Determinants of the Household Saving Rate in Austria

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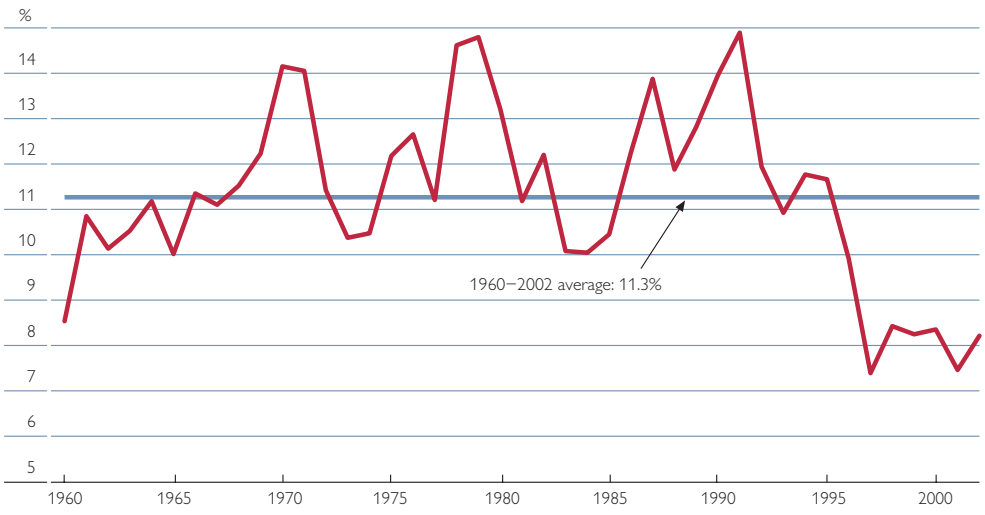
The last few decades have seen a decline in the household saving rate in Austria and other industrial countries. Using an error correction model, this paper shows that in Austria personal saving decisions are influenced by income growth, real interest rates, inflation, social security expenditure and the general government budget balance. These findings are becoming increasingly important for economic policy, given the aging of society and the concomitant need for pension system reform. In future, households will be required to make greater provision for themselves and step up their saving efforts. As the results show, this can be achieved by productivity-boosting measures that generate income growth and promote personal saving.

1 Introduction

In traditional economic theory, the saving rate plays a crucial role, as a direct correlation is postulated between the saving rate and investment rate, on the one hand, and economic growth, on the other. For instance, Feldstein and Horioka (1980) observe that, for 21 industrial countries from the early 1960s to the mid-1970s, investment and domestic savings are positively correlated with each other. In the age of globalization and the close integration of international capital markets, domestic saving should, however, no longer determine growth. As the current example of the U.S.A. shows, capital gaps can be closed by foreign capital flows.

Chart 1

Household Saving Rate in Austria



Source: Statistics Austria.

The last few decades have seen a decline in the saving rate in many industrial countries. Long-run determinants responsible for this are becoming increasingly pertinent to economic policy, given current demographic trends. Aging populations make the reform of pension insurance schemes of utmost urgency and raise two questions: first, whether personal saving can supplement (or, even, partially substitute) claims on the public

Refereed by Michael Wüger, Austrian Institute of Economic Research (WIFO).

[1] *The authors would like to thank Gerhard Fenz, Manfred Fluch, Ernest Gnan, Johann Scharler, Martin Schneider, Martin Schürz, Maria Teresa Valderrama und Irmgard Wenko for their comments, and Beate Resch for providing valuable statistical support.*

social security system and, second, whether personal saving will be adequate, in view of the levels of self-sufficiency required (Börsch-Supan/Brugiavini, 2001).

In 1991 the household saving rate[2] in Austria peaked at close to 15%. Within six years it had halved and fallen to a historic low of 7.4%. Since then, there have been no indications that household saving is returning to its average level in the past (1960 to 2002) of 11.3%.

A similar trend can be seen in other countries. As table 1 shows, some saving rates have fallen sharply.

Table 1

Personal Saving Rates in Selected Countries

	1970–1979	1980–1989	1990–1999	2000–2002
	Average in %			
U.S.A.	9.6	9.0	5.2	2.1
Japan	23.7	16.3	12.3	7.5
Germany	13.0	12.8	11.6	10.2
Canada	12.0	15.3	9.1	4.4
Australia	14.2	11.1	5.0	1.7
Austria	12.6	11.8	10.9	8.0
Italy	x	29.4	22.7	15.5
United Kingdom	7.9	8.9	9.0	5.9
Belgium	20.8	15.9	17.1	14.0
Finland	3.1	3.0	3.8	−0.9
Netherlands	4.1	14.3	13.9	8.1
Spain	14.8	11.6	13.1	10.5
Ireland	16.5	12.3	10.7	10.2

Source: OECD.

To be highlighted, in particular, is the trend in Japan where the average personal saving rate plunged from 23.7% in the 1970s to 7.5% in 2000 to 2002. Australia posted a similarly steep decline. In Europe, Italy offers the most striking example: in the 1980s it featured Europe's highest saving rate of, at times, more than 30%. At the start of the new millennium, however, its saving rate had halved.

2 Determinants of the Saving Rate in Economic Literature

Owing to the importance of saving for national capital formation, the decline in the saving rate has raised academic interest in its determinants. De Serres and Pelgrin (2003) examine the extent to which the decline in the saving rates of OECD countries can be attributed not only to rising asset prices in the 1990s but to other effects not induced by the financial markets. Their findings show that household saving is negatively determined by government saving, aging populations and real interest rates, with positive effects coming from changes in terms of trade and from productivity growth. Callen and Thimann (1997) also look at OECD countries, focusing on the impact on household saving by both the tax and social security systems. In their opinion, tax regimes based on direct taxation reduce personal saving, whereas heavier indirect taxation favors net personal saving. Similarly, higher government transfers result in lower levels of saving. Ul Haque, Pesaran and Sharma (1999) do not detect a statistically significant long-run effect on household saving induced by GDP growth, inflation, real interest rates, wealth endowment

[2] *See Appendix for a definition of the saving rate.*

or demographic trends. Instead, their study suggests that households react strongly to the state of public finances. For instance, if the general government surplus falls, this decline will be almost entirely offset by higher personal saving.

Masson, Bayoumi and Samiei (1998), Edwards (1995) and Loayza, Schmidt-Hebbel and Servén (2000) enlarge this group of countries and analyze the factors influencing saving behavior in both industrial and developing countries. As soon as the income level of less developed countries rises, so too does their propensity to save. Likewise, financial market trends have a positive impact on saving behavior. The deeper and broader the financial markets, the more people save.

For Austria, Gugerell (1980) shows the extent to which saving behavior (in addition to macroeconomic variables such as income, interest rates and prices) can also be explained by households' expectations of their financial situation. Pollan (1988) examines the impact of unemployment and inflation on saving deposit trends. A key focus of the in-depth study by Jäger and Neusser (1988) on the theory of consumer and saving behavior is the correlation between household saving behavior and fiscal policy in Austria, also analyzed at length by Neck (1993).

There are two kinds of literature currently available on Austria in this area. The first describes the effects on consumption and then, owing to the intimate relationship between consumption and saving, derives implications for the latter. The second analyzes only one component of national saving, namely the accumulation of financial assets, and ignores nonfinancial assets.

This study differs from the abovementioned literature on Austria in many respects. First, the saving rate is explicitly described as a dependent (and thus analyzable) variable. Second, instead of considering individual effects in isolation, the effect on the saving rate by all available determinants is tested simultaneously. In addition, new factors are introduced, which have not yet been investigated for Austria so far. Finally, the study's observation period of four decades allows conclusions to be drawn on Austria's long-term saving behavior.

This study is structured as follows: Chapter 3 presents the theoretical underpinnings of the saving behavior applied in the model. Chapter 4 introduces the model used to test the factors influencing Austria's saving rate. Chapter 5 discusses the findings and compares them with previous studies on Austria. The final chapter presents the conclusions, which round off this study.

3 Theoretical Basis of Saving Behavior

The theoretical underpinnings of this study are essentially based on the life cycle hypothesis proposed by Modigliani and Brumberg (1954). This postulates that the consumption decisions of individuals are subject to an intertemporal decision-making process, the aim of which is to maximize utility. In its simplest form, the model divides the lifetime of individuals into a working period and a retirement period. In the working period individuals accumulate wealth, which is used in the retirement period (when a decline in income can be expected) to maintain their accustomed level of consumption.

The structure of this model gives income growth and the age structure of the population a special role in explaining the national saving rate (Deaton, 1992; Modigliani, 1986). First, income growth influences personal saving due to the productivity of the younger generation in the population, which is higher than that of the older generation. If the propensity to save is equal, net saving is positive, as the relative income shares of the young are higher than the elderly population's. Second, demographic trends, or the age structure of the population, are a key determinant of the saving rate. The higher the share of the nonworking population, the stronger the impact a decline in wealth causes at this stage of life. Aging populations therefore mean a lower saving rate, as saving by the active population is squeezed by the negative or low saving of those no longer in work.

As Browning and Crossley (2001) and Attanasio (1999) explain, the life cycle model described above provides a general framework that cannot include every aspect affecting both consumption decisions and saving decisions. Instead, other factors need to be included in this framework in order to better represent reality. One aspect excluded by the life cycle hypothesis is the psychological determinants of saving behavior. For instance, Thaler (1994) points out that it cannot be assumed of all individuals that they see their life as a maximization problem to be solved accordingly. Saving in the context of the life cycle hypothesis follows a strict pattern that requires present consumption to be deferred. Individuals' lack of self-control and shortsightedness conflict with this behavior.

In addition to income growth and demographic trends, the model employed includes yet more potential factors influencing saving behavior. One of these is the trend in interest rates, although its effect on saving behavior is not clear in theoretical terms. If interest rates are high, households will limit their present consumption and save more in order to consume more in the future. However, this is contradicted by the fact that households look forward to higher income thanks to better earning prospects in the future. This allows them to increase present consumption and anticipate future income growth. It is unclear *a priori* which of these two effects is the greater. Empirical analysis of the interest rate effect does not arrive at any consistent results either. For instance, although Bosworth (1993) identifies a positive coefficient for the interest rate variable in time series estimations for individual countries, when he carries out a cross-country panel assessment he finds a negative coefficient.

A further factor relates to the consideration of imperfect credit markets. If households cannot raise a loan, they consume less than intended, which means they save more. Furthermore, liquidity constraints that are nonbinding at present (but may be binding in future) lead to households saving more in a bid to offset potential declines in income (Zeldes, 1989). According to Jappelli and Pagano (1994), international differences in personal saving can be attributed to liquidity constraints, reflecting, for instance, the amount homebuyers may borrow and statutory lending restrictions.

According to Feldstein (1976), public pension schemes influence personal saving, as households substitute private wealth with claims on the social security system. The extent of wealth substitution depends on the degree to which pension claims are seen as being equivalent to traditional saving investments. However, there is a retirement effect, which induces households to step up wealth accumulation during the working period. Public pension schemes enable households to limit their supply of labor and to take early retirement. But this means they are gainfully employed for a shorter period of time and will need to distribute their decline in wealth over a longer period of retirement. The retirement effect also depends on life expectation and the income substitution rate.

Uncertainty in the form of inflation and unemployment can also change the optimal distribution of resources over both present and future time periods. Inflation is an illustration of general macroeconomic uncertainty, which fuels higher net saving according to Deaton (1977) since, in periods of general inflation, consumer price increases are misinterpreted as relative price increases. This results in consumer restraint. Unemployment is used as an indicator for individual income uncertainty. According to Caroll (1992), expectations of unemployment and related income uncertainty trigger precautionary saving.

Furthermore, public debt can influence personal saving. Barro (1974) argues that households with a long planning horizon take account of the government's intertemporal budget restriction in their saving decisions. If government is in debt and chooses not to finance its spending by taxation, households will increase their net saving. This is because they expect a further hike in taxes in future to discharge the debt.

4 Factors Influencing the Saving Rate in Austria – Empirical Estimations

The data used (see Appendix for more details) cover the 1960 to 2002 period. Since the list of potential factors is extensive, a relatively simple empirical method (rather than a highly structured theoretical model) is used to identify the main determinants of the household saving rate. By estimating different equations, variables are eliminated that do not contribute toward explaining the saving rate trend.

Econometric Method of Estimation

Since both saving and consumer behavior evolve slowly, we do not estimate the correlations by means of simple regression but use an error correction model. This allows us to estimate a long-run correlation between the variables and to model behavior in the short run. The error correction model is generally represented by the following equation:

$$\Delta Y_t = \beta_1 \Delta X_{1t} + \beta_2 \Delta X_{2t} + ... + \beta_n \Delta X_{nt} + \gamma(Y_{t-1} - \alpha_0 - \alpha_1 X_{1t-1} - \alpha_2 X_{2t-1} - ... - \alpha_n X_{nt-1}) + \varepsilon_t.$$

The equation consists of two parts. The first part (written in terms of changes in variables) describes short-run fluctuations and how quickly the system attains the (new) state of equilibrium. The second part (the expression in parentheses) describes the long-run state of equilibrium attained by the system. This expression contains one period-lagged deviations from equilibrium. This means that if there is a deviation from equilibrium, in the next period an effect is produced in the direction of equilibrium provided the coefficient γ is negative. The magnitude of coefficient γ corresponds to the speed with which the saving rate moves toward equilibrium.

One condition for an error correction model is the existence of a cointegration relationship between variables. For this, two things are necessary. First, the variables must be integrated (in the simplest case, of order 1) and, second, the residuals derived from the regression of these variables must be stationary. This is why augmented Dickey-Fuller (ADF) tests, demonstrating that the saving rate, real interest rate and inflation rate are nonstationary, were performed. Thury and Wüger (1994, 2001) derive an error correction model for the consumption habits of Austrian households. The stationarity of the saving rate derives from the fact that consumption and income are cointegrated. However, data up to 2002 reveal that the saving rate is nonstationary.

First, a long-run relationship between the key variables was estimated. These included income growth, the real interest rate and the inflation rate. The residuals of this regression were then tested by an ADF test for stationarity. Since this test did not indicate nonstationarity, a cointegration relationship between the variables was assumed.

The next step involved the estimation of the error correction model using various combinations of explanatory variables. After eliminating all insignificant parameters, we obtained the final specification:
$\Delta S_t = \beta_1 \Delta g_t + \beta_2 \Delta r_t + \beta_3 \Delta z_t + \gamma(S_{t-1} - (\alpha_0 + \alpha_1 g_{t-1} + \alpha_2 r_{t-1} + \alpha_3 \pi_{t-1} + \alpha_4 n_{t-1})) + \varepsilon_t.$
S … Household saving rate
g … Growth rate of real disposable household income
r … Real interest rate
z … Public social security expenditure as a percentage of disposable household income
π … Inflation rate
n … Budget balance

A summary of the estimation results is reported in the table below.

Estimation Results

	Dependent Variable: Δ Saving Rate		
	Coefficient	Standard error	t-value
Δ Income growth	0,61	0,09	6,81
Δ Real interest rate	0,69	0,19	3,60
Δ Social security expenditure	0,90	0,28	3,22
Adjustment coefficient	−0,52	0,12	−4,31
Constant	1,05	1,61	0,66
Income growth	0,97	0,24	3,96
Real interest rate	1,16	0,26	4,40
Inflation rate	0,62	0,19	3,33
Budget balance	−0,35	0,17	−2,08

Adjusted R2 was 0.65 and the Durbin-Watson statistic was 2.10, which does not signify an indication of serial correlation. Similarly, a Breusch-Godfrey test did not indicate serial correlation. A White test was used to check whether the residuals were heteroscedastic. The test revealed that this problem was nonexistent for the model employed.

The adjustment coefficient is −0.52. This means that households within a single period offset approximately 50% of deviation occurring from their target saving rate. The minus sign ensures the stability of the model.

According to these empirical estimations (see box "Econometric Method of Estimation"), the saving rate is positively influenced by income growth in both the short and long run. The short-run coefficient is 0.61 and the long-run coefficient is 0.97. This means that if real income grows by 1 percentage point, the saving rate will rise by 0.61 percentage point in the short run and by about 1 percentage point in the long run. One of the key hypotheses proposed by Modigliani (1986) is that income growth influences personal saving. Although households base their consumption decisions on lifetime income, owing to deep-seated behavioral patterns

they adjust their behavior in line with their improved earning prospects only tentatively, which results in higher saving.

As far as their saving decisions are concerned, households react relatively strongly to fluctuations in the real interest rate. If the real interest rate increases by 1 percentage point, the saving rate will rise by roughly 0.69 percentage point in the short run. In the long run, this effect will be as much as 1.16. In both cases, the coefficient will be positive. In other words, households defer present consumption to the future by saving. This finding contrasts with earlier studies on the interest rate elasticity of Austrian households. In an international comparison, Wüger (1985) reached the conclusion that Austrian households react to higher interest rates primarily by portfolio shifts rather than by additional saving. In other countries, saving is on the whole more sensitive to interest rate fluctuations than in Austria. Gugerell (1980) attributed Austrians poor responsiveness to interest rates in the 1970s to their experience of inflation and to the fact that central bank was aiming at keeping nominal interest rates stable.

The effect of the social security system on personal saving decisions was initially tested by pension income and proved to be insignificant. In a further step, the ratio of public social security expenditure to disposable household income was used as an indicator. This indicator throws light on what share of income is financed by government (via household contributions) and does not need to be provided by personal saving. According to our estimations, social security expenditure does not have a long-run effect on the saving rate. Instead, it has a robust short-run effect: if the share of social security expenditure as a percentage of disposable income increases by 1 percentage point, the saving rate will rise by 0.90 percentage point.

Although social security expenditure does not play a role in households' long-term financial planning, the positive saving incentive it creates in the short run reflects how the social security system has grown in the last few decades. Broad sections of the population have become entitled to social security benefits, allowing them to reduce their precautionary saving for contingencies and income uncertainties and, instead, to accumulate private wealth. This effect was strengthened through public subsidies for various saving instruments, which reached considerable proportions according to Inderst, Mooslechner and Unger (1990). Between 1970 and 1980 alone, the share of subsidized assets as a percentage of total household financial assets is estimated to have risen from 8.5% to some 20%.

In contrast to social security expenditure, the inflation rate does not have a direct impact on short-term personal saving decisions. However, it has an indirect effect via real interest rates. In the long run, a rise in the inflation rate will cause the saving rate to increase by 0.62 percentage point. This can be attributed to two reasons. First, as far as their long-term inflationary expectations are concerned, households can exploit real asset price inflation and invest more heavily in real estate and other nonfinancial assets. Second, financial assets play a crucial role in wealth formation, making a large part of the population vulnerable to inflation. To reconverge toward the long-term asset equilibrium, losses in real wealth triggered by inflation are offset by greater per-

sonal saving efforts. Pollan (1988) also reaches similar conclusions. He assumes that households strive to achieve a specific ratio of savings to income. During the period of high inflation in the 1970s, he computes high inflation-induced losses in savings, which disturbed this ratio. Pollan attributes the increase in the saving rate in 1975 and 1976 to the fact that households wanted to pursue a long-term wealth target and rebuild their accustomed level of real savings.

The unemployment rate – a second factor of uncertainty – is not significant in the present specification. The evidence from previous studies on the impact of unemployment on personal saving decisions is mixed. Pollan (1988) assumes that, in the first half of the 1980s, the bleak labor market scenario at the time induced households to increase saving above trend (of the previous years) in order to counter greater income uncertainty. Although saving deposits form only one component of total private wealth, if losses in income are incurred in the short run, saving deposits' high liquidity makes them more suitable as contingency funds than nonfinancial assets and other financial assets. According to the abovementioned cross-section comparison by Wüger (1985), a statistically measurable effect of unemployment on the saving rate could not be ascertained after the second oil crisis. Wüger attributes this to, for instance, Austria's social provision measures, which did not make precautionary saving necessary to the same extent as in countries with a less well-developed social infrastructure.

The budget balance (in % of GDP) has a long-run effect of –0.35 percentage point. This means that households will save more intensively in the event of a growing budget deficit (falling budget balance). There are signs here that households in their intertemporal resource allocation make some allowance for public debt and anticipate future tax changes. By contrast, the available studies on the impact on consumption and saving by Austrian fiscal policies arrive at opposite conclusions. Neck (1993) estimated consumption functions that include various financial indicators of the public sector as an explanatory variable. His findings reject the hypothesis that there are Ricardian equivalence effects in Austria. Jäger and Neusser (1988) reached the same conclusions, i.e. growth in the budget deficit does not lead to a reduction in consumption and to an increase in saving. However, these studies date from some time ago.

Finally, two potential factors, which proved insignificant in the estimation, still need to be examined. First, a test was performed on the degree to which Austrian households are subject to borrowing constraints and thereby urged to save. Household debt, which has accelerated sharply in the last three decades, was used as an indicator. Between 1970 and 2002, household debt grew from 10% to almost 50% of disposable income. The fact that liquidity constraints are currently nonexistent in Austria could be related to the deregulation of the financial markets since the second half of the 1970s. At that time, the measures adopted included the reduction of market entry restrictions for banks, the removal of lending growth limits and permission to advertise consumer loans (Braumann, 2002).

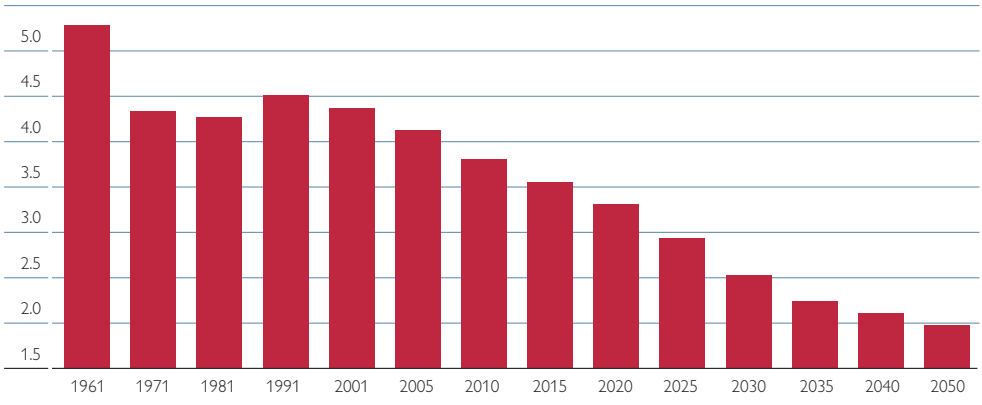
Second, demographic changes, as shown by the ratio of the number of pensioners to the number of people in work, did not have a significant

effect on the saving rate either. This can be attributed to two factors. First, saving by elderly households is led by bequest motives and provisions for health expenses, which averts a rapid reduction in wealth in old age.

Second, the age structure in the last 40 years has altered only gradually. The share of people aged 15 to 64 in Austria's total population increased from 65.3% to 67.7% between 1961 and 2001, whereas the share of those aged 64+ grew by 3.1 percentage points to 15.5% in the same period. In the next few decades, however, this scenario could undergo a sea change. As the projections indicate, the ratio of working age people to those aged 64+ will shrink dramatically owing to the acceleration of population aging (see chart 2). The baby boom generation is currently enjoying a time of life associated with high income and a high propensity to save, which positively contributes to net current saving. For Austria, there are admittedly signs that, during the retirement period, consumption declines more steeply than income, which means this time of life is seen more as a saving (than a dissaving) period (Wüger, 1989). It is well known from studies analyzing income data according to age group that, although the saving rate remains positive at retirement age, it is lower than during working life (Börsch-Supan et. al., 2000). Were this to apply to Austria as well, it could nudge down the country's saving rate in future.

Chart 2

Ratio of Working Age People[1] to People Aged 64+ in Austria



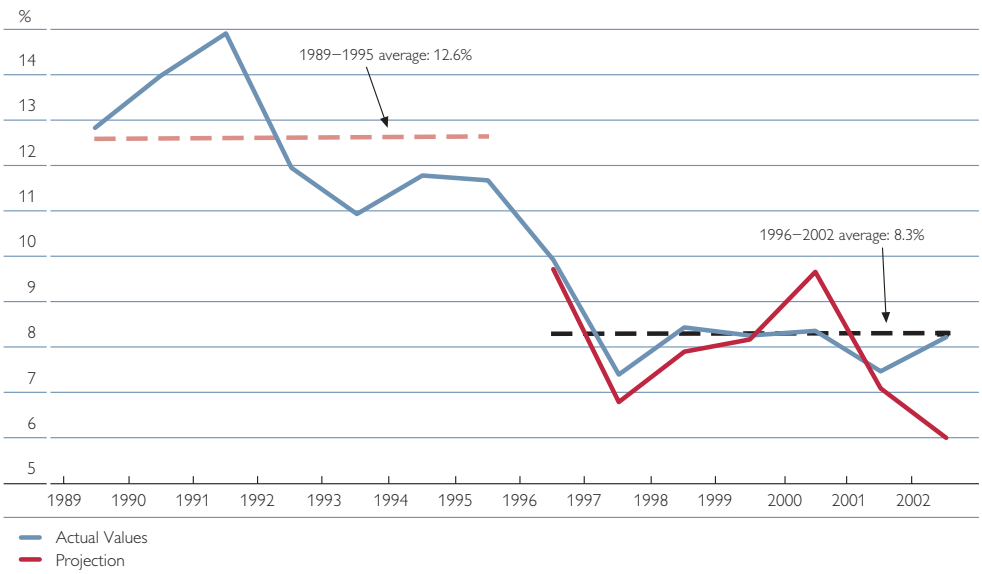
Source: Statistics Austria.
[1] Working age people are defined as being 15 to 64 years old.

5 Determinants of the Decline in the Saving Rate in the 1990s

An analysis of the trend in the household saving rate in Austria shows a striking decline since the mid-1990s. To test the model for goodness-of-fit and to identify potential determinants of this decline, the model was fitted to the data up to 1995; thereafter projections were estimated for 1996 to 2002. The results of this estimation are reported in chart 3. This reveals that the model is actually a good representation of the decline in the saving rate. Its estimated parameters for the truncated period are close to those resulting from the estimation for the entire period. The model also indicates the absence of a structural break and

Chart 3

Comparison of Projection with Actual Values



Source: Statistics Austria, OeNB.

that household saving behavior can be described by the specification used over the entire period.

To identify the determinants of the decline, the averages of the individual data series in the 1989–1995 period are compared with those in the 1996–2002 period (see table 2). The average saving rate in the last seven years has been 4.29 percentage points below the average of the preceding seven-year period. The contributions of the individual explanatory variables are presented in a way such that the change in the seven-year average is multiplied in each case by the corresponding coefficient of the model's long-run component. This shows that the most robust effect (1.63 percentage points) is produced by the lower real interest rate. The next biggest contribution (0.93 percentage point) stems from the lower inflation rate. Weaker real income growth contributes 0.87 percentage point and the improved budget balance (smaller budget deficit) contributes 0.60 percentage point. Overall, these four variables (4.03 percentage points) explain a large part of the decline in Austria's household saving rate since the mid-1990s.

Table 2

Contribution of Explanatory Variables to the Saving Rate Decline in the 1990s

	Saving rate	Income growth	Real interest rate	Inflation rate	Budget balance
1989-1995 average in %	12.58	2.52	4.43	3.14	−3.56
1996-2002 average in %	8.29	1.62	3.03	1.64	−1.82
Change in average in percentage points	−4.29	−0.89	−1.40	−1.50	1.74
Coefficient		0.97	1.16	0.62	−0.35
Contribution in percentage points		−0.87	−1.63	−0.93	−0.60

Source: OeNB.

6 Summary, Outlook and Conclusions

Since the early 1990s the saving rate has been in steep downtrend. This decline can be explained by the variables estimated in the present study, which determine long-term saving behavior. Budget consolidation in recent years has reduced saving for future tax increases. Similarly, a more stable price climate has contributed to lower welfare losses that did not need to be substituted by additional net saving. Low real interest rates set only low incentives designed to limit present consumption and to generate higher income in future by increasing investment. Last but not least, income growth was additionally too low to fuel intensive saving in Austria.

What can be expected in future? Changes currently being implemented in the pension system could influence household saving. With lower pension income, precautionary saving for retirement is likely to become more important. Recent surveys on saving behavior reveal that the saving motive in Austria is already changing accordingly. Tax incentives favor private pension provision over alternative investments and could – in addition to a switch between alternative saving vehicles – also give rise to additional net saving, as shown by households' response to interest rate incentives in the past.

As an aggregate parameter, however, the saving rate conceals the fact that not all households can make adequate provisions for their pension income. Despite the opening up of financial markets, low-income households, in particular, are subject to liquidity constraints and greater income uncertainty than households on a better financial footing. The purchase of illiquid receivables to build up pension capital is generally not feasible in these cases. As the UK's experience shows (Attanasio and Rohwedder, 2003), this scenario can lead to the introduction of private pension insurance generating negative distribution effects in its wake. The trend in the aggregate saving rate therefore offers only an initial indication of adequate precautionary saving.

Demographic trends are also likely to have an impact on personal saving. The baby boom generation, currently enjoying a high income and net savings, will retire from working life in the next few decades. Since saving rates dip in old age and the ratio of the working population to pensioners is shrinking, a decline in the private saving rate should be expected in the long run. Although global capital markets are closely integrated with each other and a smaller domestic supply of capital can be offset by foreign capital flows, it should be borne in mind that other developed countries are also faced with similar demographic aging processes (Bloom and Canning, 2004). Negative growth effects could therefore arise from higher real interest rates induced by an excessive shortfall in the supply of capital.

As the model shows, income growth is a key determinant of personal saving. If the working population declines in future, productivity will have to increase at the same time to prevent the incurrence of welfare losses. Gnan, Janger and Scharler (2004) confirm the cardinal importance of productivity for Austrian growth over the last 40 years. To safeguard growth prospects in the long run, productivity-boosting activities such as research and development should be supported to a greater extent and human capital be promoted. This should also entail positive effects

on personal saving that counter the impact by population aging on the supply of capital in the economy as a whole.

Appendix: Data Series and Data Sources

Data series	Source of data
Household saving rate	Statistics Austria
Household disposable income	Statistics Austria
Real household disposable income	Statistics Austria
Secondary market yield	Oesterreichische Kontrollbank
Social benefits	Statistics Austria
Inflation rate (annual rate of change in CPI)	Statistics Austria
Budget balance, % of GDP	Statistics Austria
Nominal GDP	Statistics Austria
Loans to households	Oesterreichische Nationalbank
Unemployment rate	Statistics Austria
Structure of population by age and employment status	Statistics Austria, Social security statistics

Data relating to the household saving rate and to disposable household income are drawn from the national accounts. Disposable income, in this context, is equal to the sum of primary income (mixed income, compensation of employees and investment income) minus social security contributions as well as income and investment tax, plus social benefits and other current transfers. Household saving is calculated as the difference between disposable income and private consumption. Saving as defined by the national accounts includes not only the accumulation of financial assets (e.g. savings deposits) but also the accumulation of nonfinancial assets (real estate, valuables, etc.). Finally, the saving rate is the ratio of saving to disposable income. A problem with the national accounts data is that the data collection systems were modified during the observation period (System of National Accounts (SNA) 68, European System of Accounts (ESA) 95). As a result, there are no general data series based on a standardized methodology. In view of these different data generation processes, it can therefore be assumed that the transition between individual data collection systems did not occur seamlessly.

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