always respect parents," the country coefficients. Controls include gender, age, age squared, health status, marital status (five statuses), employment status (five statuses), family income.

Southern Europeans was to leave parental home at the time of marriage, whereas Northern Europeans had weaker family ties and were not bound by such norm. She then argues that the sexual revolution of the 1960s had a differential impact on Southern versus Northern Europe. Although the sexual revolution occurred in all countries, in Southern Europe, it implied that parents allowed far more freedom within the parental home. As a result, Southern Europeans nowadays stay in the parental home for longer and postpone marriage. In Northern Europe, there was no link between the date of marriage and the date of home leaving, and the sexual revolution did not influence coresidence with parents. This idea is documented using a survey on Italian young adults who coreside with their parents. More specifically, youth living with parents who allow more sexual freedom are more likely to be willing to continue coresiding; this idea is consistent with our children's happiness report in table 10.4. Giuliano also documents the role of

culture by looking at second-generation immigrants in the United States, who display similar trends and differences as their peers in the countries of their parents; the postponement of home leaving of young Europeans is correlated with the postponement of home leaving of second-generation individuals of European origins in the United States.

Alesina and Giuliano (2007) further develop the "weak" versus "strong" family ties link with the economy and show that, in societies with strong family ties, the family is a more important economic unit. In these societies, home production is higher, but the labor force participation of young adults and geographical mobility are lower compared to societies with weak family ties.

10.2.2 The Role of Economic and Institutional Factors

Other explanations of the peculiarity of the Italian pattern focus on economic factors. Here the emphasis is on the interaction of economic circumstances with the institutional setting and, especially, welfare.

Becker et al. (2004) point to the peculiarity of the labor market. They explain the late home leaving pattern of Southern Europeans through the central role of *job insecurity.* In their model, children continue coresiding with parents even when working if they see their future income as insecure. The reason is that moving out of the parental home is considered an irreversible choice. Cross-country relationships on coresidence and measures of job insecurity are consistent with their hypothesis. Their microeconometric evidence is on parents: focusing on a pension reform that exogenously affects the income of parents, they show that a higher job insecurity of parents causes a delay in the housing emancipation of young adults. Provincial unemployment rates, on the other hand, do not have an effect on young adult's home leaving rates—according to Becker et al. (2004), this is related to the fact that unemployment rates do not adequately reflect youth's job insecurity.

In an analysis of the European Community Household Panel, Aassve and colleagues (Aassve et al. 2002) show that own income and employment are more linked to the decision to leave the parental home in Italy and other Southern European countries than elsewhere. According to Blossfeld and colleagues (Blossfeld et al. 2005; Blossfeld, Mills, and Bernardi 2006), the increasing job insecurity for young people that is implied by the globalization process is not adequately buffered by familistic welfare regimes like the one prevailing in Italy. For this reason, delayed home leaving is seen as a rational response to job insecurity, especially in societies without adequate welfare for young people.

Giannelli and Monfardini (2003) model the transition to adulthood by considering household membership, human capital accumulation, and work as joint decisions. They focus on Italy. Coresidence with parents is suppose to increase the reservation wage of young adults, They show that, in the pres-

ence of poor labor market opportunities (measured via the unemployment rate), youths may opt for investing in the improvement of human capital. Moreover, they emphasize the importance of housing and show that house prices are positively related to the propensity to reside with parents.

Alessie, Brugiavini, and Weber (2005) present a theoretical and empirical model of joint living arrangements and savings decisions in which they argue that coresidence with parents is a rational response of Italian youth to particularly high transaction costs on the housing market. Continuing to coreside with young parents allows young people to save more than they could do otherwise and to be more ready to successfully carry on subsequent housing choices.

10.3 Transition to Adulthood and the Economy: Does Late Matter?

What are the economic consequences of a delayed transition to adulthood? This section addresses this question. We look at three possible channels of influence: on fertility and population aging, on ability, and on labor market outcomes.

10.3.1 Fertility and Population Aging

Individuals typically plan their lives, and especially the transition to adulthood, according to a specific sequence of events, where there is a common "normative" pattern. First, they complete education. Then they become financially independent. Then they enter into a stable cohabiting partnership. Then they have children. This sequencing implies that a delay in achieving any one of these steps also postpones the subsequent ones. In particular, because childbearing comes at the very end, a delay in any of the preceding events entails a likely increase in the age of parenthood. Skirbekk, Kohler, and Prskawetz (2004) have documented this pattern with reference to Swedish women. They exploit the fact that in Sweden, age at entry into school is restricted: children must enter school in the year in which they turn seven. This implies that children born in January tend to complete schooling when they are eleven months older than children born in December. This exogenous variation in the age when completing education can be exploited to study the effect of age on the timing of marriage and fertility. Skirbekk and colleagues estimate that the delay in completing education is transmitted into a delay of marriage and fertility, although not one for one. In particular, the age at first birth for women born in January is higher by almost five months compared to women born in December. This effect of delayed education also persists for the timing of second births, although it becomes smaller. In this Swedish sample, however, completed fertility (i.e., the overall number of children) is not affected by the delay in the age of completed education.

In the case of Italy, an important question is whether the late transition

into adulthood can contribute to explain the low fertility rate, which in turn influences the speed of population aging. As discussed in the previous section, Italians now have one of the highest median ages of first birth, relative to other countries or time periods. We suspect that this is an important reason for the low Italian fertility rate. Once age at first birth reaches the mid-30s for men and the late 20s for women, as is the case for Italy, there is not much time left to have a large family.

By using propensity score matching in order to the get causal effects of age at home leaving on fertility and by comparing individuals who leave the parental home before versus after the median age, Billari, Mazzuco, and Ongaro (2006) estimate that by the thirty-third birthday, Italian "early" home leavers have .522 more children (for men) and .700 more children (for women) compared to "late" home leavers. The effect is higher for those who leave home when starting a partnership (+.795 for men, +.817 for women) as compared to those who leave home prior to the start of a union (+.353 for men, +.374 for women).

Through its effect on fertility, the delayed transition to adulthood has key implications on the age structure of the population and of the labor force; on the dependency ratio; and through these channels on aggregate productivity, the government budget, and a host of other variables—see, for instance, Lindh and Malmberg (2007) on how the age structure of the population impacts on macroeconomic variables and can be used in forecasting economic growth.

10.3.2 Productivity

As shown in figure 10.1, the age profile of Italian workers is very different from that observed in other OECD countries. Italian male employment is quite low until about thirty years of age and keeps rising until about forty years of age. In most other OECD countries, instead, the peak employment rate is reached at a much younger age. A similar but less pronounced difference between Italy and other countries can be observed with regard to female employment, except that here the most striking difference is the overall low employment rate at all age groups and, particularly, among older women. This delay in employment is bound to have large effects on labor productivity. Here we discuss why.

Ability and Learning

Fertility is not the only human trait to have a pronounced age profile. A large body of evidence documents that cognitive abilities also decline significantly past a certain age. For instance, Avolio and Waldman (1994) have studied age differences in abilities in the *General Aptitude Test Battery,* exploiting data collected by the U.S. Department of Labor from 1970 to 1984. Although the pattern varies somewhat depending on the specific ability, all abilities decline rapidly once age has reached the mid thirties. By about

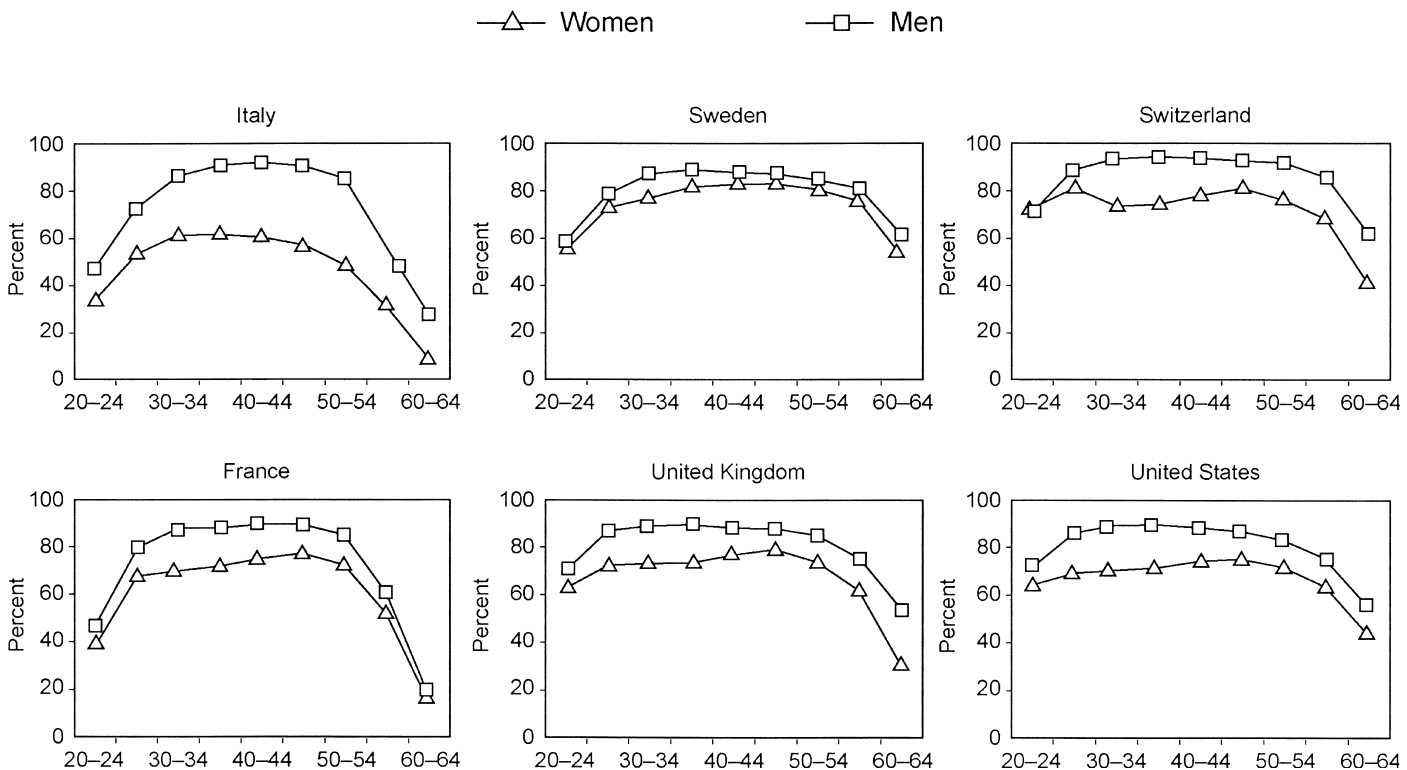


Fig. 10.1 Employment ratios by age and gender—2005

Source: OECD.

fifty years of age, average abilities are about one-half standard deviation below the level reached by the twenty-five to thirty-four-year-old group.

This age-related pattern of ability implies a corresponding pattern in labor productivity. But productivity is also influenced by experience, which rises with age and years spent working. As a result, although the relationship between age and labor productivity is typically hump-shaped, the peak in productivity is reached at a later age than the peak in ability. Skirbekk (2004) surveys the relevant and very large literature. Individual productivity is very difficult to measure because often it is the result of team work. Thus, the specific age where productivity peaks differs across studies, depending on how individual productivity is measured and what the worker's occupation is. Most studies find that productivity is highest for individuals in their thirties and forties, however. Earnings continue to rise even after productivity has peaked, so the peak in earnings is typically reached around fifty years of age.

Although experience rises with age, the ability to learn also declines rapidly as individuals become older. It is well documented that the elderly learn at a slower pace, particularly if what they learn is very different from what they are already familiar with (Rybash, Hoyer, and Roodin 1986) or if learning takes place in complex and rapidly changing environments (Myerson et al. 1990). This is particularly well known for languages: if a language is not learned by a young age, it will never by spoken perfectly.

Exploiting the same method discussed in the previously mentioned study of fertility of Swedish women, Billari and Pellizzari (2008) show that age has a significant negative effect on university performance in subjects requiring mathematical or analytical abilities. In Italy, children must enter school in the year in which they turn six. Like in Sweden, therefore, first-year university students born in January are eleven months older than those born in December, and this age difference is exogenous. Billari and Pellizzari compare the performance of students in economics and management at Bocconi University born in different months. They have a very rich sample, where they can control for a variety of individual features, such as grades in high school, the score in a standardized test at the entrance of university, and family background. University performance is measured by average graduation marks, the probability of ending with full marks, and the average grades in the first and second year of study. Students born in December display significantly better performance than those born in January, that is, they get 0.9 percent higher graduation marks. When focusing on grades in specific courses, they find that older age deteriorates grade performance in analytical and mathematical subjects (December versus January imply 2.1 percent higher marks in quantitative subjects and 1.8 percent higher marks in economic subject) but not in those requiring verbal skills or that are less demanding from a quantitative point of view (such as history, languages, or law).

These findings are remarkable because earlier studies focusing on high school performance, sport performance, or even the probability of completing tertiary education, had found the opposite: younger individuals (i.e., those born in the second half of the year) tend to do worse (e.g. Skirbekk, Kohler, and Prskawetz [2004] and the references cited there). A common interpretation of these earlier results is that they reflect the effect of relative (as opposed to absolute) age: individuals born in the second half of the year have less self-confidence, and this hurts their performance. A unique feature of the Bocconi data set is that it contains information on high school performance and of a general entry test performed by the university. By controlling for the final grade in high school and the performance in the test, differences in self-confidence induced by relative age effects are controlled for. This allows the impact of absolute age to be more correctly estimated.[3]

What does all of this imply for the effect of delayed employment on labor productivity? Figure 10.1 shows that, below the age of fifty, the age profile of Italian workers is delayed by five or even ten years relative to that of other OECD countries. This means that Italian workers are employed for a smaller fraction of their most productive years. Perhaps more important, particularly for male workers, it also implies that they have less time to benefit from experience and that their on-the-job learning is concentrated later in life when their learning ability is impaired. This is bound to have a negative effect on individual productivity although it is hard to quantify.

Matching in the Labor Market

Shimer (2001) points to yet another reason why a delayed first entry into the labor market might have adverse economic effects. Exploiting U.S. states data, he notes that an increase in the share of youth in the working population brings about a sharp reduction in the state unemployment rate as well as an increase in the participation rate. He also shows that turnover in manufacturing also increases sharply when the youth share goes up. A plausible interpretation of this finding is that young workers are more willing to accept job offers and that this creates a positive trading externality (Diamond 1982). As a result, a labor market with a higher youth share attracts more vacancies, boosting job creation and reducing unemployment. Because young workers are more mobile, over time, the matching of workers to jobs also improves, leading to a delayed rise in aggregate productivity.

Of course, delayed entry of young workers into the labor market works in the opposite direction. Entering the labor market at a higher age entails a likely loss of mobility and flexibility. In the presence of trading externalities, the whole economy suffers as a result.

3. An alternative explanation is that individuals born in the first quarter have less social skills and, therefore, spend more time studying compared to other more social peers. If this was the primary explanation, however, it would be difficult to explain why younger age is associated with better performance *only* in more mathematical exams.

Effort

Productivity also depends on effort, besides individual ability. A delayed transition into adulthood is also likely to be associated with dampened effort to improve one's economic situation and overall smaller effort on the job. For many individuals, the age between the early twenties and the early thirties is the period in life for investing in one's future. Postponing this phase to older ages is difficult, not just because learning becomes harder, but also because other goals beside work become prominent. It is not just a matter of age, but also of individual attitudes. Being financially dependent, living with one's parents, and staying out of the labor market for long periods of time, are likely to impact on the goals and ambitions of young men and women. Although hard to quantify and assess precisely, these sociological and psychological effects of a late transition into adulthood can be very relevant.

Table 10.5 illustrates how the attitudes toward work vary with age, exploit-

Table 10.5 Values and age

	Spend time with colleagues (1)	Child quality: hard work (2)	Work will be less important in life (3)
Age below 30 years	–0.23	0.08	0.09
	(0.03)***	(0.04)**	(0.03)***
Age above 50 years	0.12	0.06	0.14
	(0.03)***	(0.04)	(0.03)***
Male	–0.12	0.27	0.02
	(0.02)***	(0.03)***	(0.02)
Part-time worker	0.11	0.06	–0.08
	(0.03)***	(0.04)	(0.03)**
Married	0.11	0.00	–0.01
	(0.03)***	(0.03)	(0.03)
Has no children	–0.09	0.06	–0.10
	(0.03)***	(0.04)*	(0.03)***
Education		–0.04	–0.05
		(0.01)***	(0.01)***
Estimation	Ordered probit	Probit	Ordered probit
No. of observations	8,364	10,652	9,999
Pseudo R^2	0.03	0.18	0.04

Notes: Standard errors in parentheses. Sample: employed individuals, from seventeen to fifty-nine years of age, in Austria, Belgium, Canada, Denmark, France, Italy, The Netherlands, Spain, Sweden, United Kingdom, United States, West Germany. Country and wave fixed effects included in all columns. Column (1): Ordered from 1 to 4, higher values mean less time with colleagues. Column (3): Ordered from 1 to 3, higher values mean it is a bad thing.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Source: World Value Surveys, all waves for which data are available.

ing data from the WVS. The sample consists of employed individuals from twelve OECD countries between seventeen and fifty-nine years of age. We control for country and wave fixed effects and other observable features, such as gender, marital and parental status, whether working part time, and (where statistically significant) education level attained. This means that we only exploit within-country variations. The default age group is middle-aged individuals (between thirty and fifty years of age). The table illustrates that individuals below thirty years of age spend more time with their colleagues (column [1]), are more likely to think that hard work is an important quality in children (column [2]), and are more likely to dislike future changes that would place less importance to work in their lives (column [3]).

These attitude differences are bound to have an impact on individual productivity and on career or advancement opportunities. Individuals who enter the labor market when relatively old might end up achieving less compared to others who start their adult and professional life at a younger age.

10.3.3 Aggregate Evidence

The age composition of the workforce varies considerably across countries and time. If the effects of age discussed in the preceding are relevant, they ought to show up in aggregate data as well. The extensive literature on economic growth has not paid much attention to these issues, perhaps because it is difficult to draw inferences from aggregate data.

A recent exception is Feyrer (2007), who studies a panel of OECD countries. Exploiting within-country variations (i.e., always including country fixed effects), he shows that changes in demographic structures are strongly correlated with changes in aggregate total factor productivity. In particular, individuals in their forties appear to be more productive than other age groups. His estimates imply that a 5 percent increase in the size of the cohort in their forties over a ten-year period is associated with faster productivity growth by 1 to 2 percent for each year in the decade. These results are consistent with those mentioned in the preceding and based on analysis of individual data, where the most productive age groups appear to be the thirties and forties.

In a related paper, Lindh and Malmberg (1999) extend the framework of Mankiw, Romer, and Weil (1992) to study the effect of the demographic structure of the population on per capita gross domestic product (GDP) growth in the OECD countries. Contrary to Feyrer, they find that the fifty to sixty-four age group has a positive influence on growth, while the younger groups have ambiguous effects and the older (post-sixty-five) group has a negative effect. This is further developed in a paper in which they use the age structure of population to derive long-term economic forecasts (Lindh and Malmberg 2007).

This type of aggregate analysis provides little information about the effects of a delayed transition into adulthood, however. For this purpose, we

would need information on dates of home leaving or similar events. Unfortunately such data are not readily available for a large number of countries or years. Nevertheless, we collected data on the percentage of men aged eighteen to thirty-four who lived with their parents in 2001 for twenty-seven European Union (EU) countries. Figure 10.2 illustrates a residual regression plot between this variable and average GDP growth over 2001 to 2005, after controlling for initial GDP per capita and a dummy variable for the more advanced EU-15 countries. As shown in the figure, the countries with a smaller fraction of young men living with their parents grow faster, and the relationship is significant at the 5 percent level. Of course, this association cannot be interpreted as causal evidence because of possible reverse causation or omitted variables. But it suggests that the hypothesis that a delayed transition into adulthood might hurt a country's economic performance deserves to be taken seriously.[4]

10.4 Analysis of Individual Data

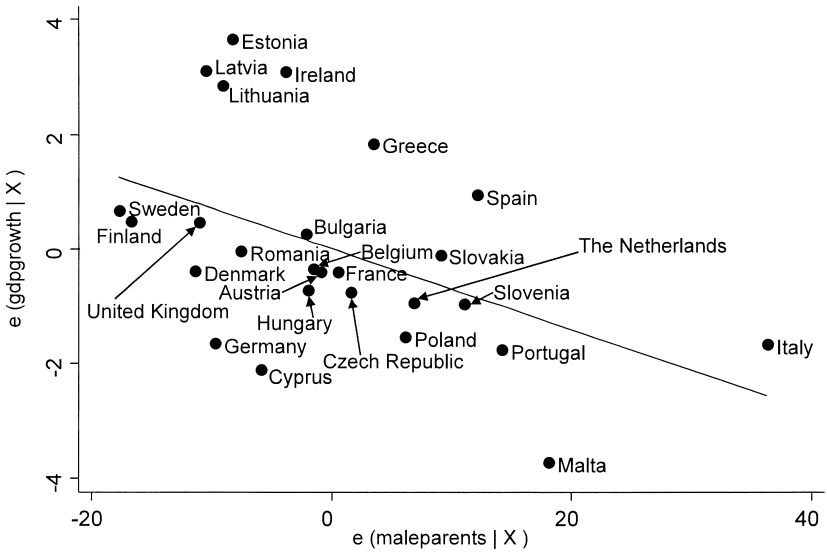
This section studies empirically the effect of the timing of transition into adulthood on individual income levels. Our general hypothesis is that individuals who have a later transition into adulthood earn less income in their adult life, that is, that it matters indeed if Italians are late. Although difficult to estimate, we are interested in a causal effect: we would like to know whether a later transition has a negative impact on lifetime economic opportunities. As discussed in the previous section, this might happen in more than one way: because a late transition reduces previous work duration and previous job experience; because past a certain age, learning on the job becomes more difficult or effort is reduced; or because a late transition changes individual goals and ambitions. Our data do not allow us to investigate the precise mechanism through which this might happen, but they will allow us to assess whether and to what extent this impact is present.

10.4.1 The Data

The Sample

We exploit a longitudinal survey on Italian youth, where we select a representative subsample of about 600 Italian men, on which we have detailed information on key dates marking the transition to adulthood as well as income, education, family background, and so on. Data come from the survey I.D.E.A. (*Inizio Dell'Età Adulta*—Beginning of Adulthood), which was carried out on a nationally representative sample about 3,000 young people

4. Data on initial per capita income for Malta and Cyprus were not available, and we thus imputed to these two countries the average initial GDP per capita of the EU countries different from the EU-15.



coef = -.07047486. se = .02758713. t = -2.55

Fig. 10.2 GDP growth (2001–2005) and percentage of men aged 18–34 living in parental home in 2001 in the European Union

Note: Residual regression plots after controlling for real GDP per capita in 2000 and a dummy variable for EU-15 countries.

born between 1966 and 1970 (aged about thirty-three to thirty-eight) and 1976 to 1980 (aged about twenty-three to twenty-seven). Interviews were conducted via telephone between December 2003 and March 2004. The sample was stratified by sex, marital status, and residential macro-areas (North, Centre and South of Italy) (Mazzuco, Mencarini, and Rettaroli 2006).

In our analysis, we focus only on men of the second age group (born between 1966 and 1970, therefore aged thirty-three to thirty-eight at the time of the interview), with a sample size of about 600. At that age, most men (even in Italy) have left home and, therefore, the timing of home leaving is known for the vast majority of individuals. In this sample corresponding to the second age group, individuals have left the parental home, on average, eight years before the date of the interview. About 12 percent of the sample has never left the parental home at the time of the interview. We do not focus on women, given the complexity of their labor force attachment in childbearing ages in a place like Italy. Indeed, in Italy, female labor force participation is among the lowest in Europe (13 percent below the EU average) and has not increased during the last decades, especially because of rationing in the child care market (Del Boca and Vuri 2007).

Table 10.6 **Monthly income of Italian young adults in the I.D.E.A. survey (ages 33–38, 2003–2004)**

	%	N
None	0.3	2
Up to 500 euros	1.6	11
From 500 up to 1,000 euros	15.4	107
From 1,000 up to 1,500 euros	51.2	355
1,500 euros and more	31.6	219
Total	100	694

Note: I.D.E.A. = Inizio Dell'Età Adulta (Beginning of Adulthood).

The Main Variables of Interest

As a *dependent variable,* we focus on *income* at the time of the interview. This variable is reported by the respondent, and in the survey it is measured by five intervals. For respondents who have any type of employment (91.5 percent of our sample, 92 percent of those who have ever left the parental home), a question on monthly income (wage or income from self-employment) is included, with five answer categories: none (could be answered by people who work in a family firm without earning direct income), up to 500 euros; from 500 up to 1,000 euros; from 1,000 up to 1,500 euros; 1,500 euros and more. A frequency distribution of the income variable is reported in table 10.6. The 8.5 percent nonemployed individuals are treated as randomly missing (analyses considering them as zero-income individuals not shown here give similar results).

As we are mostly interested in the direction of effects on income (as the dependent variable), and in the comparison of the effect of late transition to adulthood with other effects, we only show analyses that based on a simple type of coding for income, which we call *income interval* from now onward. We recode the answer obtained by respondents in five categories ("0 euros" = 0; "up to 500 euros" = 1; "from 500 up to 1,000 euros" = 2; "from 1,000 up to 1,500 euros" = 3; "1,500 euros and more" = 4). This variable becomes the dependent one in a series of least squares models (with or without instrumental variables). We also estimated the same series of models using ordered probit, or on log-income intervals (with 0 euro incomes recoded as 1) using interval regression. Results are similar to the ones we show here.

The main indicator of the timing of transition into adulthood is the age at which the respondent left the parental home for the first time for a period longer than six months, for reasons other than the military service (see also appendix A). This variable is called *age of home leaving,* and it is measured in years (it varies almost continuously as the month of home leaving is also known). In our sample, age of home leaving has small but positive correla-

tion with years of education ($\rho = .12$, $p = 0.002$ for the hypothesis $\rho \neq 0$) and with other markers of the transition to adulthood, such as age at first job ($\rho = .11$, $p = 0.0054$) and age at first sexual intercourse ($\rho = .18$, $p = 0.0000$). Table 10.7 contains the descriptive statistics for this variable, together with those of other regressors defined in the next subsection. The main focus of our analysis is whether *age of home leaving* has a causal effect on income later in life. As already mentioned, our analysis cannot shed light on the specific mechanism through which this may happen although we discuss this issue in the following.

We also consider another variable related to the age of transition into adulthood: the quarter of birth. As discussed in the previous section, Italians have to attend compulsory school in the year in which they turn six. This means that when school ends in a "standard" fashion, on average, individuals born in the first quarter are at least six months older than those born in the last quarter of the year and, thus, have had a later transition into

Table 10.7 **Descriptive statistics of regressors and instruments in the I.D.E.A. survey (ages 33–38, 2003–2004)**

	Mean	Standard deviation	Valid N
Age of home leaving	25.94	4.55	644
Age of mother at own birth	28.12	6.05	732
Education (respondent, no. of years)	12.68	3.35	767
"Too long" education (dummy)	.22		705
Father's education (no. of years)	7.82	4.47	767
Mother's education (no. of years)	7.20	3.80	767
Mother housewife (dummy)	.65		746
Father employed (dummy)	.92		740
Parents divorced or separated (dummy)	.04		767
Number of siblings (excl. respondent)	1.60	1.38	767
Religiosity score (1–5) at age 16	2.43	1.49	759
Lack of self-confidence score (1–4)	2.40	.83	862
Married (dummy)	.69		767
No. of children	.90	.93	767
Age of first job	22.42	6.17	721
Age of first sex	18.20	3.05	693
Northwest (dummy)	.28		767
Northeast (dummy)	.20		767
Center (dummy)	.19		767
South (dummy)	.32		767
Living in main city of the province (dummy)	.56		767
Provincial average income (aggregate, euros in 2005)	24,109.58	6,285.33	753
Youth unemployment rate (aggregate %)	27.52	19.61	733
Empty dwellings (aggregate %)	19.64	8.77	753

Note: I.D.E.A. 5 Inizio Dell'Età Adulta (Beginning of Adulthood).

adulthood.[5] We thus define two dummy variables, called *first quarter* and *fourth quarter,* respectively, that equal one if the individual is born in that quarter (we also experimented with using the month of birth, rather than the quarter, and obtained consistent results). To verify that indeed the quarter of birth influences the timing of significant events, we ran an ordinary least squares (OLS) regression of the age when education was completed against the dummy variables for the first and fourth quarter of birth and the level of education attained, with and without the other regressors defined in the following (the variables for family background and residential location, the variable measuring church attendance, and the dummy variables for the current age group). The results are not shown but are available upon request. Irrespective of the specification, when education is completed, individuals born in the first quarter are younger by about eight months than those born in the fourth quarter, in line with expectations, and the difference is statistically significant. The quarter of birth, on the other hand, has no effect on the level of education attained. This confirms that the quarter of birth influences the timing of transition into adulthood, with individuals born in the first quarter more likely to transition at an older age.

Other Regressors

Throughout our analyses, we control for several observed individual characteristics. For simplicity, we define the name of each variable in italics when the variable is actually reported in the tables. Table 10.7 provides descriptive statistics also on other regressors, while appendix A provides full details on all variables.

Individual Characteristics *Age* of the individuals is controlled by a set of dummy variables, one for each year of age between thirty-three and thirty-eight. The variable *education* measures educational attainment (defined in years corresponding to the attained school degree). Unfortunately, we do not have information on school or university grades (nor on the subject). We know how many years each respondent actually spent in school or university, however. Thus, to measure differences in school performance, we include a dummy variable that equals one if the time spent to attain the school or university degree exceeded the normally required time by more than two years (alternative definitions such as a more continuously time varying indicator gave similar results). To capture differences in religious upbringing, we also include a variable that measures the reported frequency of church attendance at the age of sixteen (the variable varies from one to five).

5. This legal requirement could be sidestepped by going to private schools as they accept also children who will turn six in the following calendar year (only in the last four years has more flexibility been accepted for public schools). Only 3.6 percent of the students in grade one in private elementary schools were early starters in 2001 to 2002; moreover, in Italy, private schools offer, on average, lower quality with respect to public schools—see Brunello and Checchi (2004).

Family Characteristics. We use several variables related to the family background of the respondent: education attained by the mother and father; the age of the mother at birth; dummy variables for whether, when the individual was sixteen years of age, the father was working and the mother was a housewife; the number of siblings; and a dummy variable for whether parents ever divorced or split.

Contextual Characteristics We also include several variables related to the *location* where the individual lived at the age of sixteen, namely, whether he lived in a city that was also a provincial capital (at the time of the surveys there were 103 provinces in Italy); the rate of youth unemployment in the province in 2001 (i.e., four years earlier than the date in which income is observed, and at about the time when individuals are likely to have considered the decision to leave the parental home); per capita income in the province in 2005 (i.e., the date in which the survey was conducted and income is observed); and three dummy variables, corresponding to the macro regions of residence (north, center, and south).

Finally, in some specification, we also control for some variables that reflect individual attitudes or lifetime choices. Although these variables might be endogenous, like *education,* their inclusion may help to clarify the mechanism through which the variables of interest influence income. Specifically, the dummy variable *married* equals one if the individual has ever been married; the variable *number of children* is self-explanatory; we measure the age when the individual first worked for pay by the variable *age of first job.* And the variable *lack of self-confidence* is a measure of individual attitudes toward one's self and the future, taken from a question that asks whether the respondent agrees with the following statement: "When I think about my future, I see it full of risks and uncertainties." Possible answers range from one to four, with higher values denoting stronger agreement (i.e., more lack of self-confidence).

Variables that are used as instruments are introduced in the following.

10.4.2 Estimation Issues

There are two relevant estimation problems. The first and main issue is unobserved heterogeneity or, more generally, correlation between the variables of interest and the unobserved error term. This problem is most obvious with regard to the variable *age of home leaving.* Relevant unobserved individual features could determine both individual income and the date at which the individual leaves the parental home. The bias in OLS estimates could go either way: on the one hand, more talented and determined individuals could have both higher income and more opportunities to leave home early, which would lead to a downward bias between *age of home leaving* and *income interval.* On the other hand, young men living in disadvantaged areas may be forced to leave home earlier to find a job, or to go to university,

which could lead to the opposite bias. We deal with this problem by relying on instrumental variables, described in the following.

The problem of unobserved heterogeneity might also be relevant with regard to *education.* Here, too, the bias in OLS estimates could be positive (if unobserved talent influences both educational attainment and income) or negative (for instance, due to measurement error). As discussed, for instance, by Card (2001), instrumental variable (IV) estimates of the effect of education on earnings are typically above the OLS estimates, which might reflect systematic pitfalls in the IV identification strategies (e.g., heterogeneous effects of education correlated with the instrument) or a negative bias in the OLS estimates. In this chapter, we generally do not attempt to cope with this problem because we lack separate reliable instruments for education (see, however, table 10.10 in the following), and because we are not interested in the effect of *education* per se.

The inclusion of a possibly endogenous variable like *education* or being *married* might bias the coefficient of interest on the variable *age of home leaving.* Appendix B shows that this bias might be positive or negative depending on the assumptions about the relevant unobserved correlations. We discuss this issue in context in the following, and we show that the results are robust to alternative specifications that include or omit these possibly endogenous variables.

The second problem is that the variable *age of home leaving* is only observed if it is lower than current age. About 12 percent of the individuals in our sample have never left the parental home for more than six months, despite their having been at least thirty-three years of age: for them, *age of home leaving* is missing. Thus, we have censoring of an endogenous regressor. We cope with this problem in two ways. First, we ignore it and assume that these observations are randomly missing or, alternatively, we just draw inferences about the sample of individuals who have already left the parental home (rather than all those of thirty-three to thirty-eight years of age). Second, we redefine the variable of interest and measure the timing of the transition to adulthood in alternative ways so as to exploit all observations in the sample, including the individuals that are still living with their parents. Details are discussed in the following.

10.4.3 Results

OLS Estimates

The dependent variable is *income interval* (with the simple coding described in the preceding). We start by assuming that all regressors are exogenous to illustrate the main correlations in the data. Table 10.8 reports the estimated coefficients of the variables of main interest. Standard errors are clustered by province of residence. Column (1) reports the most parsimonious specification; besides the variables reported in the column, we control for all the other

Table 10.8 **Ordinary least squares (OLS) estimates—income interval and age of home leaving**

	(1)	(2)	(3)
Age of home leaving	–0.028	–0.026	–0.025
	(0.007)***	(0.007)***	(0.007)***
First quarter	–0.185	–0.189	–0.182
	(0.059)***	(0.062)***	(0.061)***
Fourth quarter	0.024	0.013	–0.011
	(0.064)	(0.064)	(0.067)
Education	0.065	0.061	0.068
	(0.010)***	(0.010)***	(0.010)***
Lack of self-confidence		–0.097	–0.100
		(0.037)**	(0.037)***
Married		0.037	0.032
		(0.083)	(0.084)
No. of children		0.055	0.053
		(0.038)	(0.037)
Age of first job			–0.009
			(0.006)
Estimation	OLS	OLS	OLS
No. of observations	497	496	496
Adjusted R^2	0.20	0.21	0.21

Notes: Robust standard errors in parentheses, clustered by province. Other included regressors (all columns): dummy variables for years of age and for macro region of residence; dummy variable for extra time to complete education; frequency of church attendance; number of siblings; mother and father education; dummy variables for mother housewife, working father, divorced parents, living in provincial capital; youth unemployment in 2001 in the province of residence when sixteen years old; average current income in the province of residence. See the appendix for detailed definitions.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

regressors mentioned in the preceding, namely a set of dummy variables for each age group, the variable for church attendance when sixteen years of age, the dummy variable for taking at least two extra years to complete the attained level of education, the full set of variables measuring family background, and the full set of variables relating to residential location.

As can be seen, a later *age of home leaving* has a negative and significant estimated coefficient, while the coefficient of *education* is positive and statistically significant. Both variables are measured in years, so their estimated coefficients are comparable. If these were causal effects, according to the OLS estimates, leaving home one year earlier would increase income by about as much as five additional months of education.

As discussed in the appendix, the inclusion of a possibly endogenous variable like *education* might introduce a negative bias in the estimated coefficient of *age of home leaving.* This would happen if the two variables are positively correlated (as would be the case if for instance the individual does

not leave home to move to a university), and if *education* is also positively correlated with the unobserved error term of the income regression. On the other hand, in this case, omitting the variable *education* would introduce an upward bias if *education* has a positive effect on income. To assess the relevance of this problem, we have also reestimated the same equation without controlling for *education.* The results are very similar to those reported in table 10.1: the coefficient of *age of home leaving* estimated by OLS with the specification corresponding to column (1) rises to –0.025 (as opposed to –0.028) and remains significant at the 1 percent level.

Being born in the first quarter of the year also has a negative and highly significant estimated coefficient. This is consistent with the hypothesis that a later age of transition into adulthood reduces income in our sample because as discussed in the preceding, on average, individuals born in the first quarter complete their education when they are eight months older than those born in the fourth quarter. The estimated coefficient is implausibly high, however, both in relation to that of *education* and in absolute value. There is no strong a priori reason why the quarterly pattern of births should be systematically correlated with relevant omitted variables; on the contrary, the variables *first* and *fourth quarter* can plausibly be expected to be exogenous. Thus, this strong negative correlation between income and the first quarter of birth is puzzling.

Of the other regressors, not shown in table 10.8, some of the family background variables are significantly different from zero (income is higher if the mother is more educated and if she is a housewife), older individuals tend to have higher income, and some of the residential location variables are also statistically significant. Overall, the pattern of estimated coefficients is very plausible although there remains much unexplained variation in the data (the adjusted R^2 is 0.20).

To assess the robustness of these results and to gain a better understanding, the remaining columns in the table add other variables that capture individual attitudes or other significant lifetime choices possibly correlated both with *income interval* and with *age of home leaving.* Thus, in column (2), we control for whether the individual is married, how many children he has, and his attitudes toward the future as measured by the variable *lack of self-confidence.* These variables might be correlated with the error term of the income equation; thus, their inclusion might introduce a bias in the estimated coefficient of *age of home leaving.* As discussed in the appendix, the sign of this bias is likely to be positive for all of these additional variables. The estimated coefficients of interest (on *age of home leaving* and *first quarter*) remain stable and highly significant. Of these new variables, only lack of self-confidence has a significant (and, as expected, negative) effect on income. We infer from these results that the correlation between our measure of the timing of transition toward adulthood and income is not due to the events captured by marriage or becoming a parent, and it is robust to controlling for attitudes toward the future.

Finally, in column (3), we also control for the *age of first job.* This is important for two reasons. First, it may provide information on the channels through which a late transition to adulthood impacts on income later in life (a shorter experience on the job versus effects on personality or individual motivation). Second, it is a robustness check for how to date transition into adulthood. Again, this variable might be endogenous, but once more, the results in the appendix suggest that any additional bias on the estimated coefficient of the variable *age of home leaving* is likely to be upward. The results of interest are robust to this inclusion, and the new variable is not correlated with income. This confirms that the timing of transition to adulthood is well captured by the variable *age of home leaving.* It also suggests the estimated coefficient of *age of home leaving* is not just capturing experience on the job. On the other hand, the finding that *age of first job* is not significantly correlated with income ($\rho = 0.01, p = 0.71$) might also be interpreted as evidence that this variable refers to menial or temporary jobs that do not correspond to a milestone event in the transition to adulthood.

Instrumental Variables Estimates

In this subsection, we try to go beyond simple correlations, and we try to estimate a causal effect of the timing of transition into adulthood, as measured by the variable *age of home leaving.* This requires having a theory about why individuals leave the parental home, of the type we reviewed in section 10.2. Our (implicit) theory is that this decision is influenced by two kinds of considerations (besides those having to do with financial independence). One factor is the cost of living alone. If housing is easily available, this cost is lower, and individuals are more likely to leave early. The second factor is the desire to be independent from parental supervision. Our instruments seek to capture these two determinants of the decision to abandon the parental home.

Specifically, we rely on two instruments. The first instrument is an indicator of the excess supply of housing in the area where the individual lived when he was making the decision to leave the parental home (Giannelli and Monfardini 2003). This is measured by the fraction of empty residential dwellings in the province of residence at the age of sixteen, measured in the year 2001. This variable, called *empty dwellings,* captures the first set of determinants described in the preceding. As an alternative variable measuring similar housing market features, we also collected data on the fraction of residential dwellings rented (as opposed to owned) in 2001, also in the province of residence at sixteen years of age. This variable was more weakly correlated with *age of home leaving* compared to *empty dwellings,* however, and for this reason, we did not use it as an instrument.

Note that throughout in the second stage regression we control for the rate of youth unemployment in 2001 and current (i.e., 2005) average income in this same province, as well as for whether the individual currently lives in the provincial capital. Thus, the identifying assumption is that, after taking

into account economic conditions as measured by youth unemployment and current income in the province, the supply of housing only matters for the decision to leave the parental home and has no direct effect on current individual income except through the variable *age of first leaving.* This assumption may fail if, for instance, housing conditions influence the kind of jobs that are accepted and this, in turn, impacts on income later in life. In particular, a cheaper housing market might induce young men to accept jobs paying a lower wage, and due to persistence in wages, this induces a positive correlation between housing prices and income later in life (or a negative correlation between *empty dwellings* and the residual of the second stage *income interval* equation). The fact that we control for economic conditions in the province may remove some but perhaps not all of this correlation. Note, however, that we expect *empty dwellings* to be positively correlated with the decision to leave home early (and this is what we find in the following), that is, negatively correlated with *age of home leaving.* Therefore, a negative correlation between this instrument and the unobserved second stage residual would bias the IV estimated coefficient of *age of home leaving* downward in absolute value against our main hypothesis that an early age of transition into adulthood increases income later in life.

The second instrument seeks to capture the individual demand for independence from his parents. We assume that the main reason to seek early independence is early sexual emancipation (see also the central role of sexual emancipation in Giuliano's [2007] arguments). Thus, as a second instrument, we use the reported age in which the individual had his first sexual intercourse (*age of first sex,* measured in years). Recall that here we control for an indicator of school performance (such as the extra time required to complete the attained level of education), for family background, and for religious habits. Thus, the identifying assumption is that, after controlling for these observed individual features, the propensity to early sexual emancipation is uncorrelated with unobserved determinants of individual income at thirty-three to thirty-eight years of age. This assumption may fail if, say, more good looking teenagers are sexually more emancipated and if good looks also help in the labor market. This failure would introduce a negative correlation between the instrument and the error term of the income regression, which would bias the IV estimate upward in absolute value. A downward bias in the absolute value of the IV estimate might also occur, however, if early sexual emancipation is correlated with individual features that are negatively correlated with adult productivity, such as engaging in risky behaviour and reduced interest in academic performance. Some evidence that this might be the case is suggested in the related literature (e.g., Schvaneveldt et al. 2001).

None of our identifying assumptions is foolproof. Nevertheless, the two instruments are uncorrelated, and they capture very different determinants of the individual decision to abandon the parental home ($\rho = .03$, $p =$

0.1717). This allows us to test the exclusion restrictions (under the null hypothesis that at least one of them is valid). Moreover, assessing the robustness of the results to the inclusion of the additional regressors mentioned in the preceding (such as being *married* and the *number of children*) is a further check on the validity of the exclusion restriction concerning the instrument *age of first sex.*

Finally, we also experimented with a third instrument, namely proximity to a big university. Specifically, we constructed an ordinal variable *university,* defined as follows: the variable equals 0 if no university exists in the province of residence at the age of sixteen; it equals 1 if in that province there is a university with up to 20,000 students; and it equals 2 if there is a university with more than 20,000 students. This variable is quite negatively correlated with *empty dwellings* ($\rho = -.36$, $p = 0.0000$), however, so relying on all three instruments deteriorates the fit of the first stage regressions (with no material effect on the IV estimates). The variable *empty dwellings* is also more strongly correlated with *age of home leaving* in the first stage. For this reason, in the end, we rely on the two instruments *empty dwellings* and *age of first sex.*

We now turn to the IV estimates, reported in table 10.9. The three columns report two-stage least squares (2SLS) estimates with robust standard errors clustered by province. The estimated coefficients of *age of home leaving* are always negative and highly significant and very stable across specifications and estimation methods. The remaining pattern of estimated coefficients is otherwise similar to that of the OLS regressions in table 10.8, except that here the variable married has a positive and significant estimated coefficient in some regressions. Relative to the OLS estimates, the estimated effect of *age of home leaving* on income rises significantly in absolute value, and now it even exceeds the effect of education.

One interpretation of this large change is that the OLS estimates were biased downward. As discussed in the preceding, a priori, the bias in the OLS estimates could go either way. In particular, individuals in underdeveloped areas with poor job opportunities may be forced to leave home early and accept jobs that pay lower wages, which would introduce a downward bias in the absolute value of the OLS estimate of interest. Moreover, measurement error in *age of home leaving* is also likely, both because individuals could misreport the true date, but more important, because this variable is really a proxy to a much more difficult to measure transition into adulthood, and it is possible that the projection on the instruments purges some of this measurement error.

An alternative interpretation is that the identifying assumptions are violated. Nevertheless, as shown toward the bottom of the table, the Hansen J test for the validity of the overidentifying restrictions can never reject the null hypothesis at very comfortable *p*-values (Baum, Schaffer, and Stillman 2003). Appendix C (table 10C.1) also shows the estimation of two just identified models, corresponding to the specifications in columns (1) and (3)

Table 10.9 **Two-stage least squares (2SLS) estimates—income interval and age of home leaving**

	(1)	(2)	(3)
Age of home leaving	–0.106	–0.105	–0.106
	(0.039)***	(0.039)***	(0.039)***
First quarter	–0.222	–0.225	–0.224
	(0.086)***	(0.091)**	(0.091)**
Fourth quarter	0.039	0.046	0.044
	(0.074)	(0.075)	(0.083)
Education	0.070	0.064	0.065
	(0.011)***	(0.011)***	(0.010)***
Lack of self-confidence		–0.105	–0.105
		(0.044)**	(0.044)**
Married		0.076	0.076
		(0.109)	(0.110)
No. of children		–0.045	–0.046
		(0.062)	(0.062)
Age of first job			–0.001
			(0.008)
Hansen J	0.523	0.631	0.631
Estimation	2SLS	2SLS	2SLS
No. of observations	457	456	456

Notes: Robust standard errors in parentheses, clustered by province. Hansen J refers to the *p*-value of the test of the overidentifying restrictions. Other regressors included in all columns: same as in table 10.8.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

of table 10.9. Thus, in one case, we assume that only *age of first sex* can be validly excluded from the second stage, and, in the opposite case, we only exclude the variable *empty dwellings.* As can be seen in table 10C.1 in appendix C, the included instrument is never statistically significant in the second stage. The estimated coefficient on *age of home leaving* differs somewhat in the two cases, although it generally remains statistically significant, but it turns out to be smaller in absolute value when the excluded instrument is the arguably more suspicious *age of first sex.* Overall, this suggests that the data do not point to obvious violations of our identifying assumptions.

Alternative Measures of Transition to Adulthood

As discussed in the preceding, about 12 percent of the individuals in our sample had not yet left the parental home. As a result, the variable *age of home leaving* is missing for these individuals. To include these observations in our sample, here we redefine the measure of the timing of transition into adulthood in a more coarse way.

Our first indicator, *age group of home leaving,* is a discrete variable that

varies from one to five, depending on the age group when the parental home was first abandoned. The first group is less than twenty years of age; the last group is past the age of thirty-two; the three intermediate groups correspond to the intervening four-year periods. The distribution of individuals is quite uniform across this partition; in the last age group, about 60 percent of individuals had not yet left the parental home, while the remaining 40 percent did.

The second indicator, *years since home leaving,* is just the number of years since leaving the parental home for the first time (with 0 denoting those that had not yet done so). This variable varies almost continuously, but it does not take into account the interaction between age and number of years out of the parental home.

Tables 10.10 and 10.11 report the estimates using these variables to measure the timing of transition into adulthood, first estimating by OLS under the assumption that they are exogenous (table 10.10) and then estimating

Table 10.10 **Ordinary least squares (OLS) estimates—income interval and other measures of the timing of transition into adulthood**

	Income					
	(1)	(2)	(3)	(4)	(5)	(6)
Age group of home leaving	–0.145 (0.024)***	–0.114 (0.024)***	–0.110 (0.025)***			
Years since home leaving				0.036 (0.006)***	0.028 (0.006)***	0.027 (0.006)***
First quarter	–0.157 (0.060)**	–0.157 (0.062)**	–0.152 (0.062)**	–0.160 (0.061)**	–0.159 (0.063)**	–0.155 (0.062)**
Fourth quarter	0.026 (0.062)	0.015 (0.061)	–0.006 (0.064)	0.038 (0.061)	0.025 (0.060)	0.004 (0.064)
Education	0.061 (0.009)***	0.056 (0.009)***	0.063 (0.010)***	0.061 (0.009)***	0.056 (0.009)***	0.062 (0.010)***
Lack of self-confidence		–0.113 (0.037)***	–0.114 (0.037)***		–0.112 (0.036)***	–0.113 (0.036)***
Married		0.114 (0.069)	0.112 (0.070)		0.110 (0.068)	0.108 (0.069)
No. of children		0.061 (0.038)	0.061 (0.038)		0.059 (0.038)	0.058 (0.038)
Age of first job			–0.008 (0.006)			–0.008 (0.006)
Estimation	OLS	OLS	OLS	OLS	OLS	OLS
No. of observations	565	564	564	565	564	564
Adjusted R^2	0.20	0.23	0.23	0.20	0.23	0.23

Notes: Robust standard errors in parentheses. Other regressors included in all columns: same as in table 10.8.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

Table 10.11 **First-stage and two-stage least squares estimates, alternative measures of transition to adulthood**

	First stage					
	Age group of first home leaving			Years since home leaving		
	(1)	(2)	(3)	(4)	(5)	(6)
Age of first sex	0.052	0.044	0.041	–0.225	–0.189	–0.173
	(0.019)***	(0.017)**	(0.017)**	(0.075)***	(0.066)***	(0.065)***
Empty dwellings	–0.014	–0.017	–0.017	0.044	0.056	0.059
	(0.006)**	(0.006)***	(0.006)***	(0.027)	(0.026)**	(0.027)**
F test	6.82	7.13	5.82	6.28	6.63	5.97
Adjusted R^2	0.08	0.18	0.20	0.15	0.26	0.27
	Second stage					
	Income interval					
	(1)	(2)	(3)	(4)	(5)	(6)
Age group of home leaving	–0.490	–0.480	–0.486			
	(0.147)***	(0.150)***	(0.156)***			
Years since home leaving				0.120	0.122	0.125
				(0.036)***	(0.039)***	(0.041)***
First quarter	–0.196	–0.209	–0.212	–0.209	–0.225	–0.230
	(0.090)**	(0.093)**	(0.094)**	(0.091)**	(0.095)**	(0.097)**
Fourth quarter	0.039	0.045	0.054	0.082	0.092	0.108
	(0.077)	(0.076)	(0.087)	(0.075)	(0.077)	(0.090)
Education	0.063	0.057	0.054	0.062	0.057	0.052
	(0.010)***	(0.010)***	(0.011)***	(0.011)***	(0.011)***	(0.010)***
Lack of self-confidence		–0.091	–0.091		–0.087	–0.085
		(0.043)**	(0.044)**		(0.044)**	(0.044)*
Married		–0.072	–0.072		–0.094	–0.097
		(0.101)	(0.101)		(0.106)	(0.106)
No. of children		–0.059	–0.059		–0.076	–0.078
		(0.067)	(0.068)		(0.070)	(0.072)
Age of first job			0.003			0.006
			(0.008)			(0.009)
Hansen J	0.758	0.724	0.517	0.55	0.503	0.31
No. of observations	517	516	516	517	516	516

Notes: Robust standard errors in parentheses. *F* test refers to the joint significance of the two instruments. Hansen J refers to the *p*-value of the test of the overidentifying restrictions. Other regressors included in all columns: same as in table 10.8.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

by instrumental variables (table 10.11). The specification is as before, and table 10.11 reports both first and second stage estimates. The results are very similar to those reported in the previous subsections. Irrespective of how it is measured, a later transition into adulthood is associated with lower income in the midthirties. Generally, both instruments are strongly significant in the first stage regressions. The second stage coefficients estimated by IV are much larger in absolute value than the corresponding OLS estimates. And the overidentification test fails to reject the exclusion restrictions. Finally, a dummy variable for whether the individual is still living in the parental home (to discriminate more finely between individuals in the last age group) turns out to have a statistically insignificant estimated coefficient (results not shown).

All together, these estimates suggest that the previous results are robust to the issue of censoring for the individuals for which the *age of home leaving* is missing.

10.5 Concluding Remarks

Italians are late. Not just a little, but a lot. They start all adult activities at a much later age than is common in other countries at comparable levels of development, from working, to living alone, to marrying, to having children. The existing literature has sought to explain this pattern and has pointed out that this has relevant implications for fertility and the demographic structure of society.

In this chapter, we have explored a different question. Does a late transition into adulthood reduce the lifetime economic opportunities of individuals? A priori, there are several reasons why this might be the case. On the one hand, a late transition into the activities that are typical of adult age may be associated with more maturity and more clarity in the pursuit of one's goals. Prolonged coresidence with parents might also relax liquidity constraints and encourage the accumulation of more human capital. On the other hand, if the transition is delayed for too long, learning abilities and motivation may be impaired, and the individual may get used to depend on others for his economic well-being and security. More specifically, prolonged coresidence with parents might raise the reservation wage and delay entry into stable jobs. If the earnings profile rises with experience on the job, this, in turn, reduces income later in life, and the effect may be very long lasting if it interacts with learning and motivation. Disparate evidence in the literature on the age profile of abilities and learning capacity and direct evidence on individual motivations suggest that this second hypothesis is not implausible in the case of Italy, given the extent of the delay.

We have studied a survey of Italian men in their midthirties that includes the retrospective reconstruction of the timing of life-course events. We mea-

sure the transition into adulthood by the event of leaving the parental home for the first time. The end of coresidence with parents is associated with changes in individual perspectives and in attitudes toward the labor market and lifetime choices in general. This turning point is likely to coincide with greater determination in the pursuit of financial independence and other economic goals. Our main finding is that the age at home leaving matters for subsequent economic outcomes. Individuals who leave the parental home earlier in life earn a higher income when they are in their midthirties. Estimation by instrumental variables suggests that this captures a causal effect, from the age when leaving the parental home to subsequent economic events. Moreover, the age when coresidence is terminated is much more important than the age corresponding to other significant events, such as that of undertaking a first job. Of course, the identification assumptions can be challenged. But the correlations are very robust, and the identification assumptions needed to interpret these correlations as corresponding to a causal effect are not inconsistent with the data.

It is important to stress that in our sample, individual income is measured several years after the first termination of coresidence, on average, more than eight years after the event. Thus, the timing of transition into adulthood appears to have very long-lasting effects. What are the mechanisms through which these effects operate, if indeed there is a causal effect? Unfortunately, the data we study can only shed partial light on this question, and probably several forces are at work. One plausible channel is the date of entry into a career path. We know that earnings keep rising with experience for several decades. Thus, anything that delays the beginning of a career path would have long-lasting effects on individual income. We find that the age when leaving the parental home is much more important than the age of the first job, however. This might be due to the first job being unimportant and uncorrelated with the subsequent main career. But is also suggests that other channels may be relevant, besides the duration of work experience. In particular, prolonged coresidence may impact negatively on individual motivations and ambitions. But in the absence of specific data, this remains a conjecture.

In principle, several policy instruments might be used to affect the timing of the transition into adulthood. An obvious place to start is education policy. The duration of secondary education and even of university education varies across countries. If the returns to education reflect an important signaling component, a shortening of the duration of education might be welfare improving. This recommendation is not as outrageous as it may at first sound. For instance, systematic comparisons of Swiss cantons where secondary education differs in duration have found that students in the cantons with a shorter curricula do not perform worse in standardized tests compared to the cantons with one extra year of schooling (Skirbekk 2005). Even without shortening the school or university curricula, policies may be

designed to discourage students from taking too long to complete a university degree (a common problem in Italy).

Housing is a second potentially relevant policy tool. Our data suggest that housing supply is an important determinant of the decision to leave the parental home. Anything that reduces the cost of housing for young men and women might have positive side effects on the economy if our inferences are correct.

The labor market is also an area of key concern. If, indeed, the mechanism behind our results reflects the age at which a stable career is initiated, then a low youth employment rate is very costly for society. This points to the relevance of policies that would facilitate labor market entry for young individuals.

It is far too early to draw specific policy conclusions from these findings, however. It is not just a matter of assessing the robustness of our inferences. Individual well-being depends on more than economic opportunities. It could very well be that Italian young men postpone leaving the parental home while being fully aware that this might reduce their permanent income (for instance, due to a shorter working experience) because they or their parents enjoy coresidence for its own sake. From a social point of view, this behavior would not be suboptimal and would not require any policy intervention, despite the wasted economic opportunities. If, instead, families systematically underestimate the opportunity cost of a late transition into adulthood, or if individual preferences and beliefs change upon leaving the parental home, then a late transition might be suboptimal even if it results from individual choices. Unfortunately, the data at hand cannot discriminate between these alternative hypotheses. Hence, we cannot draw clear-cut policy implications from these findings, even if we could be sure that a late transition into adulthood causes a loss of income later in life.

Appendix A

Variable Definitions in the Individual Analysis

Here we provide the definition of the variables used in the individual analysis. Descriptive statistics are shown in tables 10.6 and 10.7.

Age: This variable is derived by using the date of the questionnaire (day, month, year) and the date of birth of the respondent (day, month, year).

Age of home leaving: This variable is derived by retrospectively asking the year and month of when the respondent first left the parental home for more than six months, excluding military or civil service (which was compulsory for respondents), and subtracting from it the date of birth. This question is also asked to individuals who are currently living with parents and who have

left home in the past. In case the month is missing, the middle of the year is imputed. In case respondents do not recall the year, age is asked directly.

Age of first job: This variable is derived using the year and month of beginning the current job (if it is the first one) or by retrospectively asking the year and month of beginning the first job (excluding small jobs during education or jobs that are directed to earn pocket money) and then subtracting from it the date of birth. In case the respondent does not recall the month, this is imputed in the middle of the year. In case the respondent does not recall the year, age at first job is asked directly to the respondent.

Age of first sexual intercourse: For respondents who declare they have already had sexual relationships, age at first sexual intercourse is asked directly. Note that the question is the last one of the questionnaire because it has been considered a sensitive question.

Birth quarter: This variable is derived by using the month of birth.

Education (respondent, father, mother): This variable is derived by recoding the answer on the highest educational level obtained by the respondent (the father, the mother) to obtain the "standard" number of years that are necessary to earn that educational level. If father's or mother's education is missing, 0 is imputed. Levels are coded as follows: elementary school = 5, middle school = 8, lower secondary school = 10, upper secondary school = 13, lower higher education title = 15, upper higher education title = 18, master or higher = 20.

Empty dwellings: This is a variable indicating the share of dwelling that are not occupied by resident persons (%) in the province in which the respondent was grown up (up to age sixteen). Data refer to the 2001 Census. The source is the Italian National Statistical Institute (ISTAT).

Father employed: This is a dummy variable indicating whether, when the respondent was aged sixteen, his or her father was employed.

Income interval: This variable is the answer to the question "How much do you earn with your work, on average, monthly (net income—take into account the average earnings during the last six months)?" This question is posed only to employed respondents. The answer is coded by using five answer categories: none (could be answered by people who work in a family firm without earning direct income) = 0; up to 500 euros = 1; from 500 up to 1,000 euros = 2; from 1,000 up to 1,500 euros = 3; 1,500 euros and more = 4.

Lack of self-confidence score: This variable indicates the agreement of the respondent with the statement "When I think of my future, I see it full of risks and unknowns": completely disagree = 1, disagree = 2, agree = 3, completely agree = 4.

Living in the main city of province: This is a dummy variable indicating whether the municipality of birth of the respondents is the province's main city.

Married: This is a dummy variable indicating whether the respondent has ever been married.

Mother housewife: This is a dummy variable indicating whether, when the respondent was aged sixteen, his or her mother was a housewife.

Northwest, northeast, center, south: These are four dummy variables indicating the geographical area of current residence (northwest is excluded in regressions).

Number of children: This variable indicates the number of children ever had by the respondent.

Number of siblings: This variable indicates the number of sibling of the respondent (excluding him- or herself).

Religiosity score at age sixteen: This score indicate the frequency of going to mass (in Italy, Catholicism is the vastly dominant religion) during the week when the respondent was sixteen. It is coded as follows: at least once a week = 1, at least once a month = 2, sometimes during the year = 3, only on particular occasions = 4, never = 5.

Parents divorced or separated: This is a dummy variable indicating whether the respondent's parents have divorced or separated.

Provincial average income: This is a variable indicating the average income in 2005 in the province in which the respondent grew up (up to age sixteen). The source is the Istituto Guglielmo Tagliacarne.

"Too long" education: This is a dummy variable indicating whether the reported age at the end of education exceeds by more than the sum of the standard age at entry into the school system of the respondent (in months) and *education.*

Youth unemployment rate: This is a variable indicating the unemployment rate (%) for people aged fifteen to twenty-four in the province in which the respondent grew up (up to age sixteen) in 2001. The source is ISTAT.

Appendix B

Sign of bias from including other endogenous regressors

Here we discuss the possible bias in the coefficient of interest (that of the variable *age of home leaving*) as a result of having other endogenous variables in the regression.

Consider the following equation:

$$Y = a + b\text{Agehl} + cW + u,$$

where Y is income; Agehl is the variable of interest (*age of home leaving*); and W is another possibly endogenous regressor, like *education* or *mar-*

ried. Implicitly we have ignored the other regressors assuming that they are uncorrelated with the error term (i.e., all variables in this equation can be interpreted as the residual component after removing the effect of the other included regressors).

Suppose that Agehl is uncorrelated with the unobserved error term u. Estimating the coefficient b by OLS and denoting by B the resulting estimate, we have (see, for instance, the appendix to Acemoglu et al. 2001)

$$plim\ B = b - \varphi\ \text{cov}\ (\text{Agehl},\ W)\ \text{cov}\ (W, u),$$

where $\varphi > 0$. Suppose the W denotes *education.* It is possible that cov (Agehl, W) > 0 (higher educational attainment implies a delay in getting a job and, hence, might entail a later *age of home leaving*). In this case, if *education* is also positively correlated with the error term of the income regression, both covariances are positive and the coefficient of interest entails a downward bias.

Conversely, suppose that W corresponds to being *married.* Then it is likely that cov (Agehl, W) < 0—to get married, most individuals would leave the parental home. If as plausible *married* is also positively correlated with the unobserved determinants of income, u, then the product of the two covariances is negative, and the inclusion of the endogenous variable *married* introduces an upward bias in the coefficient of *age of home leaving.*

Finally, it is straightforward to see that omitting the variable W from the regression introduces a bias that has the same sign as c cov(Agehl, W). That is an upward bias in the case of $W =$ *education* (because presumably $c > 0$ and cov (Agehl, W) > 0) and a downward bias in the case of $W =$ *married* because presumably $c > 0$ and cov (Agehl, W) < 0.

Appendix C

Just Identified Models

Table 10C.1 **Just-identified models—income interval and age of home leaving**

	Income			
	(1)	(2)	(3)	(4)
Age of home leaving	–0.082	–0.138	–0.083	–0.125
	(0.045)*	(0.078)*	(0.051)	(0.065)*
First quarter	–0.224	–0.223	–0.224	–0.226
	(0.078)***	(0.098)**	(0.083)***	(0.098)**
Fourth quarter	0.032	0.049	0.027	0.059
	(0.070)	(0.085)	(0.087)	(0.093)
Education	0.068	0.070	0.065	0.063
	(0.011)***	(0.012)***	(0.010)***	(0.011)***
Empty dwellings	0.004		0.003	
	(0.005)		(0.006)	
Age of first sex		0.011		0.007
		(0.019)		(0.015)
Lack of self-confidence			–0.103	–0.106
			(0.042)**	(0.046)**
Married			0.054	0.093
			(0.097)	(0.134)
No. of children			–0.018	–0.067
			(0.064)	(0.093)
Age of first job			–0.003	0.001
			(0.010)	(0.009)
Estimation	2SLS	2SLS	2SLS	2SLS
No. of observations	457	457	456	456

Notes: Robust standard errors in parentheses. Columns (1) and (3): excluded instrument is age of first sex. Columns (2) and (4): excluded instrument is empty dwellings. Other regressors included in all columns: same as in table 10.8. 2SLS = two-stage least squares.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

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Comment Luigi Pistaferri

Introduction

I enjoyed reading this chapter, if for no other reason than because it seems to talk about me and so many of my friends back in Italy! Leaving aside jokes, the topic is actually quite a serious one. Billari and Tabellini show that "lateness" may have important effects on people's economic success (as measured by earnings, for instance) and even on more macro variables (such as growth). The evidence in the latter case is circumstantial, and so I won't spend time discussing it.

The paper is part of a vast research agenda looking at the impact of demographic features on economic outcomes. For various examples, see Alesina and Giuliano (2007). The starting point of the paper is the observation that Italians exhibit "unusual" demographic features: they complete their education later than their counterparts in other industrialized countries,

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