



OESTERREICHISCHE NATIONALBANK

F O C U S O N A U S T R I A

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<i>In recent years empirical research on the term structure of yields focusing on the interdependence of asset returns, inflation and real activity has reemerged as a topical issue for economic theory and policy. The present study analyzes the information content of yield curve spreads for economic activity and inflation in Austria using a Vector Error Correction model (VEC). The prices of financial assets will play an important role as monetary policy indicators in European Monetary Union.</i>	
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**Legend**

- = The numerical value is zero
- . . = Data not available at the reporting date
- × = For technical reasons no data can be indicated
- 0 = A quantity which is smaller than half of the unit indicated
- = New series

Note: Apparent arithmetical discrepancies in the tables are due to rounding.

# R E P O R T S

# Calendar of Monetary Highlights

## **March 1998**

- 1 The Amendment to the Investment Fund Act takes effect, laying the legal foundation for launching non-dividend funds, funds of funds, institutional funds and pension funds as well as removing legal obstacles for merging funds.

## *Economic Background*

The economies of the industrialized countries were still on the rebound in 1997, though the overall expansion remained moderate. To some degree, this may be the result of the financial turmoil gripping Asia, particularly because growth in the countries with important trade links to the region suffered setbacks.

Even though the business upturn in the United States and Canada had already been underway for so long, it gained further momentum. Conversely, Japan's incipient recovery of 1996 was nipped in the bud; economic activity there slumped, reflecting the shock waves of the Asian financial tumult. The economies of the developing countries lost steam again, and the expansion in the CEEC transition countries was not quite as fast-paced as it had been a year earlier. In Western Europe, however, the recovery stayed on track, though a broadly-based upturn has yet to establish itself.

In view of the Asian predicament, international organizations, notably the IMF and the OECD, and forecasters alike revised their projections for the business outlook downward marginally. However, they expect the Asian troubles to impact different regions differently; the 1998 global growth rate is likely to be the same as in 1997. Japan is expected to be hardest hit, whereas the fallout will be less pronounced in Europe, whose real economic ties to the affected countries of Asia are relatively weak. On the contrary, steady consumer prices, low interest rates and stable exchange rates within Europe are anticipated to bolster Europe's upswing. Moreover, domestic demand seems to be recovering progressively in the large Continental European economies. The powerful upturn is predicted to cushion the blow of the Asian crisis to the U.S. economy.

Of the main macroeconomic target indicators, unemployment remained most intractable in the EU; it declined only slightly to 11.3% across the entire region. Apart from resolute labor and employment policies, the national medium-term employment action plans for the period up to the year 2002 that EU Member States have been called on to draw up by April

1998 on the basis of EU guidelines should help alleviate the unemployment problem. The goal is to substantially raise employment and to reduce the jobless rate in all EU Member States.

The U.S. expansion speeded up further in 1997. At 3.8% in 1997, GDP rose far faster than in 1996. One factor which provided a major impetus is sustained robust consumer demand, backed up by favorable employment and enlarging real incomes. Also, with sales prospects bright, businesses lifted investment; consequently, the upturn is self-sustained. Another factor which contributed to the expansion of GDP is the surge in real exports. Employment is another area in which the U.S. economy did very well: Roughly 3 million new jobs were generated in 1997, bringing the five-year total to some 14 million. The unemployment rate dropped below 5% last year without inflation heating up (the rate of price increase remained stable at below 2% in 1997). The budget deficit was cut substantially, and the U.S. budget is projected to be in surplus in the fiscal year 1998/99 for the first time in 30 years.

Japan had no such economic policy successes to point to in 1997. The hesitant recovery in Japan at the beginning of 1997 was cut short by the VAT hike in April 1997. The blow to the economy was compounded by the external trade losses Japan suffered in the wake of the Asian financial upheaval; approximately one quarter of Japan's exports go to the region. At the same time, Japan's banking sector was beset by a shakeout. The government put together financial aid packages to prop up ailing banks and to stimulate business activity. Japanese inflation ran below the 2% mark in 1997.

Germany exemplified the typical European picture of economic activity in 1997: Domestic and external demand expanded at divergent rates. Domestic demand stayed sluggish, while dynamic exports, rallying as the Deutsche mark depreciated in real terms, brought real GDP growth to 2.5% in 1997. Growth should remain on this track in 1998. The labor market did not recover. Prices were stable, and German inflation was still very low at the outset of 1998.

### **The Upswing in Austria Comes along Nicely**

The favorable global economic setting and Austrian products' significantly improved competitiveness markedly lifted Austria's economic data nearly across the board. Wage moderation helped keep inflation at bay, short-term interest rates stabilized at a low level, and long-term rates continued to diminish as convergence progressed. The real effective depreciation of the schilling and high productivity gains in manufacturing kept unit labor cost rises in check, so that the Austrian aggregate improved impressively against trade partners' unit labor costs. In addition, the public sector's consolidation measures did not weaken economic activity as much as expected.

Preliminary calculations peg real economic growth at 2.5% in 1997, far better than forecast. This trend is anticipated to go on in 1998, with growth coming to perhaps as much as 3%. Recent surveys confirm this projection. Industrial enterprises assess both incoming orders and the future business outlook with much more optimism than three months and one year ago.

The economic data which have come in so far do not signal any negative repercussions of the Asian financial crisis on Austria. The foreign trade data, which have been processed up to November 1997, indicate vigorous export activity and, as only under 3% of Austria's trade is conducted with East Asia, show no impact of the Asian plight. Indirect, second-round effects channeled through a possible marginal drop in European business activity could crop up in the long run, but the growing importance of domestic demand in the current European revival could help contain any such danger.

The individual economic aggregates confirm the general assessment presented for Western Europe and in particular for Germany. Exports were the motor of growth in Austria; they shot up by 14% from January to November 1997. As imports expanded at only half that rate, the trade deficit was slashed by nearly ATS 25 billion or 26%. Unfortunately, the trade results had little effect on the current account, as the travel surplus contracted and transfers slid further into deficit at the same time. The current account shortfall widened from ATS 58 billion in the January through November 1996 period to ATS 59 billion in the analogous 1997 period.

Private consumption remained languid in 1997, a development ascribable to stagnating real incomes, a tight labor market and the unmitigated impact of the public sector's consolidation package.

The government succeeded in attaining its budget targets in 1997. The 1997 budget deficit was ATS 0.5 billion smaller than fixed in the estimate (net deficit: ATS 68.0 billion). The retrenchment measures implemented in the dual budgets of 1996 and 1997 decreased the annual deficit to 2.5% of GDP in 1997 (as given in the notification of March 1998). The state and local governments' fund management were instrumental in reaching this goal. General government gross debt amounted to 66.1% of GDP in 1997, down from almost 70% in 1996. While this value exceeds the TEU criterion of 60%, the ratio diminished and approached the reference value.

Developments on the labor market were not uniform: Although employment enlarged, unemployment also went up slightly.

### **Manufacturing is on a Roll**

The national accounts data calculated by the Austrian Central Statistical Office (ÖSTAT) and the Austrian Institute of Economic Research (WIFO) tally Austria's nominal GDP at ATS 2,517 billion in 1997, which is tantamount to a 3.9% or ATS 95 billion increase. Per capita GDP ran to ATS 311,700. At 1983 constant prices, this corresponds to a 2.5% GDP growth rate, which is above expectations. The relatively large gap between the forecast and the actual result stems from the fact that the forecast was based on comparatively old and imprecise data when it was drawn up in December 1997.

Growth by sectors only partially corresponded to the long-term trend. The largest of the sectors, the service sector, did not expand further and again accounted for 67% of gross value added (i.e. GDP prior to inclusion of financial intermediation services indirectly measured, import duties and value added tax). The secondary sector (manufacturing, energy and water supply, construction) posted slight gains (to 32%) on account of animated

industrial and construction activity. The primary sector's share (agriculture and forestry, mining) shrank again.

High external demand above all benefited enterprises operating in the exposed sector. Manufacturing (excluding construction) output mounted by nearly 5%, a rate last recorded during the cyclical boom of 1989. According to the business confidence survey published by the Federation of Austrian Industry at the end of January 1998, industry expects these trends to last. Business in most sectors is looking up. Roughly half the respondents said their orderbooks were quite full, only 11% were unhappy with the volume of orders. Over 90% of the industries surveyed are optimistic for the first half of 1998. They see output rising or at least maintaining its current level.

The recuperation of construction came as a surprise: Construction output progressed by 3% in 1997. Business was not as animated in the building construction business as in the building completion sector and in auxiliary construction, which thrived on brisk residential refurbishing activity.

In the tertiary sector, only transport and financial intermediation contributed above-average growth impulses.

On the supply side, unlike during the rebound of the late 1980s, the manufacturing sector contributed more to the current upswing than the service sector, whose output at the time had skyrocketed by 5% to 7% (1988). The current growth rates of service output lingered in the 1% to 3% range.

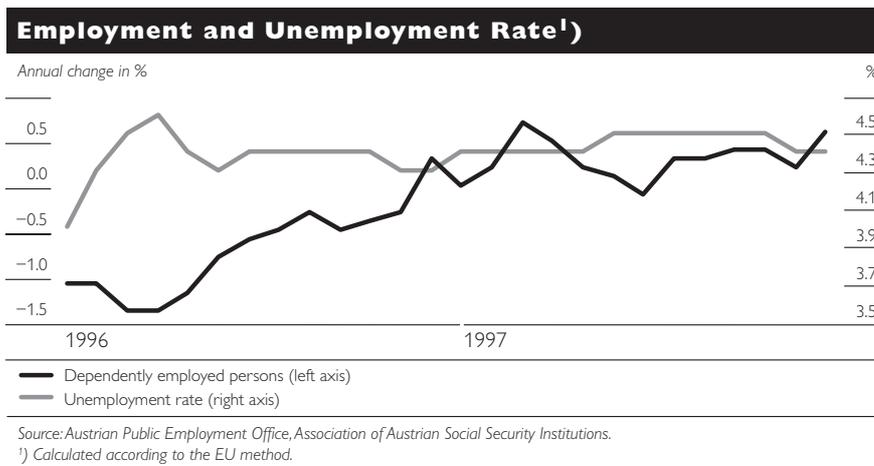
On the demand side, the upturn a decade ago was much more dynamic, extending to all demand components. In contrast to the current recovery, domestic and foreign demand developments did not diverge, but much rather moved in parallel. Thus the upturn was self-sustained ten years ago, which was also confirmed by the high growth rates of investment. As in 1997, public consumption provided little stimulus. The growth impulses provided by the external sector, however, were much stronger at the time than in 1997.

Employment augmented by a total of 245,000 persons between 1988 and 1992, which corresponds to an annual average of 2.1%. Such vigorous employment growth can hardly be expected during the upcoming cycle from 1998 to 2002 (see box).

### **Employment Rises**

The recovery exerted a positive but restrained influence on the labor market; only specific sectors were buoyed by the upswing.

Action taken to ease rigid working hour provisions had positive repercussions for employment, although the liberalization of working time and shop opening hours for the most part boosted the number of marginal jobs, i.e. those qualified as low-income part-time employment subject to special tax treatment, rather than full-time jobs. The labor market statistics do not cover such positions, so the official employment increase of 0.3% is actually understated. Nevertheless, employment rose perceptibly in the service sector, above all in the categories business-related services and in trade and repair. Demand in the tradable goods sector was tepid, and financial services companies shed labor.



The unemployment rate edged up marginally in 1997, rising to 7.1% according to the national definition. Joblessness calculated on EU criteria ran to 4.4%, up marginally from 1996. The market for vacancies underwent a trend reversal, with the number of jobs available enlarging perceptibly for the first time since 1990.

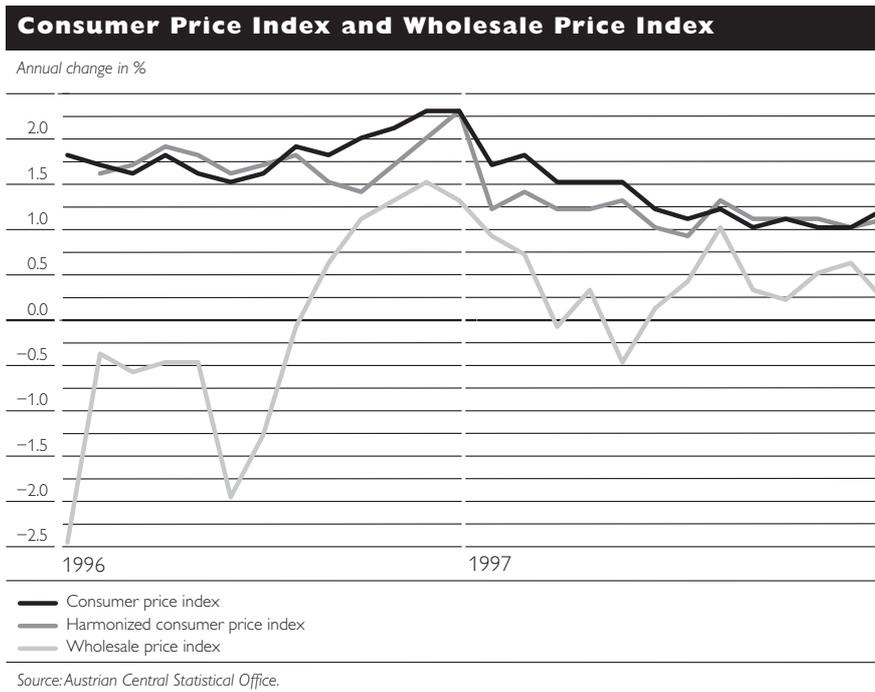
At the beginning of 1998, employment and unemployment continued to develop along divergent lines. The threat of a record number of registered unemployed did not materialize, but the January and February level was just above and just below the 300,000 mark, respectively. The expansion of employment gained momentum, and vacancies were on the rise. Even so, the jobless rate remained firmly entrenched on the 1997 level, and no lasting improvement on the Austrian labor market is expected before 1999.

### Inflation Drops to just over 1%

Austria was in a league with Finland and Ireland as one of the three countries with the lowest inflation rate EU-wide. The rate of inflation as measured by the Harmonized Index of Consumer Prices (HICP) came to 1.2% year-on-year. The national CPI showed the 1997 inflation average at 1.3%, the lowest value since the 1950s.

Apart from the abovementioned economic influences, a number of other special factors acted as a damper on inflation. Public fees and charges were hiked far less than in the previous years. The basis effect of the energy tax introduced in June 1996 petered out toward the middle of the year, and the fuel price rise decelerated gradually. More expensive raw material prices in the wake of the firming of the U.S. dollar exerted only temporary upward pressure on prices. Far slower rent rises in a well-balanced residential market were decidedly the greatest influence in keeping inflation in check. Food was the only category heating up inflation; the dampening effect on food prices of Austria's entry into the EU with its lower food prices seems to have run its course. Moreover, the CPI was based on a new basket of goods.

Inflation ran to 1.2% in January, signaling an ongoing calm pace of consumer price inflation. This is also true of wholesale prices, which were a mere 0.2% above the January 1997 figure.



### Wages Rise by Less than 2%

With prices ticking upward only slowly and competition becoming fiercer, wage increases remained moderate in 1997. The increase in standard wages concluded in collective bargaining negotiations averaged 1.7%, less than in 1996. Wage restraint was compounded by higher taxes and lower transfers that the government's budget retrenchment package burdened households with. These factors kept real incomes from advancing from the 1996 level.

Standard wages went up by 2.3% year-on-year in January 1998.

Relative unit labor cost, a crucial price competitiveness gauge, declined by nearly 4% in industry and fell by comparison to Austria's main trade partners. This trend lasted throughout the beginning of 1998 and promises to further enhance competitiveness.

### Medium-Term Business Outlook for Austria

*Economic growth is projected to accelerate in the 1998 to 2002 period from the 1993 to 1997 five-year period. The Institute for Advanced Studies (IHS) published a medium-term forecast in January 1998 in which it pegs real GDP growth at 2.5% a year, 0.8% a year more than in the previous five-year period.*

*The rosy outlook for the 1998 to 2002 period is predicated first and foremost on a favorable international cyclical scenario. Forecasters pin their hopes on mounting foreign demand as the engine of growth in Austria. The growth of goods and service exports will quicken from an average of 5.5% in the 1993 to 1997 period to 6% a year between 1998 and 2002. Tourism is expected to recuperate again after having declined for three years. The IHS and the Austrian Institute of Economic Research, WIFO, see travel receipt growth firming again and the rise in travel expenditures tapering off, a development which is anticipated to lower the current account deficit to 1% of GDP. The program to promote technological advances and boost exports is also expected to contribute to economic growth. Continued wage moderation and consistent price stability are projected to foster competitiveness further in the upcoming years.*

*Investment growth will depend on the type of investment: Forecasters assume that plant and equipment outlays will stay buoyant, surging 5.2% annually, whereas construction investment will remain listless.*

*Although real incomes will go up, consumption is set to be hesitant, as consumers will use the additional income to replenish their savings accounts. Forecasters bank on an increase in the savings ratio from 8 to 9% a year between 1997 and 1999. Private consumption is projected to expand more slowly than the economy throughout the entire five-year period.*

*Austria's labor market is likely to benefit from this more dynamic business activity. The unemployment rate should sink by about 1/2 percentage point to 6.5% in 2002, and employment is anticipated to gain 0.6%. This prospect appears realistic in view of the importance the federal government attaches to employment and job creation. A stepped-up move toward more flexible working hour schemes, a stronger focus on training and education, more incentives for the foundation of enterprises and finally less bureaucracy represent major items on the government's agenda for labor market policy in the medium term. These issues have all been addressed in the so-called employment action plan.*

### Development of Selected Economic Indicators

	1996	1997	1997			1997			Forecast	
			1st quarter	2nd quarter	3rd quarter	Oct.	Nov.	Dec.	1998 <sup>1)</sup>	1999 <sup>1)</sup>
Annual change in %										
<b>Overall economy</b>										
GDP, in real terms,	+ 1.6	+ 2.5	..	..	..	x	x	x	+ 2.7	+ 3.0
thereof: investment	+ 2.4	+ 3.6	..	..	..	x	x	x	+ 3.6	+ 4.6
private consumption <sup>2)</sup>	+ 2.4	+ 0.2	..	..	..	x	x	x	+ 1.5	+ 1.8
Productivity	+ 2.1	+ 1.6 <sup>1)</sup>	x	x	x	x	x	x	+ 2.1	+ 2.1
Production of physical good	+ 1.3	+ 4.6	..	..	..	x	x	x	+ 4.5	+ 4.5
<b>Labor market</b>										
Dependent employment	- 0.7	+ 0.3	+ 0.3	+ 0.3	+ 0.2	+ 0.4	+ 0.4	+0.2	+ 0.6 <sup>6)</sup>	+ 0.9 <sup>6)</sup>
Unemployed	+ 6.9	+ 1.2	- 1.2	+ 1.1	+ 3.0	+ 2.4	+ 2.9	+3.2	+ 0.0	- 1.7
	%									
Unemployment rate <sup>3)</sup>	4.4	4.5	4.4	4.4	4.5	4.5	4.5	4.4	4.3	4.2
Annual change in %										
<b>Prices</b>										
Consumer price index	+ 1.9	+ 1.3	+ 1.7	+ 1.4	+ 1.1	+ 1.1	+ 1.0	+1.0	+ 1.5	+ 1.5
Harmonized consumer price index	+ 1.8	+ 1.2	+ 1.3	+ 1.2	+ 1.1	+ 1.1	+ 1.1	+1.0	x	x
Wholesale price index	+ 0.0	+ 0.4	+ 0.3	- 0.0	+ 0.8	+ 0.2	+ 0.5	+0.6	x	x
Foreign trade prices <sup>4)</sup>										
Imports	+ 1.2	+ 0.7	..	..	..	x	x	x	+ 1.9	+ 1.4
Exports	+ 0.4	+ 0.6	..	..	..	x	x	x	+ 1.3	+ 1.2
<b>Wages</b>										
Negotiated standard wage rate index	+ 2.4	+ 1.8	+ 1.7	+ 1.8	+ 1.9	+ 1.9	+ 1.9	+1.8	+ 2.0 <sup>7)</sup>	+ 2.7 <sup>7)</sup>
Unit labor cost in industry	- 1.0	- 3.8 <sup>1)</sup>	x	x	x	x	x	x	- 2.6	- 1.7
<b>External sector</b>										
Imports, in nominal terms	+ 6.7	+ 8.1	+ 8.0	+12.4	+11.0	+ 2.0	+ 7.3	..	+ 9.4	+ 9.6
Exports, in nominal terms	+ 5.5	+11.1	+10.1	+20.5	+18.5	+16.0	+ 0.5	..	+10.6	+10.6
	ATS billion									
Balance on current account	-43.4	-45.5 <sup>1)</sup>	- 8.0	-20.7	- 8.2	-12.3	-10.1	..	-45.4	-43.3
	%									
<b>Interest rates</b>										
Call money rate	3.19	3.27	x	x	x	3.37	3.39	3.46	x	x
Secondary market yield (federal government) <sup>5)</sup>	5.30	4.79	4.65	4.71	4.77	5.04	5.08	4.91	5.70	5.90
Annual change in %										
<b>Effective exchange rate</b>										
Nominal	- 1.5	- 2.3	- 2.4	- 1.9	- 3.2	- 2.1	- 1.9	-1.7	+ 0.5	+ 0.6
Real	- 2.1	- 3.3	- 3.1	- 2.6	- 4.5	- 3.3	- 3.3	-2.9	- 0.5	- 0.4
	%									
<b>Budget</b>										
Federal government deficit in % of GDP	3.7	2.7	x	x	x	x	x	x	2.6	2.6
Deficit of the public households in % of GDP	3.8	2.5	x	x	x	x	x	x	2.3	2.1

Source: OeNB, Austrian Institute of Economic Research, Labor Market Service Austria, Association of Austrian Social Security Institutions.

<sup>1)</sup> Forecast of the Austrian Institute of Economic Research of December 1997.

<sup>2)</sup> Incl. consumption of the private nonprofit services sector.

<sup>3)</sup> Calculated according to the EU method.

<sup>4)</sup> Imports and exports of goods and services according to the Austrian Institute of Economic Research.

<sup>5)</sup> Ten-year federal government bonds (benchmark).

<sup>6)</sup> Excl. persons doing compulsory military service and persons on paid leave.

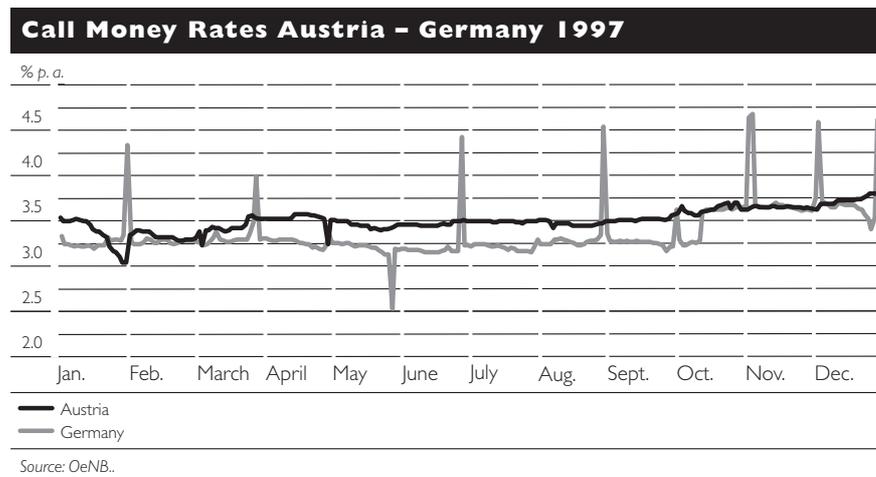
<sup>7)</sup> Change in gross earnings per employee.

# Money and Credit in 1997

## Unperturbed Liquidity Conditions on the Money Market

Throughout 1997, schilling money market interest rates remained relatively stable, fluctuating only minimally. It was not until the last quarter that money market rates climbed slightly. On a calendar-day average basis, call money rates edged up just under 0.2 percentage points; rates for securities with a maturity of twelve months or less advanced by 0.4 percentage points. Call money fluctuated between 2.88 and 3.52%, i.e. within a 0.64 percentage points bracket. During the first three quarters, the bandwidth had, however, narrowed from 0.43 to 0.12 percentage points, before inching up again to 0.21 percentage points in the final quarter. The 1997 money rate for three month paper equaled that of call money; money market rates applied to longer maturities recorded a somewhat wider span: Six month paper moved within 0.83 percentage points and twelve month paper within a 1.12 percentage points range.

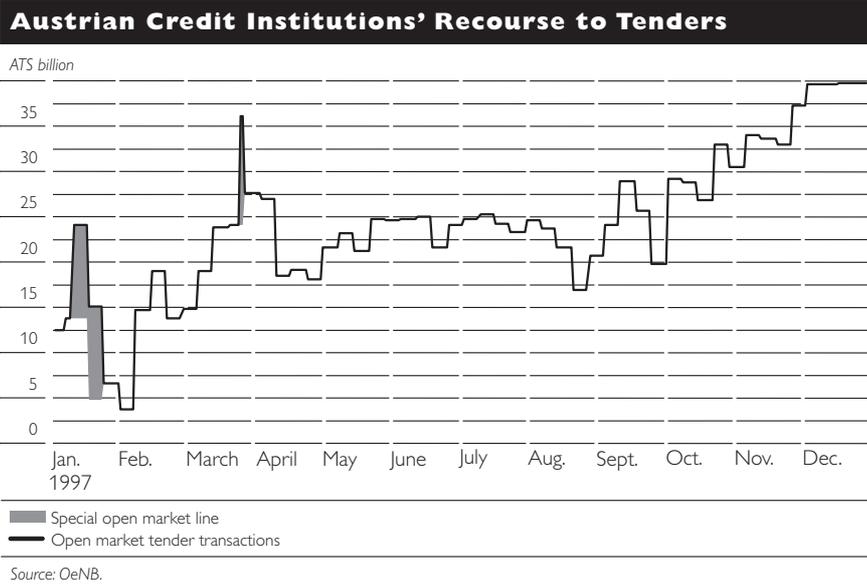
Austrian short-term rates lay somewhat higher than comparable euro-Deutsche mark rates, with the exception of individual days, when the German rate peaked sharply. After the most recent hike of key interest rates in October, which was marginally lower in Austria, German and Austrian rates largely converged.



The OeNB not only left the 1997 discount and lombard rates (2.5 and 4.75%, respectively) untouched, but also the interest rate for GOMEX, or short-term open market, transactions, which stood at 3.4%. On October 9, 1997, the OeNB joined other European central banks in raising the tender rate for repurchase transactions from 3.0 to 3.2% (effective October 17, 1997).

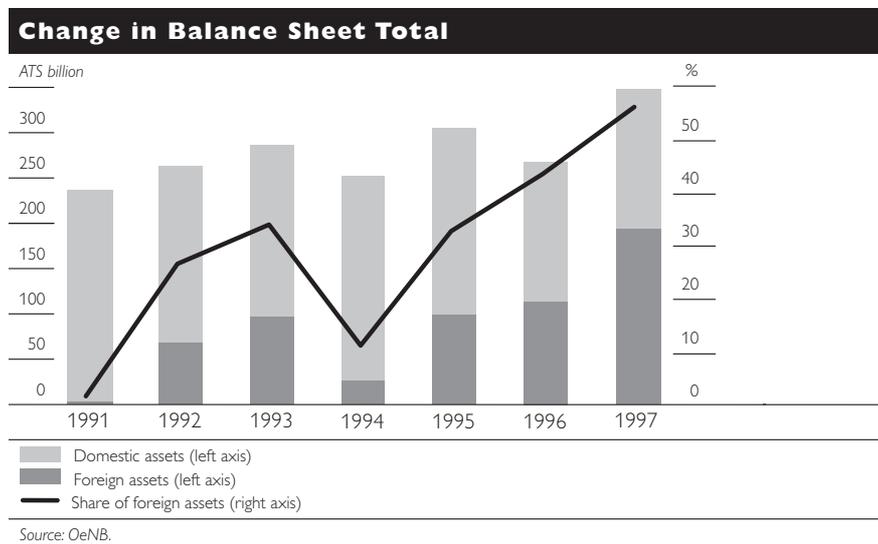
Liquidity conditions remained unperturbed on the Austrian money market throughout the review period. Banks' recourse to central bank refinancing via standard instruments continued to be low, averaging an annualized 55%. By contrast, demand for open market operations expanded briskly, with the importance of the allocation of central bank funds via tender operations gaining sharply. In line with efforts to harmonize monetary policy instruments within the EU, the OeNB has issued tenders every two weeks since the beginning of 1997. This also led to the increase in the sum

earmarked for open market operations from ATS 40 billion to ATS 60 billion on February 21, 1997.



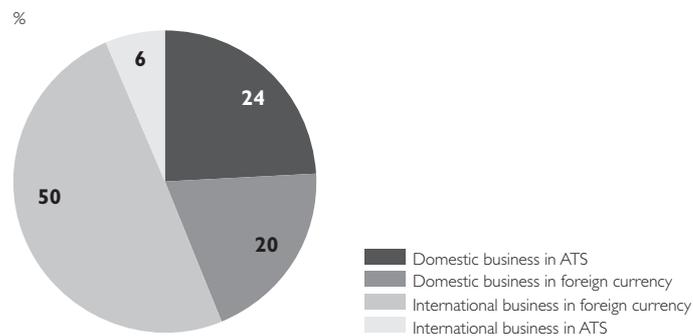
### Balance Sheet Total Grows on the Back of International and Foreign Currency Business

The balance sheet total posted by Austrian credit institutions in 1997 augmented slightly more than the year before, namely by ATS 349 billion or 6.2%. In particular, international business (on the assets and liabilities sides) and foreign currency loans extended to residents soared. The pace of growth of securitized lending observed in the past few years slackened, while participations mounted steeply. Unlike in 1996, interbank business gained somewhat on the previous year.



In general, credit institutions increasingly operated at an international level in 1997: Business abroad and foreign currency transactions already accounted for three quarters of balance sheet total growth. More than 50% of the increment was generated in international business, which expanded four and a half times as rapidly as domestic business. Foreign currency transactions also figured prominently on the assets side of domestic business, carrying 45% of the boost.

#### Share in the Balance Sheet Total Growth in 1997



Source: OeNB.

#### Foreign Activity Loses Momentum in the Course of 1997

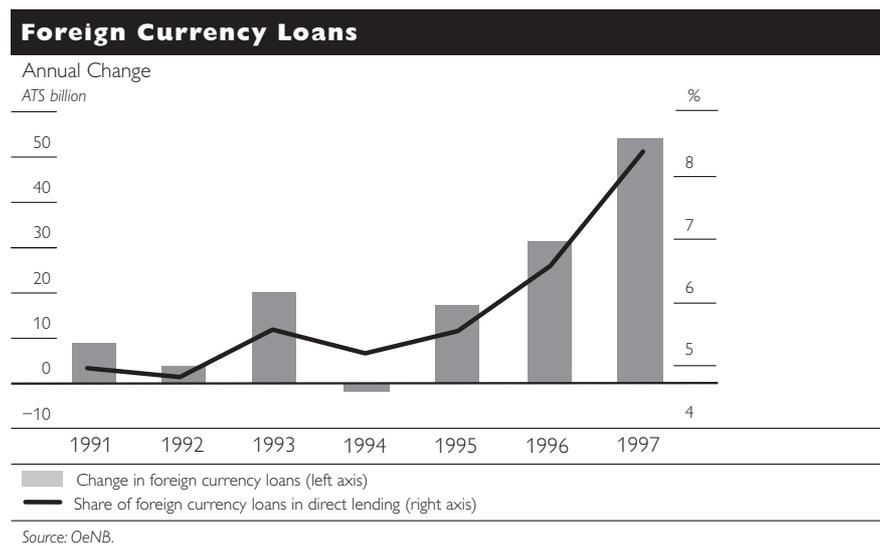
The growth of foreign assets came to ATS 195 billion in absolute terms, bringing foreign assets to ATS 1,450 billion. The 15.6% growth rate was more than double the clip at which the entire business volume accelerated. The expansion was almost exclusively attributable to foreign currency transactions (90%). However, over the course of the reporting year, Austrian credit institutions' international business activity lost steam. Granted, the share of foreign assets in the balance sheet total, at 24.2% at year-end, was 2 percentage points higher than a year earlier, but that was still 1 percentage point below the mid-1997 value. Interbank business was, above all, scaled back perceptibly in the second half of 1997, with foreign interbank claims gaining 3.7% year on year. Lending to foreign nonbanks grew most in absolute terms, rising by ATS 88. Holdings of foreign securities and participations increased by slightly more than one third or ATS 74 billion.

On the liabilities side, credit institutions' foreign activity developed at an even more dynamic pace. Foreign liabilities jumped by ATS 270 billion or 19.5%. Austria's credit institutions took out sizeable amounts especially on the interbank market. Consequently, their interbank liabilities expanded to ATS 899 billion, up ATS 150 billion from the end of 1996. Over the year, interbank liabilities developed in much the same way as interbank assets, declining toward the end of 1997. Credit institutions launched issues to the amount of ATS 96 billion on international capital markets.

#### Growth in Foreign Currency Loans Picks up

At ATS 83 billion, lending to domestic nonbanks (securitized and nonsecuritized, including GOMEX) underperformed the 1996 value by

roughly ATS 27 billion. This aggregate's share in the balance sheet total sank by 1.7 percentage points to 51.0%. On the one hand, the structure of the credit portfolio shifted from securitized to nonsecuritized instruments and, on the other hand, further toward foreign currency loans.



As in 1996, direct lending advanced by 3.6%, in absolute terms the ATS 92 billion gain topped that of 1996 marginally (ATS 89 billion). For the first time the expansion was largely driven by loans denominated in foreign currency, which got a further boost in 1997 and augmented by nearly a third. The volume of foreign currency loans outstanding almost doubled over the past three years. Their share in total direct credits mounted from 5.2% to 8.3% over that same period. Enterprises and households alike tapped foreign currency loans to a much greater extent: Almost half of their new bank liabilities were denominated in foreign currency. Given the low interest level of a number of international currencies, borrowers largely substituted foreign currency loans for schilling loans. Subsequently, the expansion of schilling loans markedly slowed over the course of 1997, so that the aggregate advanced by ATS 38 billion or 1.6% on the previous year.

Credit institutions' claims on Austrian enterprises, whose propensity to invest significantly heightened over the reporting year owing to favorable production and sales expectations, increased by 7% in 1997. Claims on households climbed 5%, as consumer sentiment steadily improved in the course of 1997. By contrast, direct public sector financing contracted by 6%.

Short-term financing instruments generally declined in 1997. Bills discounted (including rediscounts with the OeNB) slipped by ATS 15 billion, and the growth of cash advances slowed from ATS 28 billion to ATS 6 billion, all of which was borne by foreign currency instruments. Schilling cash advances decreased in the period under review.

### Funded Credits Declined

Funded credits (including GOMEX) to domestic nonbanks shrank by ATS 9 billion, after they had still gained ATS 22 billion in 1996, which was

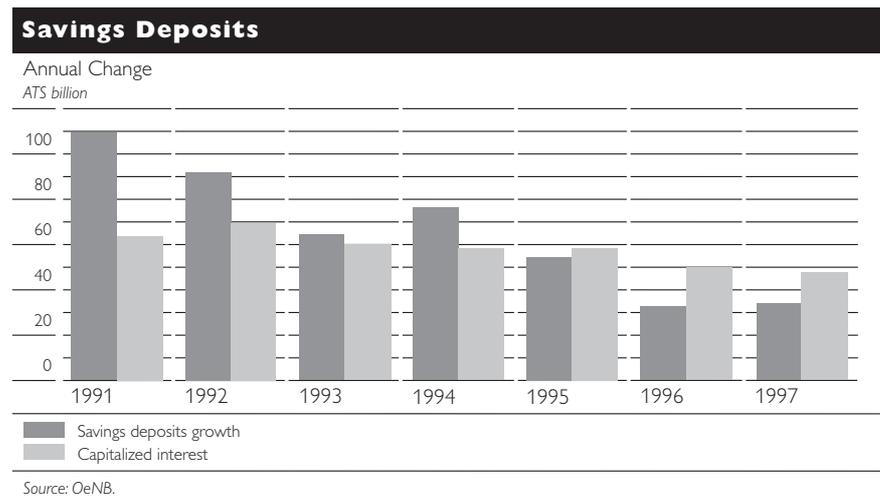
mainly due to diminishing holdings of government securities. All in all, credit institutions' lending to the public sector dipped by more than ATS 40 billion (1996: –ATS 9 billion). By contrast, more and more company issues, credit institutions' issues and investment certificates were incorporated into portfolios.

The restructuring of the Austrian banking system went hand in hand with the establishment of company groups, which in turn swelled the stakes held in associated companies. Participations in nonfinancial companies were reduced. The net volume of participations augmented by ATS 33 billion to ATS 149 billion.

### Slide in Foreign Currency Deposits

Depositing at Austria's credit institutions remained sluggish in 1997 and only inched up by ATS 39 billion (1.8%), i.e. one quarter less than a year ago. At 2.0%, schilling deposit growth declined for the third consecutive year in 1997.

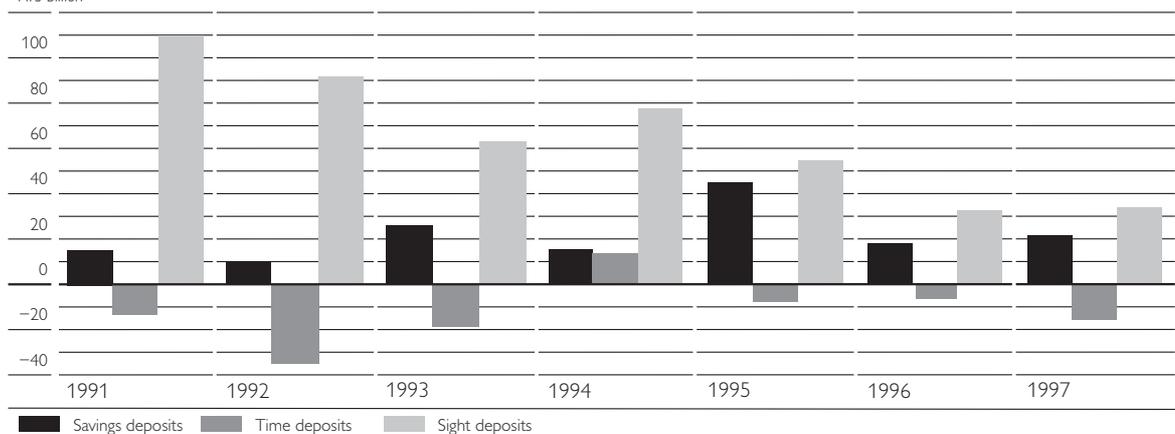
Savings deposits edged up ATS 34 billion or 2.1%, which again fell short of the capitalized savings deposit interest of ATS 47 billion (1996: ATS 50.2 billion) as at December 31, 1997. Deposits tied up for five years and less registered slight gains; time deposits of over five years, including capitalized savings deposit interest, declined. The share of sight deposits in overall deposits fell slightly to 7.8%. Only building societies' deposits posted marked increments, rising by ATS 16.5 billion year on year.



Time deposits shrank by ATS 16 billion in the survey period, with all groups of depositors except for the nonbank financial intermediaries (insurance companies, investment funds) diminishing their credit balances. The public sector was the number one contributor to this slide in deposits. This steadily declining trend set in in 1990 (and was broken only once), and time deposits nearly halved since the end of 1989. In stark contrast, sight deposits gained significantly yet again in 1997, surpassing the year-earlier figure by ATS 22 billion (1996: ATS 18 billion), but no longer scored the growth rates common in the first half of the 1990s. Enterprises and households further bolstered their liquid bank deposits in 1997.

### Schilling Deposits

Annual Change  
ATS billion

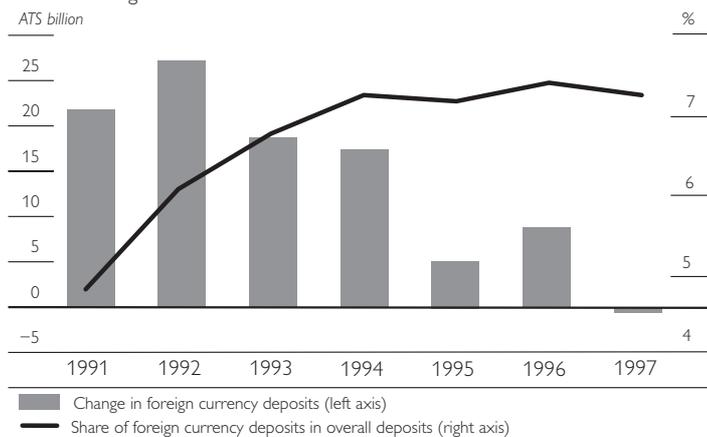


Source: OeNB.

Foreign currency deposits, having posted relatively hefty growth in the first half of 1997, decreased in the following months and, on December 31, 1997, fell ATS 0.5 billion short of the year-earlier value (1996: +ATS 9 billion).

### Foreign Currency Deposits

Annual Change  
ATS billion



Source: OeNB.

In the same vein, net sales of own issues to resident nonbanks dropped from ATS 10 billion to ATS 8 billion.

Austrian credit institutions' declining capital formation clearly points to a shift in investors' preferences: In particular, sales of investment certificates skyrocketed in 1997.

### Rise in the Equity Ratio to 12.94%

In the reporting year, domestic banks' own funds augmented by ATS 50 billion or 14.3% to a total of ATS 396 billion. In 1996, they had mounted by ATS 31 billion. The banks' equity ratio according to § 23 of the Austrian Banking Act 1993 was therefore raised from 12.32 to 12.94%.

# Austria's Major Loans Register in 1997

Austria's Major Loans Register is compiled from data credit and financial institutions as well as contractual insurance companies submit to the OeNB monthly; these data state amounts of credits or lines of credit granted provided they are in excess of ATS 5 million. The institutions subject to the reporting requirement may in turn request receipt of the collected data to facilitate their credit auditing. Major Loans Register data are also used for banking supervisory purposes.

The main recent changes of the major loans reporting system consisted in the newly imposed requirement to report special off-balance-sheet financial transactions (pursuant to Annex 2 of § 22 of the Austrian Banking Act) and claims evidenced by securities (both effective since July 1, 1997), the extended requirement to provide banking supervisors with information and the duty to communicate information to competent authorities in the EU Member States with effect from August 1, 1996.

Claims evidenced by securities, or securitized claims, comprise bonds, participating bonds, commercial papers, certificates of deposit, cash certificates, fixed-rate medium-term notes, registered bonds, promissory notes, convertible bonds, zero bonds and mortgage bonds.

## **Coverage: 54,000 Borrowers; Debt Volume: ATS 3,300 Billion**

The number of registered borrowers rose by 9.2% (thereof domestic borrowers: +6.4%, foreign borrowers: +34.3%) to 53,854. The number of reporting institutions at 1,587 changed only marginally (+3 institutions). A breakdown of this net figure reveals a longer-term trend contrasting a growing number of leasing companies with a declining number of credit institutions.

87.4% of the registered borrowers were domiciled in Austria (1996: 89.8%). 56% of the non-Austrian borrowers were domiciled in the EU, with the volume of lending to borrowers in Germany (ATS 128 billion; +ATS 87.6 billion; ATS 59.9 billion thereof securitized claims) topping the list by a comfortable margin, followed by U.S. borrowers at ATS 106 billion (+ATS 79 billion) and borrowers located in Japan at ATS 47 billion (+ATS 45 billion, nearly all of which were claims on banks). Germany also represented the heavyweight in the statistic in terms of the number of nondomestic borrowers, followed by the U.S.A. and the U.K. The volume of lending to Taiwan, Japan and Denmark grew most rapidly.

The total volume of reported loans widened from ATS 2,387 billion to ATS 3,288 billion (+38%), a considerable share of which consisted of claims evidenced by securities (ATS 424 billion). These newly registered claims were instrumental in causing the volume of lending to foreigners to skyrocket by 111%, lifting the total by ATS 517 billion to ATS 984 billion; securitized claims accounted for ATS 205 billion of this increase. The volume of debt outstanding of the ten main nonfinancial borrowers amounted to ATS 219 billion (1996: ATS 200 billion), which is equivalent to 6.6% of the total volume of major loans. At ATS 308 billion, the volume owed by the ten largest borrowers from the field of finance surpassed this amount considerably. The biggest volume of debt outstanding to a nonresident

nonfinancial borrower amounted to ATS 13.5 billion, that to a single nonresident debtor in banking to ATS 39.4 billion.

### The Volume of Major Loans Burgeons on the Inclusion of Securitized Claims

By types of loans, single payment credits and loans (+25.8%) augmented fastest (apart from securitized claims, which were first registered in July 1997); assets from leasing operations advanced most slowly (+1.5%). The volume drawn was largest in the category single payment credits and loans (ATS 1,853 billion), followed by revolving loans (ATS 663 billion) and securitized claims (ATS 424 billion).

#### Types of Loans

	Volume drawn		Annual change	
	1996	1997		
	ATS million		%	
Bills of exchange	17,779	19,361	+ 1,582	+ 8.90
Revolving loans	605,566	663,463	+ 57,897	+ 9.56
Single payment credits and loans	1,472,514	1,852,956	+380,442	+25.84
Loans channeled through banks (trustee loans)	44,200	50,090	+ 5,890	+13.33
Assets from leasing operations	71,509	72,563	+ 1,054	+ 1.47
Other guarantees	175,250	205,279	+ 30,029	+17.13
Securitized claims	x	424,084	+424,084	x
Total	2,386,818	3,287,796	+900,978	+37.75

Lending by housing construction savings and loan associations expanded most strongly (by ATS 6.7 billion), bringing loans extended by this category to a record of ATS 6.9 billion. This powerful rise is rooted in two factors, the reporting of securitized claims for the first time and the sharp boost in single payment credits and loans. A parallel development occurred in the category contractual insurance companies. Like the insurance sector (+3.2 percentage points), joint stock banks and bankers (+5.3 percentage points) expanded their market share further to 33.7%. Savings banks lost market share (-3.1 percentage points), as did special purpose banks (-2.7 percentage points). The other sectors' proportions remained virtually unaltered.

#### Major Loans by Lender

	Volume drawn		Annual change		Market share
	1996	1997			
	ATS million		%		
Joint stock banks and bankers	678,395	1,106,635	+428,240	+ 63.13	33.66
Savings banks	691,580	851,268	+159,688	+ 23.09	25.89
State mortgage banks	144,831	168,866	+ 24,035	+ 16.60	5.14
Raiffeisen banks	379,563	495,605	+116,042	+ 30.57	15.07
Volksbanken	96,749	124,596	+ 27,847	+ 28.78	3.79
Housing construction savings and loan associations	215	6,891	+ 6,676	x	0.21
Special purpose banks	297,322	320,458	+ 23,136	+ 7.78	9.75
Leasing companies	73,810	73,901	+ 91	+ 0.12	2.25
Contractual insurance companies	24,353	139,576	+115,223	+473.14	4.25
Total	2,386,818	3,287,796	+900,978	+ 37.75	100.00

### **Financial Institutions and Nonresidents Are the Main Debtors**

A breakdown of credits by economic sectors on the basis of the Austrian Statistical Classification of Economic Activities (ÖNACE) shows that borrowing shot up fastest in the category "credit and financial institutions, contractual insurance companies," advancing by 62% to ATS 645 billion. Most of this addition can be pinpointed to the new inclusion of securitized claims, which accounted for ATS 175 billion of the above amount.

The rise in holding companies' debt (+37%) contrasted with the decline in the borrowing in the division "post and telecommunications," a development which is mainly linked to the trend to split enterprises into an operative and a holding company. The 39% expansion of borrowing by companies belonging to the section "electricity, gas and water supply" above all reflects the impact of the registration of securitized debt for the first time (accounting for ATS 9 billion). The 13.5% advance in borrowing by "borrowers with joint and several liability" can be ascribed to the greater need for funds on the part of associations and partnerships under the Civil Code. The low volume of debt outstanding in the section "education" mainly results from the fact that schools are financed chiefly by regional authorities and are thus subsumed under the public sector. The 17% jump in lending to the subsection "manufacture of transport equipment" derives mostly from a single international manufacturer who lifted borrowing. The ATS 1 billion rise in loans extended to the section "agriculture, hunting and forestry; fishing," like the ATS 1.8 billion surge in lending to companies subsumed under wood and wood product manufacturing (including furniture) partly mirrors the furniture industry's efforts to gain a foothold in raw material extraction and processing. A detailed breakdown of borrowing by companies under the heading "land transport; transport via pipelines; water transport; air transport; supporting and auxiliary transport activities; activities of travel agencies" (ATS 73.5 billion) shows that the subclasses "activities of other transport agencies" and "freight transport" account for ATS 17 billion, the subclass "transport by cable railways, funiculars and ski lifts" accounts for ATS 12 billion, the division "air transport" accounts for ATS 9 billion and "activities of travel agencies" account for ATS 3 billion of the total. The debt outstanding of businesses involved in sporting activities, swimming pools and other recreational activities runs to some ATS 7 billion (see Table).

### **Construction Has the Highest Default Rate**

655 major borrowers became insolvent in 1997. The 595 bankruptcies and 60 arrangements in bankruptcy added up to a total of ATS 12.7 billion or 0.4% of the major loans reported on December 31, 1997. Most of the volume was concentrated in construction (ATS 2.5 billion), followed by businesses in wholesale and commission trade (ATS 1.3 billion) and in the manufacture of basic metals and fabricated metal products (ATS 1.1 billion). Sole proprietorships and individuals accounted for defaults of ATS 1 billion.

## The Major Loans Register in an International Perspective

International efforts to standardize major loans registrations systems were intensified within the framework of discussions held by the Sub-Group on Credit Registers (an EMI working party of the Banking Supervisory Sub-Committee). From the Austrian point of view, the option under § 75 para 5 Austrian Banking Act to communicate information to authorities in other Member States for banking supervisory purposes represents an approach to intensifying international cooperation. The legal prerequisites for a systematic, regular exchange of data between the supervisory authorities were laid down at the beginning of 1998.

### Classification of Major Loans by the Borrower's Economic Activity

	Dec. 31, 1996	Dec. 31, 1997	Change	%
	ATS billion			
Agriculture, hunting and forestry; fishing	1,033	2,061	+ 1,028	+ 99.5
Mining and quarrying	3,948	4,251	+ 303	+ 7.7
Manufacture of food products; beverages and tobacco	30,781	30,918	+ 137	+ 0.4
Manufacture of textiles	13,065	12,527	- 538	- 4.1
Manufacture of wearing apparel; dressing and dyeing of fur	2,279	2,405	+ 126	+ 5.5
Manufacture of leather and leather products, manufacture of footwear	2,125	2,280	+ 155	+ 7.3
Manufacture of wood and wood products	16,337	18,178	+ 1,841	+ 11.3
Manufacture of pulp, paper and paper products	22,864	23,613	+ 749	+ 3.3
Publishing, printing and reproduction of recorded media	9,485	11,611	+ 2,126	+ 22.4
Manufacture of coke, refined petroleum products and nuclear fuel	6,822	6,990	+ 168	+ 2.5
Manufacture of chemicals, chemical products and man-made fibers	15,198	15,003	- 195	- 1.3
Manufacture of rubber and plastic products	10,679	10,920	+ 241	+ 2.3
Manufacture of other nonmetallic mineral products	21,115	21,586	+ 471	+ 2.2
Manufacture of basic metals and fabricated metal products	39,914	39,538	- 376	- 0.9
Manufacture of machinery and equipment n.e.c.	48,138	46,405	- 1,733	- 3.6
Manufacture of electrical and optical equipment	24,579	24,716	+ 137	+ 0.6
Manufacture of transport equipment	8,466	9,912	+ 1,446	+ 17.1
Manufacturing n.e.c.	11,775	11,452	- 323	- 2.7
Recycling	1,110	950	- 160	- 14.4
Electricity, gas and water supply	29,815	41,519	+ 11,704	+ 39.3
Construction	84,906	90,243	+ 5,337	+ 6.3
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	23,995	27,200	+ 3,205	+ 13.4
Wholesale trade and commission trade, except of motor vehicles and motorcycles	125,509	126,189	+ 680	+ 0.5
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	52,134	51,218	- 916	- 1.8
Hotels and restaurants	34,905	35,083	+ 178	+ 0.5
Land transport; transport via pipelines; water transport; air transport; supporting and auxiliary transport activities; activities of travel agencies	68,180	73,409	+ 5,229	+ 7.7
Post and telecommunications	75,668	49,211	- 26,457	- 35.0
Real estate activities	200,944	216,183	+ 15,239	+ 7.6
Renting of machinery and equipment without operator and of personal and household goods	13,606	12,339	- 1,267	- 9.3
Holding companies	117,930	161,107	+ 43,177	+ 36.6
Computer and related activities; research and development; other business activities	44,339	50,819	+ 6,480	+ 14.6
Education	157	114	- 43	- 27.4
Health and social work	2,258	3,639	+ 1,381	+ 61.2
Other community, social and personal service activities	14,543	14,820	+ 277	+ 1.9
Borrowers with joint and several liability	22,813	25,895	+ 3,082	+ 13.5
Enterprises total (excl. sole proprietorships)	1,201,419	1,274,302	+ 72,883	+ 6.1
Sole proprietorships and individuals	219,810	265,061	+ 45,251	+ 20.6
Public sector (excl. central and state government)	116,016	119,503	+ 3,487	+ 3.0
Credit and financial institutions, insurance companies	397,960	645,346	+247,386	+ 62.2
Nonresident borrowers	466,598	983,582	+516,984	+110.8
Total	2,386,818	3,287,796	+900,978	+ 37.7

S T U D I E S

# The Information Content of the Term Structure – The Austrian Case

Richard Mader<sup>1)</sup>

## I Introduction

In recent years empirical research on the term structure of yields has increasingly focused on the interdependence of asset returns, inflation and real activity. The consensus that has emerged is that yield curve spreads and stock prices in particular are thought to contain valuable information, which is why they are usually taken into account in economic forecasting.

In principle, policymakers can use these financial indicators when implementing monetary policy. Yield curve spreads can serve as a benchmark for macroeconomic forecasts, for example. If the indicators coincide with the model forecasts, confidence in the model results is enhanced. However, if there are inconsistencies between financial indicators and model results, it may be necessary to review the assumptions or the structure of the model. Yield curves have the additional advantages that the data are available in real time and that they are not subject to revision.

Strong evidence exists that in the U.S.A. the steepness of the yield curve is a good predictor for real activity<sup>2)</sup> (Estrella and Hardouvelis, 1991; Estrella and Mishkin, 1996). In other industrial countries, in particular the EU economies, the evidence is mixed. Good forecasting properties of the slope of the yield curve have been identified for Canada and Germany (Plosser and Rouwenhorst, 1994; Estrella and Mishkin, 1995; Bernard and Gerlach, 1996) and to a lesser extent for the U.K. (Estrella and Mishkin, 1995; Bernard and Gerlach, 1996), Italy (Estrella and Mishkin, 1995) and France (Davis and Fagan, 1995; Bernard and Gerlach, 1996).<sup>3)</sup>

Moreover, Estrella and Mishkin (1996) concluded that the information content of yield curve spreads is far greater than that of stock prices. However, predictions for real output in the U.S.A. were found to become more accurate if the stock price index was included as a regressor. Thus, stock prices seem to contain information which is not reflected in the yield curve spread; they are thought to be useful in forecasting recessions and recoveries.

Empirical work also concentrated on the analysis of the predictive power of yield curve spreads in forecasting future inflation changes. The results indicate that yield curve spreads contain information about future inflation in the U.S.A.,<sup>4)</sup> although the predictive power for inflation is found to be weaker than for real activity (Fama, 1990; Jorion and Mishkin, 1991; Estrella and Mishkin, 1995). For the EU countries, empirical results vary. In general they are less significant than for the U.S.A. (Mishkin, 1991). Davis and Fagan (1995), for example, showed that out of the four largest EU countries, spread variables performed best in the U.K. and worst in France. The empirical analysis of Jorion and Mishkin (1991) points to a limited information content of spreads in Germany. However, Gerlach (1995), using a longer sample period and different spreads, found that in Germany spreads do contain considerable information about future changes in inflation.

Researchers originally used simple or multiple regressions to analyze the information content of the term structure for economic activity and inflation (Estrella and Hardouvelis, 1991; Plosser and Rouwenhorst, 1994; Fama, 1990). More recently vector autoregressive models (VAR) have been employed to shed light on the forecasting abilities of the term structure for

inflation and real activity (i. e. Davis and Fagan, 1995; Canova and De Nicolo, 1997). In principle a VAR – if appropriately specified – approximates the data-generating process of a vector of variables and allows the interdependences between the variables to be taken into account.

## **2 The Importance of Financial Indicators in the Austrian Monetary Policy Framework**

In Austria, financial asset prices traditionally play no prominent role as a monetary indicator. This partly reflects the fact that Austrian capital markets – against the background of the high degree of monetary wealth formation via the universal banking system<sup>5)</sup> – have not developed sufficiently in order for asset prices to carry a high information content. Thus, financial indicators such as yield curve spreads have not been attributed great importance for the implementation of monetary policy, which for more than 17 years has been oriented towards holding the schilling stable vis-à-vis the Deutsche mark.

In addition, the lack of data – especially on long time series – makes quantitative analysis difficult. This is one reason for the absence of empirical research of these issues.

Regardless of these problems, I will attempt to analyze whether financial asset prices can provide information and be used as indicators in monetary policy decision-making in Austria. In this context, I will concentrate on the information content of yield curve spreads in forecasting economic activity and future inflation.

## **3 Data and Methodology**

In the first instance, a regression technique was applied (see Annex 2) to predict future economic activity according to the specifications of Estrella and Hardouvelis (1991) and Plosser and Rouwenhorst (1994). The use of the cumulative growth rate as the dependent variable permits long-term economic relationships to be analyzed. To this end the cumulative industrial growth rate was regressed on the term spread (SM-VIB)<sup>6)</sup> on the one hand and on the term spread and a short-term interest rate (VIB)<sup>7)</sup> on the other hand. A Newey-West procedure was used to correct the standard errors.<sup>8)</sup> The analysis was based on monthly data between January 1983 and December 1995. When the term spread was used as the only regressor, the coefficients were significant for all time horizons, with the exception of the six-month span. When the short-term interest rate is added, results were significant for 18-, 24- and 36-month horizons. However, further analysis shows that the Newey-West procedure does not provide for sufficient correction, so that the results appear to depend considerably on the method chosen. The inclusion of an AR(3) model for the error terms in the equation produces almost no significant results (apart from the 12- and 18-month horizons for the regression following Plosser and Rouwenhorst). Regressing changes in inflation on the term spread (like Fama, 1990) accomplishes similar results. When an AR(1) model was included in the equation all coefficients become insignificant.<sup>9)</sup>

The following analysis is based on a Vector Error Correction model (VEC). This method makes it easier to analyze the interdependences between the included variables and – above and beyond pure VAR models – to take into account possible relationships among the levels of the variables.

The model comprises the following two variables:

- real activity as measured by the industrial production index (IP),
- inflation as measured by changes in the consumer price index (INF).

The financial variables used in the analysis are:

- the slope of the Austrian yield curve as measured by the difference between the yield on long-term domestic government bonds in the secondary market and a short-term money market interest rate (SM-VIB),
- the slope of the German yield curve as measured by the difference between the yield on long-term domestic government bonds in the secondary market and a short-term money market interest rate (BMB-B3M),
- the foreign yield spreads as measured by the difference between the yields on domestic and foreign ten-year government bonds. (Besides the Austrian/German yield differential SM-BMB, the German/U.S. yield differential BMB-BMU is taken into account.)

In the process of variable selection the following considerations were emphasized: The choice of the yield spreads was based on their presumed macroeconomic relevance. The domestic German yield spread and the Austrian and German yield differential were chosen because of the strong economic links between the Austrian and German economies (reflected also in the exchange rate target of the OeNB). The yield differential to the U.S.A. is assumed to cover any potential relationship with the German (and therefore indirectly with the Austrian) rate. The lack of data confined the analysis of the domestic yield curve to the spread between the ten-year government bond yield and a three-month money market rate. Thus, it was not possible to analyze the usefulness of different spreads for predicting inflation and economic activity. Gerlach (1995), for example, found that in Germany the medium-term range of the yield curve and in particular spreads vis-à-vis two-year rates are most indicative of future inflation.

The details of the data sources and time series employed are given in the Annex. The sample covers monthly data from January 1983 to December 1995. The analysis is based on monthly rather than quarterly<sup>10)</sup> data so as to maximize the number of observations. While the sample must be large enough to insure reliable results, this may involve the potential problem of noise in the data.

In the VEC all changes of variables are regressed both on lagged changes of themselves and on lagged changes of all other variables contained in the system. Moreover, the VEC includes a cointegration term that conveys information about the levels of all variables in a special restricted form.

Unit root tests were conducted and unit roots established in all the variables. Thus, the precondition of a VEC model is fulfilled with all time series being integrated of order 1. In calculating the VEC, no deterministic

trend in the data was assumed. According to the Akaike and Schwartz criteria, two lags were found to be the optimal lag structure.

A Johansen Test, which can be interpreted as a multivariate unit root test, was performed to check for the existence of linear combinations of variables, which are stationary. The test found one cointegrating relation at a five percent significance level.

#### **4 Empirical Results**

The results of the VEC analysis indicate that apart from the dependence of inflation on industrial output, all other variables are autonomously driven. Thus, the analysis does not point to any predictive power of the considered domestic or foreign yield spreads for output or inflation. The changes in inflation significantly depend on the levels of all other variables, as they are closely tied by the error correction term.

This finding contrasts with the empirical results generally found for the U.S.A., Canada and – though less so – for some of the larger EU economies, in particular Germany (Davis and Fagan, 1995; Bernard and Gerlach, 1996; Canova and De Nicolo, 1997). In several smaller economies (which are more comparable to Austria), predictive power was attributed to yield curve spreads, but no in-depth research has been conducted for such countries.<sup>11)</sup>

The inclusion of stock prices does not change these results. Output and inflation are not significantly affected by the stock market. This confirms the findings of Canova and De Nicolo (1997) for some larger European economies (Germany and the U.K.). In the U.S.A., by contrast, stock prices were found to add information not contained in yield curve spreads (Estrella and Mishkin, 1996).

#### **5 Conclusions**

The limited relevance of yield curve spreads for predicting real activity and inflation in Austria - in particular compared to the larger economies such as the U.S.A., Canada or Germany – may be traced to the following factors:

- First of all, there is a lack of data, which precludes a more comprehensive and in-depth analysis of the issues discussed (issues such as the analysis of different yield spreads or longer lag structures).
- Second, partly as a result of the small size of the market, interest rates did not respond strongly to market forces before the late 1980s, when the liberalization and deregulation of Austrian financial markets started to accelerate. The size of the bond market was limited, and the market was not fully developed over much of the sample period. Greater integration of financial markets might improve the forecasting power of yield spreads.
- The financial market structure may partly explain the poor forecasting performance of yield curve spreads. Institutional investors, especially investment and pension funds, who are considered to react more rapidly to expected changes in inflation and output, have gained importance in the 1990s. But investments managed by Austrian investment and pension funds are still low by international standards. However, as the state

- pension system is becoming increasingly burdened, such investments are expected to grow more quickly in the next few years.
- The Austrian stock market only started to develop at the end of the 1980s (share turnover totaled ATS 20 billion in 1989) and even today is marked by moderate liquidity concentrated in a few shares. Thus it is not surprising that the stock price index does not provide much information.
  - The information content of the yield curve might have also been affected by Austria's choice of exchange rate regime. Linking the schilling to the Deutsche mark generally implies a parallel movement of interest rates, but not necessarily of economic activity and inflation in the short-term. Moreover, German reunification represents an exceptional period, which may have strong effects on the sample.
  - The creation of the European Monetary Union will change the focus of research, also for the OeNB. Economic analysis will concentrate more strongly on the EMU area. At the OeNB, economic analysis will attribute great importance to financial indicators, in particular yield curve analysis. Yield spreads e.g. might be a good predictor of economic activity and inflation in EMU, above all against the background of the significant results often found for larger economies.

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## 7 Annex

### Data Sources

- IP: Industrial production at constant prices (seasonally adjusted monthly series; energy excluded). Source: WIFO (Austrian Institute for Economic Research).
- INF: Annual change in the consumer price index (seasonally adjusted monthly series; all items): 1986 = 100. Source: WIFO.
- SM: Sekundärmarktrendite, i. e. the secondary market yield of ten-year government bonds (monthly averages). Source: Oesterreichische Kontrollbank.
- VIB (VIBOR): Interest rates on three-month interbank loans (monthly averages). Source: OECD.
- BMU: Ten-year Treasury bond yield (benchmark bonds, monthly averages). Source: Datastream.
- BMB: Ten-year government bond yield (benchmark bonds, monthly averages). Source: Datastream.
- B3M: Interest rates on three-month interbank loans (monthly averages). Source: Datastream.

**Estimates for Austria in accordance with specifications**

**of Estrella and Hardouvelis (1991)**

Industrial production (cumulative growth rate)

Horizon (months)	Spread (SM-VIB) (Standard errors corrected with Newey-West procedure)		Spread (SM-VIB) (Equation including AR[3] model for noise)		
	Coefficient	t-Statistic	Coefficient	t-Statistic	
6		1.37	1.40	0.34	0.29
12		1.86	2.07	-0.40	-0.47
18		2.36	2.91	-0.36	-0.60
24		2.32	3.06	0.52	1.03
36		1.72	3.23	-0.09	-0.24
48		1.55	4.93	0.38	1.43

**Estimates for Austria in accordance with specifications**

**of Plosser and Rouwenhorst (1994)**

Industrial production (cumulative growth rate)

Horizon (months)	Spread (SM-VIB) (Standard errors corrected with the Newey-West procedure)		VIB		Spread (SM-VIB) (Equation including AR[3] model for noise)		VIB	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
6	-0.01	-0.84	-0.01	-2.21	-0.01	-1.20	-0.01	-1.69
12	-0.02	-1.90	-0.03	-4.92	-0.03	-2.72	-0.03	-3.44
18	-0.03	-2.47	-0.04	-6.77	-0.03	-2.70	-0.04	-3.76
24	-0.04	-2.84	-0.06	-6.67	-0.02	-1.69	-0.04	-4.21
36	-0.08	-3.61	-0.08	-7.32	-0.03	-1.89	-0.05	-2.91
48	-0.02	-0.57	-0.05	-2.70	-0.00	0.25	-0.02	-0.94

**Estimates for Austria in accordance with specifications**

**of Fama (1990)**

Changes in inflation (cumulative growth rate)

Horizon (months)	Spread (SM-VIB) (Standard errors corrected with the Newey-West procedure)		Inflation		Zinsspread (SM-VIB) (Equation including AR[3] model for noise)		Inflation	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
6	0.00	-3.28	-0.35	-3.92	0.00	-0.58	0.00	0.07
12	-0.06	-3.43	-0.71	-7.64	0.00	0.33	0.08	0.60
18	-0.01	-3.38	-0.98	-10.23	0.00	-0.54	-0.14	-1.23
24	0.00	-2.46	-1.18	-10.96	0.00	-0.38	-0.01	-0.12
36	0.00	0.81	-1.33	-13.51	0.00	0.60	-0.13	-1.28
48	0.01	2.76	-1.30	-23.82	0.00	0.11	0.05	0.42

- 1 *The views expressed are those of the author and not necessarily those of the OeNB. The author is grateful to Helmut Pech and Peter Mooslechner for helpful comments.*
- 2 *In the U.S.A. the best predictability was found between six and eight quarters ahead (Estrella and Mishkin, 1996).*
- 3 *Estrella and Mishkin (1995) did not find the slope of the yield curve to contain any information for predicting recessions in France.*
- 4 *In the U.S.A. the forecasting power was found to be best more than six months ahead (Mishkin, 1990).*
- 5 *The financial structure plays an important role in this context. The Austrian financial system is dominated by universal banks, which provide the lion's share of external financing for enterprises. Small and medium-sized companies, which dominate the enterprise sector, use credit financing as the major source of external finance. On the other hand, most monetary wealth is held with banks (i.e. in savings accounts).*
- 6 *The slope of the Austrian yield curve as measured by the difference between the yield on long-term domestic government bonds in the secondary market and a short-term money market rate.*
- 7 *The interest rate on three-month interbank loans.*
- 8 *Estrella and Hardouvelis, and Plosser and Rouwenhorst, applied the Newey-West procedure to correct the standard errors, since the dependent variable is a long horizon growth rate (and thus strongly correlated); therefore the error terms in the regressions exhibit substantial serial correlation.*
- 9 *When a Newey-West correction is used, all results are significant (apart from the 36-month horizon).*
- 10 *However, the analysis using quarterly data did not change the results substantially.*
- 11 *Yield curve spreads were found to be significant for predicting real activity in Belgium and the Netherlands (Davis and Fagan, 1995; Bernard and Gerlach, 1996) and for forecasting inflation in Belgium (Davis and Fagan, 1995).*

# Official Announcements of the Oesterreichische Nationalbank

Authentic  
German text  
published in the  
Official Gazette  
(Amtsblatt zur  
Wiener Zeitung)

Translation  
published in  
"Reports and  
Summaries"  
issue no.

## Official Announcements Regarding the Foreign Exchange Law

DL 1/91	Promulgation of the new Official Announcements regarding the Foreign Exchange Law; general provisions 1. Issuance of new Official Announcements 2. Definitions 3. Fees	Sept. 24, 1991	4/1991
DL 2/91	Granting of general licenses 1. General license 2. Waiver of obligation to declare; release 3. Nonbanks 4. Banks not engaged in foreign business 5. Foreign exchange dealers 6. Exchange bureaus 7. Special banks and financial institutions 8. Provisions applying to both banks and financial institutions	Sept. 24, 1991	4/1991
DL 3/91	Reporting requirements 1. General provisions 2. Exemptions from the reporting obligation 3. General reports 4. Reports by banks 5. Reports by nonbanks and financial institutions 6. Special reports	Sept. 24, 1991	4/1991
DL 4/91	Assets of nonresidents with residence (domicile) in Iraq	Oct. 29, 1991	4/1991
DL 2/93	Modification of the Official Announcement DL 3/91	May 5, 1993	2/1993
DL 3/93	Modification of Official Announcement DL 2/91; Sanctions of the United Nations Against Libya (SC Resolution No. 883/1993)	Dec. 15, 1993	4/1993
DL 1/96	Modification of Official Announcement DL 3/91	Sept. 3, 1996	3/1996

Please see the German-language publication "Berichte und Studien" for a list of all Official Announcements in German.

## Official Announcements Regarding Minimum Reserve Requirements

MR 4/95	Calculation of the minimum reserve	Aug. 3, 1995	3/1995
MR 5/95	Minimum reserve ratios and special interest	Aug. 3, 1995	3/1995
MR 6/95	Minimum reserve requirements for credit institutions in the customs exclaves	Aug. 3, 1995	3/1995
MR 1/96	Supplement to § 2 subparagraph 1 of Official Announcement MR 4/95 issued by the Oesterreichische Nationalbank	Dec. 20, 1996	12/1996

# List of Reports, Summaries and Studies<sup>1)</sup>

Published in  
F = "Focus on Austria"

Please see the German-language publication "Berichte und Studien" for a list of all German-language reports, studies and special publications of the OeNB.

## **Oesterreichische Nationalbank and Selected Monetary Aggregates**

Official Announcements Regarding the Foreign Exchange Law and Minimum Reserve Requirements – see preceding page	
Implications of Cash Innovations for Monetary Policy	F 1/1997
Calendar of Monetary Highlights	F 3/1997
The Influence of the Oesterreichische Nationalbank on the Financing Conditions of Austrian Enterprises	F 3/1997
Calendar of Monetary Highlights	F 1/1998

## **Austrian Financial Institutions**

Austria's Major Loans Register –	
Functions, Classification of Major Loans by Sectors and 1996 Results	F 1/1997
The Second Major Amendment to the Banking Act	F 1/1997
Financial Flows in the Austrian Economy in 1996	F 3/1997
Austrian Bank Holidays in 1998	F 4/1997
Money and Credit in the First Three Quarters of 1997	F 4/1997
Money and Credit in 1997	F 1/1998
Austria's Major Loans Register in 1997	F 1/1998

## **Austrian Interest Rates**

The Information Content of the Term Structure – The Austrian Case	F 1/1998
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## **Austrian Capital Market**

### **Austrian Public Finance**

Structural Budget Deficits in Austria	F 3/1997
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### **Austrian Real Economy**

The Influence of the Oesterreichische Nationalbank on the Financing Conditions of Austrian Enterprises	F 3/1997
Economic Background	F 4/1997
The Payment Habits of Austrian Private Households	F 4/1997
Economic Background	F 1/1998

<sup>1</sup> For a comprehensive list of reports, summaries and studies hitherto published please refer to issue no. 4/1997 of "Focus on Austria."

Published in  
F = "Focus on Austria"

### **External Sector**

Austria's Balance of Portfolio Investment	F 1/1997
Austria's International Investment Position in 1996 – Austria's Portfolio Position and the International Investment Position of the Domestic Banking Sector	F 3/1997
Austrian Direct Investment Stocks in 1995	F 3/1997
Austrian Portfolio Investment	F 3/1997
Austrian Outward and Inward Direct Investment at the End of 1995	F 3/1997
Balance of Payments in the First Three Quarters of 1997	F 4/1997

### **International Economy**

# Publications of the Oesterreichische Nationalbank

	Published
<b>Periodical Publications</b>	
Statistisches Monatsheft	monthly
Statistische Daten der inländischen Kreditinstitute (advance excerpts from “Statistisches Monatsheft”)	monthly
Leistungsbilanz Österreichs, revidierte Jahresdaten gegliedert nach Regionen und Währungen	annually
Berichte und Studien	quarterly
Focus on Austria (selected chapters from “Berichte und Studien”)	quarterly
Focus on Transition	semiannually
Geschäftsbericht	annually
Annual Report (English translation of “Geschäftsbericht”)	annually
Notenbank und Währung	annually
Volkswirtschaftliche Tagung (for a list of the topics discussed at the conferences see below)	annually
The Austrian Financial Markets – A Survey of Austria’s Capital Markets – Facts and Figures	annually
<b>Other Publications</b>	
National Bank Act 1984 (as of September 1990)	1990
Money and the Central Bank (English translation of “Notenbank und Währung”)	1990
New Developments in Banking and Finance in East and West (Kranichberg 1989)	1990
Erfahrungen Österreichs beim Übergang von administrativer Regulierung zur Marktwirtschaft (Moscow 1990)	1990
Challenges for European Bank Managers in the 1990s (Badgastein 1990)	1991
From Control to Market – Austria’s Experiences in the Post-War Period (Warsaw 1990)	1991
The Economic Opening of Eastern Europe (Bergsten Conference Vienna 1991)	1991 <sup>1)</sup>
Erneuerung durch Integration – 175 Jahre Oesterreichische Nationalbank	1991
Striking a Balance – 175 Years of Austrian National Bank	1991
Transparente Dispositionen – Liberalisierter Devisenverkehr unter Beachtung internationaler Publizitätsverpflichtungen	1991
Ausgeglichene Position – Die neue Präsentation der österreichischen Zahlungsbilanz	1992
Aktive Bilanz – Ein Jahr vollständig liberalisierter Devisenverkehr in Österreich	1992
Nationalbankgesetz 1984 (as of January 1993)	1993
Economic Consequences of Soviet Disintegration (Bergsten Conference Vienna 1992)	1993
Neuorientierung – Internationale Vermögensposition und Außenwirtschaftliche Investitionsbilanz Österreichs	1993
Bankwesengesetz 1993	1994 <sup>1)</sup>

<sup>1</sup> Out of print.

Published

**Other Publications (cont.)**

Internationale Vermögensposition 1992 – Die grenzüberschreitenden Forderungen und Verpflichtungen Österreichs	1994
International Investment Position for 1992 – Austria's cross-border assets and liabilities	1994
Western Europe in Transition: The Impact of the Opening up of Eastern Europe and the former Soviet Union	1995
Die Oesterreichische Nationalbank als Unternehmen	1996
Monetary Policy in Central and Eastern Europe: Challenges of EU Integration 1996	1996
Information literature on banknote security	recurrently
Working Papers (for a list of the topics discussed in the papers, see below)	occasionally

**Videos**

Wie Mozart entsteht (banknote security)	1990
The Evolution of W. A. Mozart (English version of "Wie Mozart entsteht")	1995
Bank der Banken (tasks and functions of the OeNB)	1991
The Banks' Bank (English version of "Bank der Banken")	1991

**List of the Topics Discussed at the  
Volkswirtschaftliche Tagungen**

- 1975 Die ökonomischen, politischen und sozialen Konsequenzen der  
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- 1976 Störungsanfällige Bereiche in unserem ökonomischen  
und sozialen System
- 1977 Fiskalismus kontra Monetarismus
- 1978 Wirtschaftsprognose und Wirtschaftspolitik
- 1979 Technik-, Wirtschaftswachstums-, Wissenschaftsverdrossenheit:  
Die neue Romantik – Analyse einer Zeitströmung
- 1980 Probleme der Leistungsbilanz in den achtziger Jahren
- 1981 Systemkrisen in Ost und West
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- 1984 Der Weg zur Welthandelsnation
- 1985 Weltanschauung und Wirtschaft
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- 1987 Vollendung des Binnenmarktes in der Europäischen Gemeinschaft –  
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- 1988 Sand im Getriebe – Ursachen und Auswirkungen  
der Wachstumsverlangsamung in Österreich
- 1989 Banken und Finanzmärkte –  
Herausforderung der neunziger Jahre
- 1990 Wettbewerb und Kooperation im Finanzbereich
- 1991 Wirtschaftliche und politische Neugestaltung Europas –  
Rückblick und Perspektiven
- 1992 Zukunft regionaler Finanzmärkte in einem integrierten Europa
- 1993 Europäische Währungspolitik und internationaler Konjunkturverlauf
- 1994 Neue internationale Arbeitsteilung – Die Rolle der Währungspolitik
- 1995<sup>1)</sup> Die Zukunft des Geldes – das Geld der Zukunft
- 1996 Auf dem Weg zur Wirtschafts- und Währungsunion –  
Bedingungen für Stabilität und Systemsicherheit
- 1997 Die Bedeutung der Unabhängigkeit der Notenbank  
für die Glaubwürdigkeit der europäischen Geldpolitik

1 Out of print.

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**List of the Topics  
Discussed in the Working Papers**

No. 1 <sup>1)</sup>	Hat Böhm-Bawerk recht gehabt? Zum Zusammenhang zwischen Handelsbilanzpassivum und Budgetdefizit in den USA <sup>2)</sup>	1990
No. 2 <sup>1)</sup>	Ost- und Mitteleuropa auf dem Weg zur Marktwirtschaft – Anpassungskrise 1990	1991
No. 3 <sup>1)</sup>	Die Wirtschaft Österreichs im Vergleich zu den EG-Staaten – eine makroökonomische Analyse für die achtziger Jahre	1991
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No. 6 <sup>1)</sup>	Zwei Jahre G-24-Prozeß: Bestandsaufnahme und Perspektiven unter besonderer Berücksichtigung makroökonomischer Unterstützungsleistungen <sup>2)</sup>	1991
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No. 10 <sup>1)</sup>	Signaling a Hard Currency Strategy: The Case of Austria	1992
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No. 23	Will Asymmetric Shocks Pose a Serious Problem in EMU?	1996
No. 24	Exchange Rates and Monetary Policy in Central Europe – a Survey of Some Issues	1997

1 Out of print.

2 Published in a modified form  
in "Berichte und Studien".



OESTERREICHISCHE NATIONALBANK

F O C U S O N A U S T R I A

I / 1998



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