

SCHWEIZERISCHE NATIONALBANK  
BANQUE NATIONALE SUISSE  
BANCA NAZIONALE SVIZZERA  
BANCA NAZIONALE SVIZRA  
SWISS NATIONAL BANK



# Quarterly Bulletin



# Swiss National Bank Quarterly Bulletin

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## Overview

### **Monetary Policy Report (p. 6)**

In the first quarter of 2006, economic growth picked up in most large economies. However, against the background of increasing interest rates and rising prices for oil, sentiment on the financial markets then clouded over. The higher interest rates mainly reflected the improved economic situation. Inflation expectations rose and central banks reacted by raising short-term interest rates. Despite this policy adjustment, monetary conditions continue to support the global economy. As before, the main uncertainties for the global economy will probably be linked to the imbalances in current accounts, the high and volatile energy prices and the fact that real estate markets are overvalued in some areas.

Benefiting from the prospering world economy, economic growth in Switzerland also gathered pace. In the first quarter, real GDP rose by 3.8% compared with the previous period and by 3.5% in year-on-year terms. In particular, equipment investment experienced a remarkable recovery. The vibrant economic activity went hand in hand with an acceleration in employment growth and a slight decline in unemployment. Price increases remained moderate, but the core inflation rates have risen slightly over the past few months due to tighter capacity and higher oil prices.

On 15 June, the SNB lifted the target range for the three-month Libor by 0.25 percentage points to 1.0–2.0%. It intends to hold the rate in the middle of the target range for the time being. By raising the target range, the SNB has brought its monetary policy course into line with economic activity, thereby ensuring that the inflation outlook remains favourable.

### **The economic situation from the vantage point of the delegates for regional economic relations (p. 38)**

The talks held by the SNB delegates for regional economic relations with around 160 representatives from various economic sectors and industries yielded a largely positive picture of the economy for the period from March to May 2006. Following the good start to the new year, the representatives of almost all industries were very satisfied with the business trend to date. The retail trade was again the least optimistic sector, but even here some improvement in consumer sentiment was felt.

### **General Meeting of Shareholders (p. 42)**

At the General Meeting of Shareholders on 28 April, the President of the Bank Council of the Swiss National Bank, Hansueli Raggenbass, first commented on the Financial Report for 2005. The annual result was extraordinarily high due to massive valuation gains on gold and on assets denominated in US dollars. However, this result in no way reflects the long-term earnings potential of the SNB. Excluding valuation gains, earnings have actually displayed a downward trend in the past few years. This was due, firstly, to the drop in interest rates and, secondly, the lower stock of interest-bearing investments. Over the past five years, operating expenses at the SNB have been particularly affected by higher depreciation attributable to the growing use of information technology and by the trend in personnel expenses.

After looking back on 2005, the Chairman of the Governing Board, Jean-Pierre Roth, outlined the economic prospects for 2006. He emphasised the need to continue reform efforts to increase the long-term growth potential of the Swiss economy. By ensuring price stability, the SNB creates an environment that promotes general economic growth and structural adjustments. It is important, in this respect, that monetary policy is credible, with regard not only to the National Bank's formal independence but also to the political environment. The Cosa initiative ("National Bank profits for the AHV/AVS") is an example of a political intervention threatening the SNB's monetary credibility.

## **Policy-relevant models for central banks**

**(p. 54)**

In autumn 2005, a conference entitled “Policy-relevant models for central banks”, co-sponsored by the SNB, the Bank of Canada and the Federal Reserve Bank of Cleveland, took place at the SNB. The report first describes the significance of quantitative models for monetary policy and then provides a summary of the papers on recent developments in modelling presented at the conference.

## **Swiss National Bank Working Papers (p. 64)**

Abstracts of five papers: Martin Brown and Christian Zehnder, *Credit Reporting, Relationship Banking, and Loan Repayment*, SNB Working Paper 2006-3; Hans-Jörg Lehmann and Michael Manz, *The Exposure of Swiss Banks to Macroeconomic Shocks – an Empirical Investigation*, SNB Working Paper 2006-4; Katrin Assenmacher-Wesche and Stefan Gerlach, *Money Growth, Output Gaps and Inflation at Low and High Frequency: Spectral Estimates for Switzerland*, SNB Working Paper 2006-5; Marlene Amstad and Andreas M. Fischer, *Time-Varying Pass-Through from Import Prices to Consumer Prices: Evidence from an Event Study with Real-Time Data*, SNB Working Paper 2006-6; Samuel Reynard, *Money and the Great Disinflation*, SNB Working Paper 2006-7.

# Monetary Policy Report

Report to the attention of the Governing Board of the Swiss National Bank for its quarterly assessment of June 2006

This report is based primarily on the data and information available as at mid-June 2006. Sections 1–3 were drawn up for the June 2006 quarterly assessment of the Swiss National Bank's Governing Board.



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## About this report

The Swiss National Bank (SNB) has the statutory mandate to pursue a monetary policy serving the interests of the country as a whole. It ensures price stability while taking due account of economic developments.

It is a particular concern of the SNB that its monetary policy be understood by a wider public. However, it is also obliged by law to inform regularly of its policy and to make its intentions known. This Monetary Policy Report performs both of these tasks. It describes economic and monetary developments in Switzerland and explains the inflation forecast. It shows how the SNB views the economic situation and what conclusions it draws from this assessment.

Sections 1–3 of the present report were drawn up for the Governing Board's assessment of June 2006. The key developments and section 4 (inflation forecast) take due account of the Governing Board's monetary policy decision of 15 June 2006.

Unless otherwise stated, all rates of change from the previous period are based on seasonally adjusted data and are annualised.

## Key developments

The global economic situation remained favourable. In the first quarter of 2006, economic growth picked up in most large economies. However, against the background of increasing interest rates and rising prices for oil and other commodities, sentiment on the financial markets subsequently clouded over. The higher interest rates mainly reflected the improved economic situation. Inflation expectations rose and central banks reacted by raising short-term interest rates. Despite this policy adjustment, monetary conditions continue to support the global economy.

In the run-up to each inflation forecast, the SNB prepares a global economic scenario which it views as the most likely development over the next three years. Its assessment of the future course of the global economy remained optimistic. The economy is expected to expand vigorously in the medium term. Until the end of the forecasting period (Q1 2009), economic growth in the US and the EU is likely to trend towards its potential, which is about 3% and 2%, respectively. As before, the main uncertainties for the global economy are linked to the imbalances in current accounts, the high and volatile energy prices and the fact that real estate markets are overvalued in some areas.

Benefiting from the prospering world economy, economic growth in Switzerland also gathered pace. Real GDP in the first quarter was up 3.8% on the previous period, thus exceeding the year-back level by 3.5%. Both domestic and export demand contributed to the economy's rapid expansion. In particular, equipment investment experienced a remarkable recovery. The banking sector and manufacturing, in particular, made a major contribution to growth. The vibrant economic activity went hand in hand with an acceleration in employment growth and a slight decline in unemployment. The talks conducted by the SNB delegates

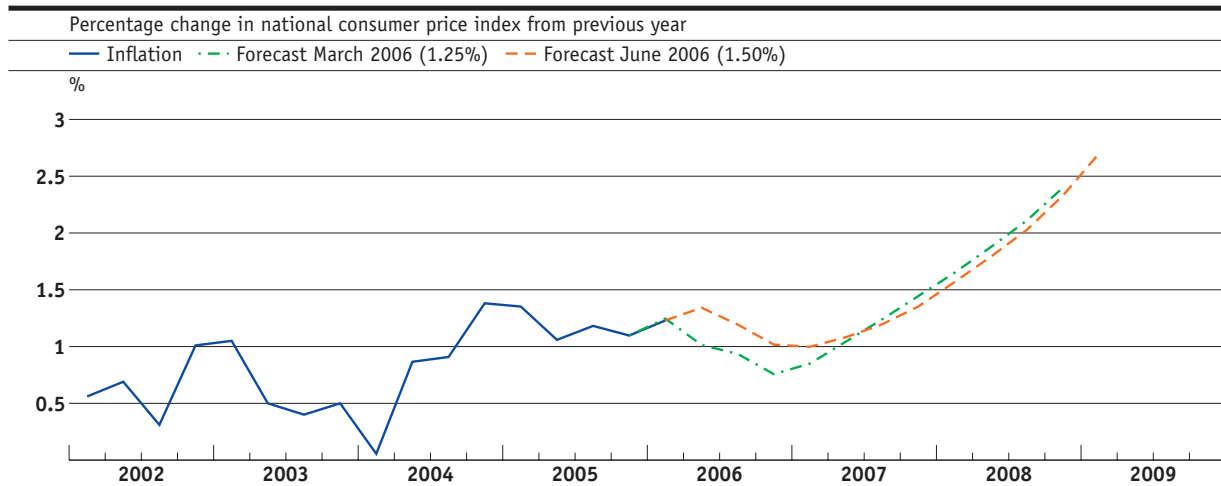
for regional economic relations with representatives from various sectors between March and May also reflected the generally upbeat mood in the economy. In almost all cases, the representatives stated that their optimistic expectations for 2006 were being met or even exceeded.

The SNB anticipates that the broad-based economic recovery will continue in 2006 and expects real GDP to grow by a little over 2.5% averaged over the year. The pick-up in corporate investment activity should increasingly be accompanied by higher employment. This is particularly true of the service sector, where employment has risen only modestly in the current business cycle so far. The seasonally adjusted unemployment rate will probably drop below 3% by the beginning of 2007.

At its quarterly assessment of June, the SNB decided to raise the target range for the three-month Libor by 0.25 percentage points to 1.0–2.0%. By lifting the interest rate, the SNB has brought its monetary policy course into line with economic activity, thereby ensuring that the inflation outlook remains favourable.

According to the June inflation forecast, which is based on the assumption that the three-month Libor remains steady at 1.5% over the next three years, inflation will continue to be moderate in 2006 and fall back to 1% by the end of the year. Averaged over the year, an inflation rate of 1.2% is expected. With the economy continuing to prosper, capacity utilisation has increased further. This, together with an ample liquidity supply, would result in increasing pressure on prices as of 2007. With an unchanged three-month Libor of 1.5%, there is a danger that inflation will exceed the 2% mark at the beginning of 2008, thereby failing to comply with the goal of price stability. If the economy continues to recover as expected, the SNB will therefore further pursue the gradual adjustment of its monetary policy.

**Inflation forecast of March 2006 with Libor at 1.25% and of June 2006 with Libor at 1.50%**



**Inflation forecast of June 2006 with Libor at 1.50%**

	2006	2007	2008
Average annual inflation in percent	1.2	1.2	1.9

# 1 Developments in the global economy

In the first quarter of 2006, economic growth picked up in most large economies. The modest slow-down of the previous quarter therefore proved to have been temporary. However, against the background of increasing interest rates and rising prices for oil and other commodities, sentiment on the financial markets clouded over. After significant advances in the first quarter, stock markets were considerably lower in May.

The higher interest rates mainly reflected the improved economic situation. Inflation expectations rose and central banks reacted by raising short-term interest rates. Despite this policy adjustment, monetary conditions continue to support the global economy. As before, the main uncertainties affecting the global economy are probably linked to imbalances in current accounts, high and volatile energy prices and the fact that real estate markets are overvalued in some areas.

In the run-up to the June 2006 inflation forecast, the SNB lifted its assumptions for 2006 GDP growth in the US slightly, to 3.5%. This reflected the robust first-quarter growth of the US economy, in particular. Likewise, the anticipated growth for Japan was set higher than in March, to 2.8%. By

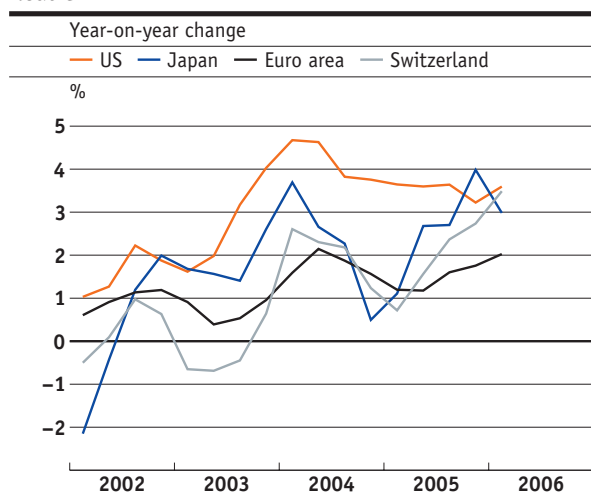
contrast, expected growth for the EU countries (EU15) was left almost unchanged at 2.3%. On the whole, the SNB's growth projections remain somewhat higher than the consensus forecasts (cf. table 1.1 and section 4.1).

## Strong economic growth in the US

In the first quarter, the US economy overcame the setback in the aftermath of the hurricanes of summer 2005. Real GDP rose by 5.3% compared with the previous period – the largest increase since the third quarter of 2003. Domestic demand picked up, mainly driven by the strong demand for consumer durables and the increase in corporate investments. Moreover, strong growth in exports of goods and services added some positive impetus.

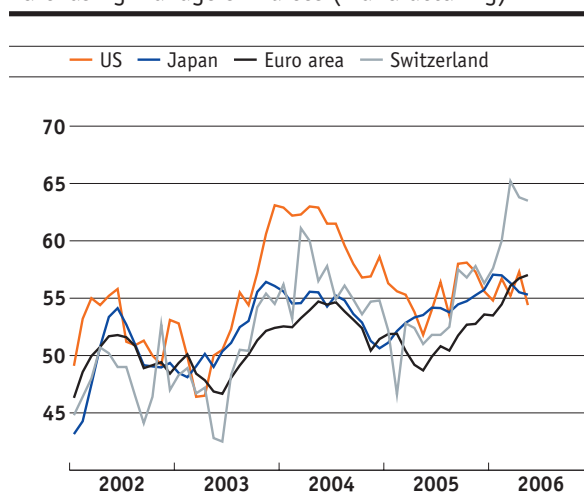
Economic prospects remained favourable; the upswing, however, is likely to lose some momentum. In April, manufacturing output continued to expand and companies remained optimistic. This was mainly reflected in a sharp increase in capital goods orders. Private consumption continued to profit from the rise in employment and increasing wages. Higher interest rates, the weaker real estate and stock markets as well as the sharp rise in energy costs are likely to result in some slowdown in this area. Consequently, economic growth is expected to decrease towards its potential of about 3%.

Graph 1.1  
Real GDP



Sources: State Secretariat for Economic Affairs (seco), Thomson Datastream, SNB

Graph 1.2  
Purchasing managers' indices (manufacturing)



Source: Thomson Datastream

### Continued economic upswing in Europe

In the euro area, too, economic recovery picked up. Supported by increased demand in the three largest member states, economic growth increased to 2.4% in the first quarter, after having remained at a low 1% in the fourth quarter. The boost was mainly attributable to strong growth in private consumer spending and exports. By contrast, growth in investment was modest. A number of indicators suggest that construction was particularly weak, while equipment investment expanded. This is true for Germany, in particular, where corporate investment activity has clearly picked up in the last few quarters.

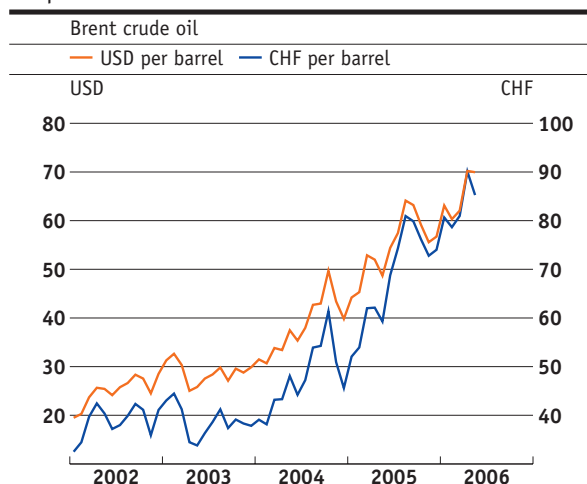
Economic recovery in Europe seems to be gaining in breadth. While the brighter outlook was initially restricted to manufacturing, a feeling of greater confidence has now spread to consumers and companies in the service sector as well. Moreover, the quarterly bank lending survey of the European Central Bank (ECB) points to growing investment activity. Consequently, employment should increase at an accelerated pace. A look at the individual countries reveals that the upswing is also well-anchored regionally. Especially the German economy, which has been lagging behind, has caught up with developments in the current business cycle. However, the increase in the German value-added tax scheduled for the beginning of 2007 is causing a degree of uncertainty.

### Strong growth in Asia

Unlike in the US and Europe, real GDP growth in Japan weakened in the first quarter. At 1.9%, it grew at barely half the rate of the previous period. Nevertheless, economic sentiment remained positive. Private consumption and investment activity continued to be an important driving force. Exports also expanded vigorously; however, the increase in imports was even more significant. The continued improvement in the labour market, in particular, gives grounds for optimism.

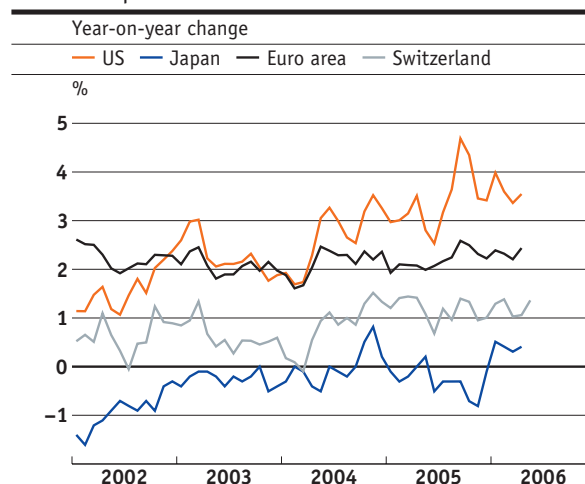
The Chinese economy still showed no signs of weakening. Real GDP in the first quarter was 10.3% up on the level of the previous year. Investment rose by almost 30% and, owing to a surge in exports, the foreign trade contribution remained positive. Indicators available for April point to a continuation of strong economic growth. Because of the slightly more restrictive monetary and lending policies, exports and investments are likely to level off somewhat. However, higher income and government support boosted private consumption. Hong Kong, South Korea, Singapore and Taiwan also saw robust economic growth in the first quarter. The strong global demand for electronic goods continued to buoy up economic activity.

Graph 1.3  
Oil prices



Sources: Reuters, SNB

Graph 1.4  
Consumer prices



Sources: Swiss Federal Statistical Office (SFSO), Thomson Datastream

### Slight increase in inflationary pressure

As a result of the renewed surge in energy prices, the consumer price inflation rate in the major industrialised countries (G7 countries) was again close to 3% in April. Likewise, core inflation – which factors out energy and food prices – climbed to 1.7%. In the US, it reached the highest level in more than a year, rising to 2.3%; in the euro area, it registered a sharp increase, reaching 1.6%. In recent months, Japan’s core inflation has edged back into the positive range for the first time in a year. The higher core inflation reflects the rise in capacity utilisation, which has gone up in most countries, and is encouraging upward adjustments in prices.

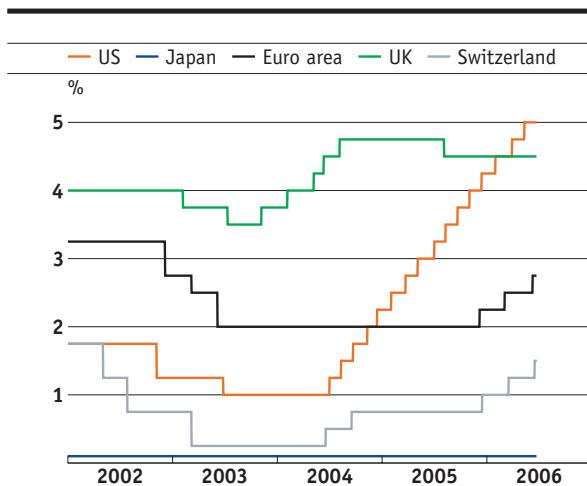
### Further tightening of monetary policy

A number of central banks tightened their monetary policy in the first half of the year. In both March and May, the US Federal Reserve lifted the call money rate by another quarter of a percentage point to a current level of 5.0%. The ECB, too, took steps to counter greater inflationary risks, raising its main refinancing rate by a quarter of a percentage point to 2.75%. It had already lifted the rate by 0.25 percentage points in March. While the Japanese central bank focused on reducing excess liquidity and left its reference rate unchanged at zero percent, the Chinese central bank moved to curb credit and investment growth and announced a rise in the short-term interest rates (1 year) of 0.27 percentage points to 5.85%.

### More optimistic consensus forecasts

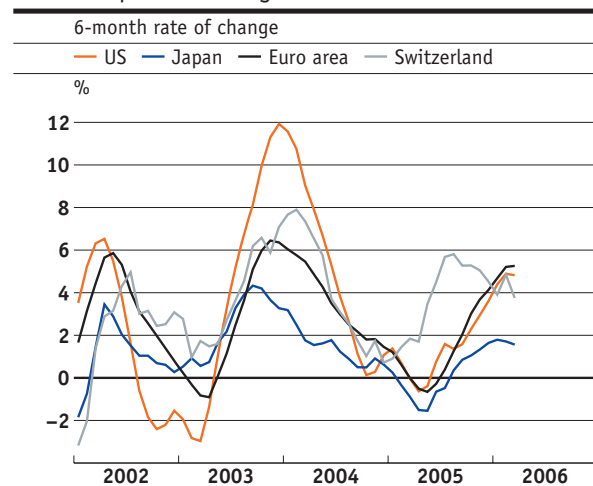
The fact that the assessment of the global economy remains favourable was also reflected in the consensus forecasts for GDP growth in 2006, which increased for most industrialised countries in May. Japan saw the most pronounced rise in its forecast, from 2.3% to 3.0%. By contrast, the adjustments for the US and the euro area remained modest. Higher energy prices and the growing capacity utilisation also resulted in higher consensus forecasts for inflation. In May, they ranged from 0.4% for Japan to 3.2% for the US (cf. table 1.1).

Graph 1.5  
Official interest rates



Sources: Thomson Datastream, SNB

Graph 1.6  
OECD composite leading indicators



Source: OECD

## Consensus forecasts

Table 1.1

	Economic growth <sup>1</sup>				Inflation <sup>2</sup>			
	February		May		February		May	
	2006	2007	2006	2007	2006	2007	2006	2007
United States	3.2	3.0	3.4	2.9	2.9	2.3	3.2	2.4
Japan	2.3	3.2	3.0	2.3	0.2	0.5	0.4	0.6
Euro area	2.0	1.8	2.1	1.8	2.0	2.0	2.1	2.1
Germany	1.6	1.0	1.8	1.1	1.7	2.3	1.7	2.3
France	1.9	2.0	2.0	2.0	1.7	1.6	1.7	1.5
Italy	1.3	1.3	1.2	1.2	2.1	1.9	2.1	1.9
United Kingdom	2.1	2.4	2.3	2.5	2.0	2.0	2.0	2.0
Switzerland	2.0	1.7	2.3	1.7	1.0	1.1	1.1	1.1

1 Real GDP, year-on-year change in percent

2 Consumer prices, year-on-year change in percent

Source: Consensus Forecasts, February 2006, May 2006. Consensus forecasts are monthly surveys conducted among over 240 companies and economic research institutes in more than 20 countries, covering predictions for the expected development of GDP, prices and other economic data. The results are published by Consensus Economics Inc., London.



## 2 Developments in the Swiss economy

### 2.1 Aggregate demand and output

#### Strong GDP growth

Benefiting from the prospering world economy, economic growth in Switzerland also gathered pace. According to estimates by the State Secretariat for Economic Affairs (seco), real GDP in the first quarter was up 3.8% on the previous period, thus exceeding the year-back level by 3.5%. Both domestic and export demand contributed to the economy's rapid expansion. In particular, equipment investment experienced a remarkable recovery from the restraint exhibited so far in this business cycle. Moreover, the expansion was broad-based across all industries, with the banking sector and manufacturing making a particularly significant contribution to growth. The vibrant economic activity went hand in hand with an acceleration in employment growth and a slight decline in unemployment.

#### Industrial activity very favourable

Industrial activity remained favourable, as reflected in the data on industrial production published by the Swiss Federal Statistical Office (SFSO) in June. According to these figures, first-quarter manufacturing output was up 11.8% on the previous period, exceeding the year-earlier level by 10.2%. Both the export sector and the companies geared to

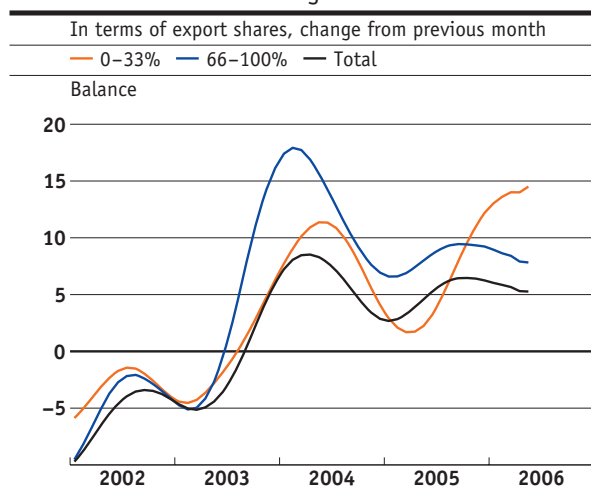
the domestic market reported a rise in demand. The order backlog continued to grow and is now considered to be very healthy. Although production was considerably higher and the stocks of finished products were reduced, delivery periods lengthened. In view of the robust demand, the companies increased their stocks of commodities and intermediate goods, which exhibited an increasing price trend.

#### Bright economic prospects for 2006

The talks conducted by the SNB delegates for regional economic relations with representatives from the various sectors between March and May reflected the generally upbeat mood in the economy. In almost all cases, the representatives stated that their optimistic expectations for 2006 were being met or even exceeded. The retail trade also saw signs of a slight improvement (cf. The economic situation from the vantage point of the delegates for regional economic relations, in the *SNB Quarterly Bulletin* no. 2/2006).

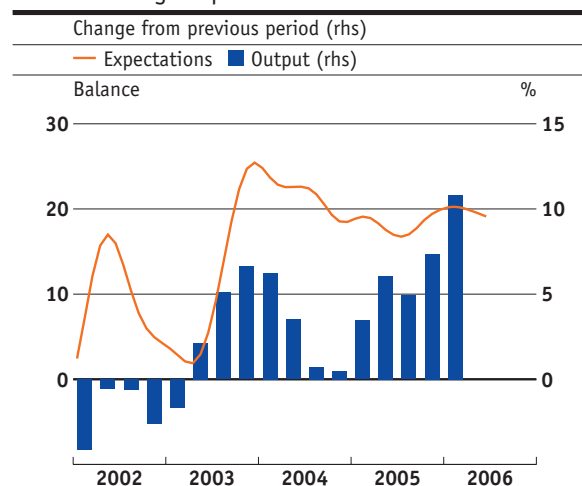
The SNB projects GDP growth of just over 2.5% for 2006. The expansion is expected to continue across a broad front, with exports continuing to provide significant momentum. The pick-up in corporate investment activity should also bolster economic growth and will increasingly be accompanied by higher employment. This is particularly true of the service sector, where employment has risen only modestly in the current business cycle so far. The SNB expects the seasonally adjusted unemployment rate to drop below 3% by the beginning of 2007.

Graph 2.1  
New orders in manufacturing



Source: Institute for Business Cycle Research at the Swiss Federal Institute of Technology (KOF/FIT)

Graph 2.2  
Manufacturing output



Sources: SFSO, KOF/ETH

**Real GDP and components**  
Year-on-year growth rates, annualised

Table 2.1

	2002	2003	2004	2005	2004			2005				2006
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Private consumption	-0.0	0.8	1.4	1.6	0.2	0.1	1.2	2.2	2.4	2.2	0.6	2.5
Government consumption	1.7	2.2	1.4	1.3	-2.1	0.4	1.5	4.9	1.1	-2.4	-0.0	-0.3
Investment in fixed assets	0.3	-1.3	3.3	3.1	1.7	4.2	-7.8	6.4	17.8	-6.5	1.2	2.9
Construction	2.2	1.8	4.1	3.6	-9.5	0.8	-7.6	9.8	30.3	-13.5	-3.9	-10.2
Equipment	-1.2	-3.8	2.7	2.8	12.5	7.2	-8.0	3.7	7.7	0.3	5.8	15.4
<b>Domestic final demand</b>	<b>0.2</b>	<b>0.5</b>	<b>1.8</b>	<b>1.9</b>	<b>0.2</b>	<b>1.1</b>	<b>-0.9</b>	<b>3.5</b>	<b>5.5</b>	<b>-0.4</b>	<b>0.6</b>	<b>2.3</b>
<b>Domestic demand</b>	<b>-0.5</b>	<b>0.4</b>	<b>1.0</b>	<b>2.0</b>	<b>5.0</b>	<b>0.9</b>	<b>-3.2</b>	<b>5.7</b>	<b>0.4</b>	<b>2.6</b>	<b>5.9</b>	<b>-0.3</b>
Total exports	-0.7	-0.5	8.9	4.5	-3.5	6.9	4.5	-7.7	23.5	5.3	5.3	18.5
Goods	1.1	-0.1	7.8	5.4	-7.2	10.9	2.4	-7.1	31.9	1.4	5.6	25.4
Excluding valuables <sup>1</sup>	0.4	0.7	7.6	5.8	-2.2	9.2	2.5	-8.8	41.0	-2.6	6.2	17.8
Services	-5.7	-1.6	12.0	2.4	6.6	-2.4	9.9	-9.1	3.7	16.5	4.6	1.8
<b>Aggregate demand</b>	<b>-0.5</b>	<b>0.1</b>	<b>3.5</b>	<b>2.8</b>	<b>2.1</b>	<b>2.8</b>	<b>-0.7</b>	<b>1.0</b>	<b>7.6</b>	<b>3.5</b>	<b>5.7</b>	<b>5.8</b>
Total imports	-2.6	1.3	7.4	5.3	6.6	8.8	-4.0	0.6	17.7	3.2	13.5	10.6
Goods	-3.0	2.1	6.4	5.8	6.9	11.1	-5.6	0.5	20.9	3.6	14.6	10.8
Excluding valuables <sup>1</sup>	-2.2	2.7	6.6	5.3	1.8	13.4	-6.3	1.1	17.0	6.8	10.0	11.0
Services	-0.7	-2.7	12.0	2.7	5.5	-1.4	4.0	1.1	4.0	1.4	8.4	9.5
<b>GDP</b>	<b>0.3</b>	<b>-0.3</b>	<b>2.1</b>	<b>1.9</b>	<b>0.4</b>	<b>0.6</b>	<b>0.7</b>	<b>1.2</b>	<b>3.8</b>	<b>3.6</b>	<b>2.7</b>	<b>3.8</b>

<sup>1</sup> Valuables: precious metals, precious stones and gems as well as objets d'art and antiques  
Source: seco

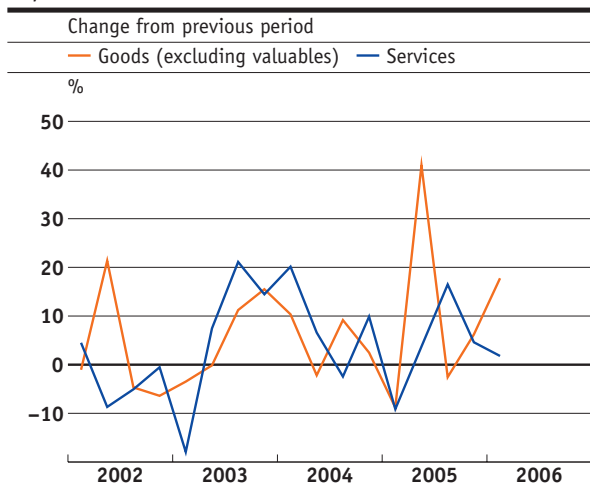
### Steep increase in exports

Thanks to buoyant foreign demand, real exports of goods and services picked up substantially in the first quarter, topping the year-back level by 12.2% in total. Unlike goods exports, service exports grew at a slower pace. As in the previous period, bank commission income and receipts from tourism expanded at an above-average rate. International transport and private insurance services also showed a positive trend.

As regards real exports of goods (excluding valuables), investment goods, which account for roughly 30% of total goods exports, staged a particularly steep increase compared with the previous period. Shipments of semi-manufactures expanded more slowly, however, while those of consumer goods (including watches, chemical and pharmaceutical products) fell below the very high level of the previous quarter. Capital goods exports continued to trend upwards in April, whereas shipments of consumer goods stabilised.

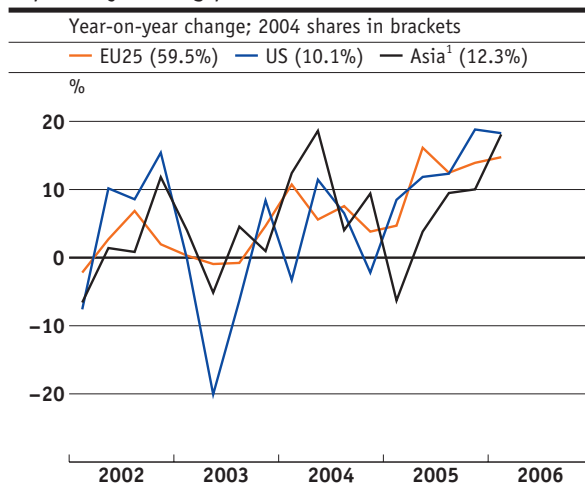
Demand for Swiss goods was geographically broad-based. Sales to the EU area in particular were up, with the increase in exports to Germany, France and Great Britain being a major contributing factor. Goods shipments to the US also continued to proceed along a favourable growth path. Exports to Asia, by contrast, lost some momentum but remained at a very high level.

Graph 2.3  
Exports



Source: seco

Graph 2.4  
Exports by trading partners



1 Asia: Japan, China, South Korea, Hong Kong, Singapore, Taiwan, Malaysia, Thailand, Philippines, Indonesia  
Source: Federal Customs Administration (FCA)

### Surge in imports

Imports of goods and services again rose steeply in the first quarter and exceeded the year-ago level by 10%. Services – particularly expenditure on fees, licences and patents as well as on transport – increased substantially, whereas growth in tourism spending slowed a little. These three categories together account for roughly 85% of service imports.

Growth in goods imports remained buoyant in the first quarter. The sharpest increase was recorded by imports of capital goods, which account for a little over 25% of total goods imports. Demand for foreign consumer goods eased, however, while imports of commodities and semi-manufactures suffered a marked decline and imports of oil products stagnated. These trends continued in April.

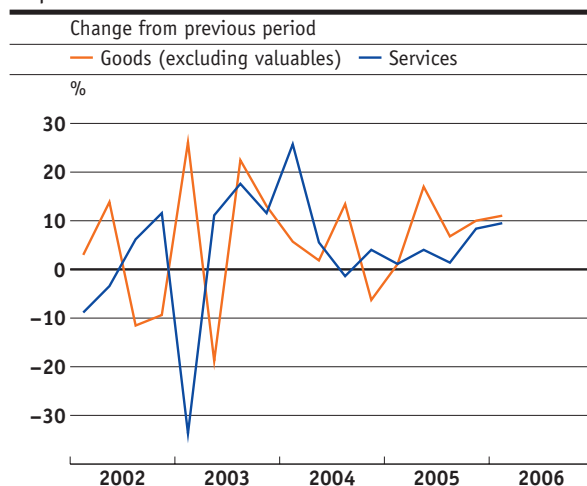
### Robust consumption

Buoyed up by the rise in income and the improved labour market situation, the trend in private consumption remained favourable. Following the moderate increase at the end of 2005, private consumption increased by 2.5% from the previous period and was thus 2.0% above the corresponding year-earlier level. Demand for consumer durables (including cars) was mostly positive. Significant momentum was added by consumption of services, particularly by higher expenditure for housing, health and leisure. The upbeat consumer sentiment also benefited domestic tourism. The number of overnight stays by domestic guests rose considerably until March, and current hotel bookings suggest a good summer season.

### Positive outlook for private consumption

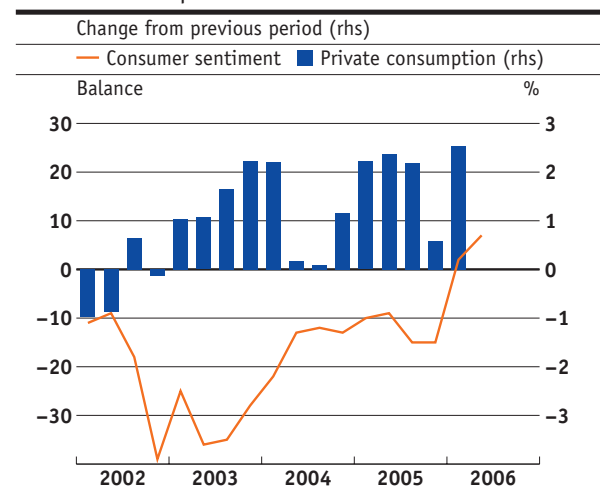
The consumer sentiment index rose in April for the second month running, thereby clearly confirming its return to positive terrain. This development was primarily due to the more favourable assessment of the economic situation and the labour market. The expected improvement in household income this year should also bolster private consumption. Following a rise of 0.9% in 2005, the SNB anticipates that real income of employees will climb by a further 2.0% this year, assuming a significant increase in employment and a slight rise in real wages.

Graph 2.5  
Imports



Source: seco

Graph 2.6  
Private consumption



Source: seco

### Residential investment expanding further

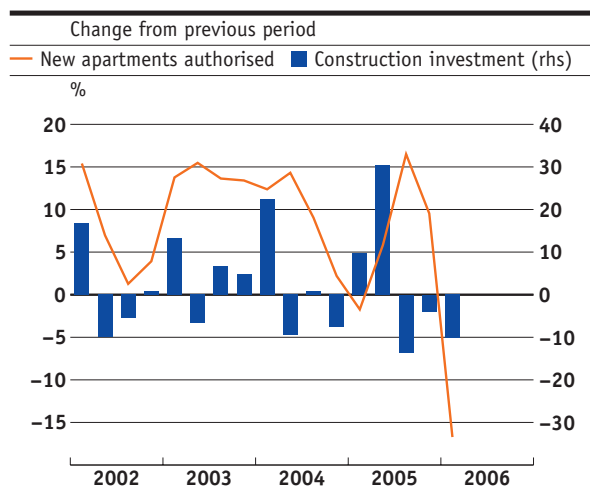
Residential construction activity continued to buoy up economic activity in the first quarter. The quarterly SFSO figures show that the number of apartments under construction surged from the previous period, exceeding the year-back level by 20%. However, overall construction investment recorded by seco was slightly lower than a year earlier.

Following the marked increase in 2005, construction investment is expected to grow only modestly this year, with residential construction continuing to provide the major impetus. Although demand for additional residential space is still high measured by the number of residential building permits, it just barely reached the year-earlier level in the first quarter. Its development will thus be significantly more restrained this year, following the very sharp rise in the past two years. By contrast, commercial construction shows signs of recovery, while there is no improvement in sight as yet with regard to office space, where the level of vacancies is unrelentingly high.

### Equipment investment catching up

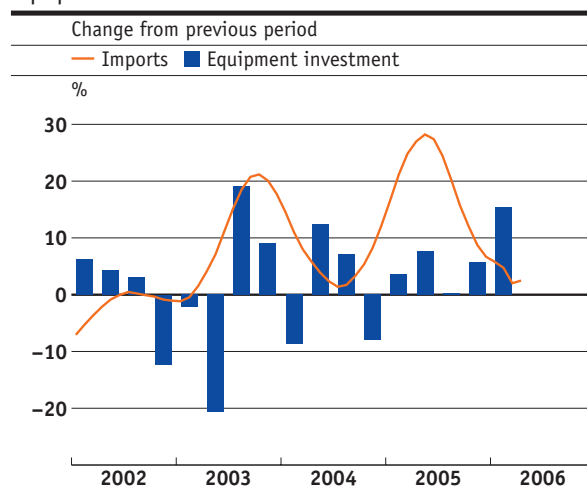
Equipment investment surged in the first quarter and surpassed the year-earlier level by 7.2% after having grown by a mere 2.8% in 2005, despite the revival of the economy. Given the improved financial standing of companies and the optimistic economic outlook, equipment investment can be expected to increase substantially during the remainder of the year. Consequently, technical production capacity should gradually reach a level commensurate with production volume. Owing to slack investment activity in the past few years, capacity utilisation in manufacturing and the proportion of companies reporting stretched capacity went up sharply.

Graph 2.7  
Construction



Sources: SFSO, seco

Graph 2.8  
Equipment



Sources: FCA, seco

## 2.2 Capacity utilisation

### Increased capacity utilisation and capacity

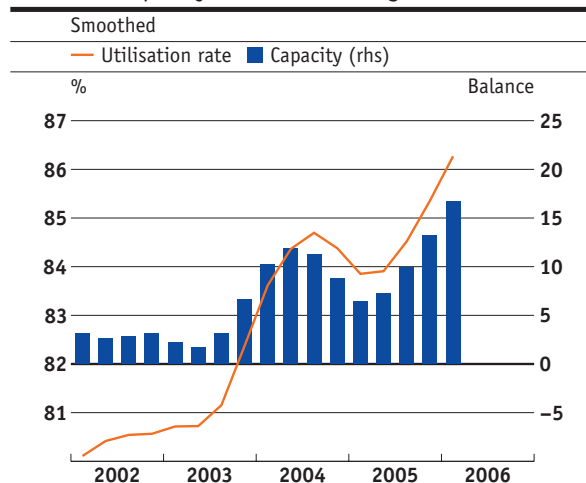
First-quarter utilisation of technical capacity in manufacturing rose from 85.4% to 86.3% according to the first-quarter survey of the Swiss Institute for Business Cycle Research at the Swiss Federal Institute of Technology and was therefore clearly above the long-term average. At the same time, technical capacity was substantially expanded, indicating that Switzerland's industry now considers the upswing to be sustained.

### Output gap almost closed

The output gap in the economy as a whole is a more general measure of utilisation. It is measured as the difference, in percentage terms, between real GDP and estimated production potential. Graph 2.10 shows three estimates of the output gap based on different methods of estimating production potential (production function, Hodrick-Prescott (HP) filter, multivariate (MV) filter).

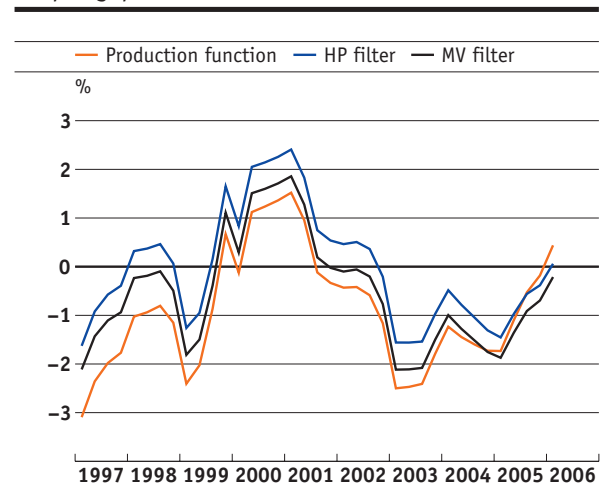
Up 3.8% in the first quarter, real GDP again grew more rapidly than estimated production potential, thus almost closing the output gap for the first time since 2001. In addition, the updated estimates reveal that the output gap narrowed faster last year than initial data had suggested. Real GDP is likely to continue expanding substantially over the next few quarters, but the positive output gap is not expected to widen much further. This is due to the fact that the capital stock is rising at a faster pace owing to brisker investment activity, thus also accelerating the growth of production potential.

Graph 2.9  
Technical capacity in manufacturing



Source: KOF/FIT

Graph 2.10  
Output gap



Source: SNB

## 2.3 Labour market

### Employment on the rise

The economic rebound also impacted on the labour market. In the first quarter, the number of employed persons climbed by 1.1% from the previous period, resulting in a year-on-year increase of 0.7%. For the first time in a long while, the service sector – which accounts for the bulk of employment – created a significant number of jobs.

The construction industry experienced an above-average rise in the number of employees (1.9%), followed by the service sector (1.2%) and manufacturing (0.9%). Within the service sector, the hospitality industry, real estate, IT as well as research and development were the main contributors to this increase. By contrast, banks and insurance companies, in particular, cut jobs again. Within the manufacturing sector, the chemical and metal industries as well as mechanical and electrical engineering companies were the major job creators.

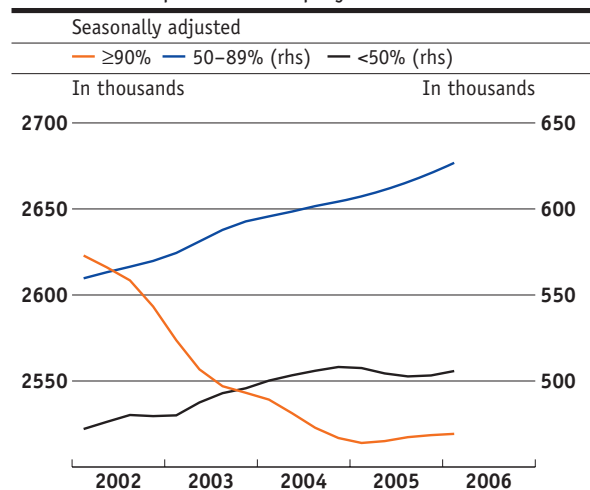
Broken down by full-time and part-time employment, the number of employees working on a part-time basis of 50–89% showed the strongest increase, while the number of full-time jobs climbed only minimally. Overall, the volume of work (in full-time equivalents) rose by 0.8% from the previous quarter – the fastest increase since 2001.

### Fall in unemployment and better employment prospects

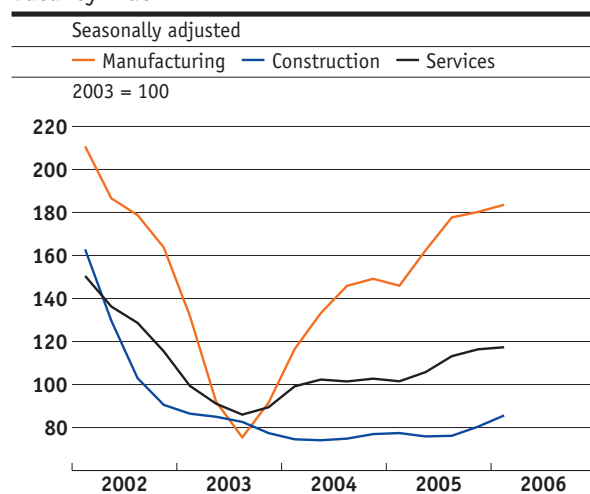
The seasonally adjusted unemployment rate dropped by 0.2 percentage points to 3.4% between February and April. Accordingly, 135,800 unemployed persons were registered with employment offices in April. The proportion of job seekers dipped by 0.1 percentage points to 5.2%, corresponding to 203,400 persons.

As graphs 2.12 and 2.13 show, both the SFSO vacancies index and the number of vacant positions reported by Publicitas trended up in the first quarter. The prospects look good that employment will strengthen further over the coming quarters and that the jobless rate will continue to fall.

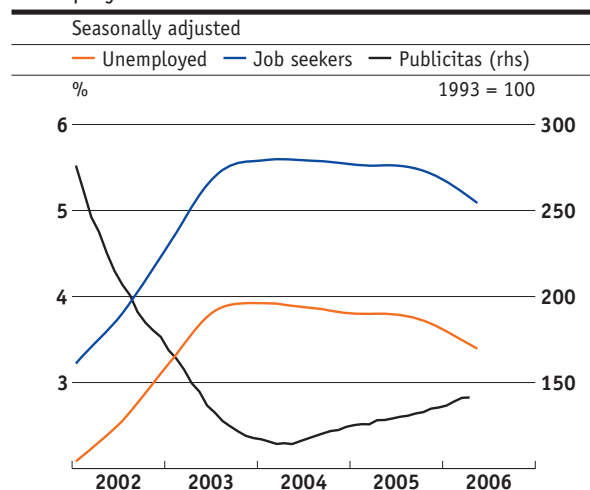
Graph 2.11  
Full-time and part-time employment



Graph 2.12  
Vacancy index



Graph 2.13  
Unemployment rates and vacancies



Graphs 2.11 and 2.12:  
Source: SFSO

Graph 2.13:  
Unemployed and job seekers registered with the regional employment offices in percent of the labour force according to the 2000 census (labour force: 3,946,988 persons).  
Sources: Publicitas, seco

## 2.4 Goods prices

### Rise in producer prices

The knock-on inflationary pressure exerted by total supply prices (producer and import prices) on consumer prices continued to grow overall between January and April. Although the rate of annual price rises for imported goods slipped slightly to 2.0% on the back of slowing price increases for energy sources, it climbed to 1.9% for domestically produced goods. Intermediate goods recorded a 3.2% year-on-year price increase, which was more than twice as high as in January. This development was mainly due to higher metal prices (aluminium, zinc, tin, copper and nickel).

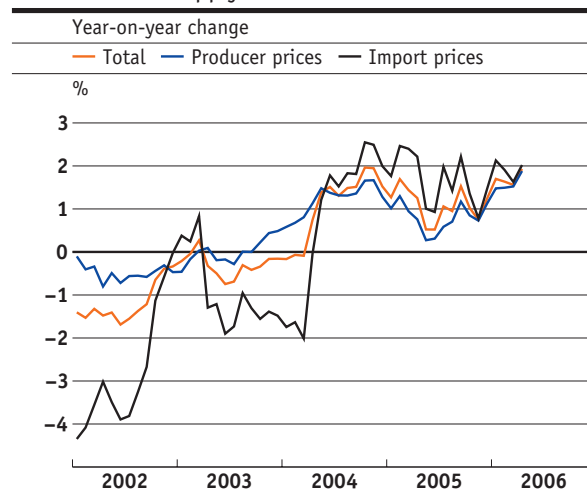
### Consumer price inflation on the rise

Annual inflation, as measured by the national consumer price index (CPI), moved up to 1.4% in May, having eased to 1.0% in March and 1.1% in April. It thus rose somewhat faster than the SNB had predicted in its inflation forecast in mid-March. Inflation was still largely driven by oil products (heating oil and fuel), which accounted for an average of just over 60% of total consumer price inflation between February and May. Excluding oil products from the CPI, price increases accelerated from 0.4% in February to 0.5% in May.

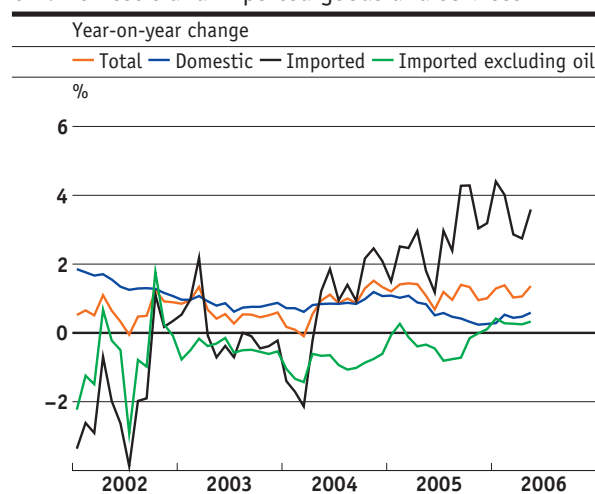
### Slightly higher domestic inflation

The annual price inflation of domestic goods and services climbed to 0.6% in May, up 0.1 percentage points from February. Prices were pushed up by rent increases, which rose 0.4 percentage points to an annualised 2.2% from February to May. This was the highest growth rate since October 2001. However, prices for other private services were marginally lower than a year earlier, largely due to falling prices for telecommunications and financial services. Likewise, no inflationary impetus came from domestic goods, which saw a year-on-year price drop of 0.3% in May. In particular, food and drug prices were lowered.

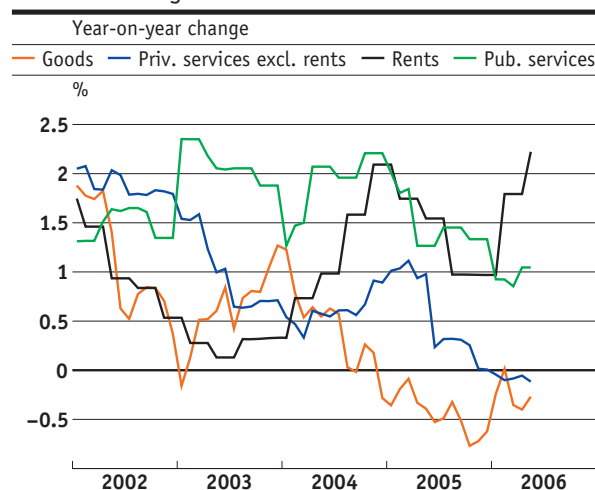
Graph 2.14  
Prices of total supply



Graph 2.15  
CPI: Domestic and imported goods and services



Graph 2.16  
CPI: Domestic goods and services



Graph 2.14:  
Source: SFSO

Graphs 2.15 and 2.16:  
Sources: SFSO, SNB



### Import inflation receding due to oil prices

Annual price inflation of imported consumer goods eased to 3.6% between February and March on the back of the modest slowdown in price rises for oil products (heating oil and fuel). Advances in the prices of other imported goods were again only minimal. Whereas prices of consumer electronics products receded, air transport and many items of clothing became more expensive.

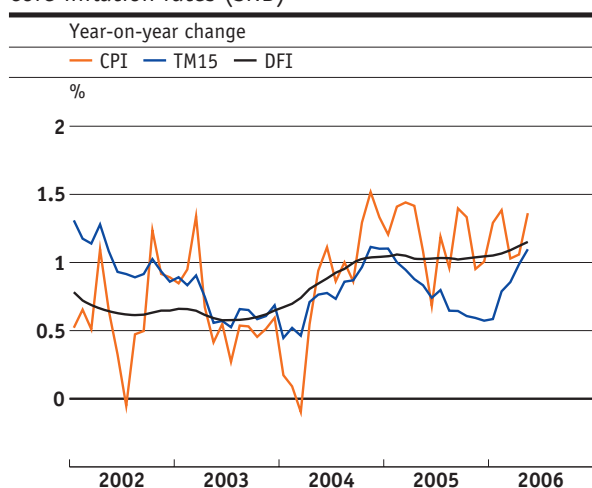
### Slow rise in core inflation rates

Inflation, as measured by the CPI, is subject to numerous short-term influences which may distort perceptions of the general inflation trend. For this reason, statistical methods are employed to calculate so-called core inflation rates, which capture the permanent component of price movements. For the assessment of the inflation trend, the SNB computes two measures of core inflation. The trimmed means method (TM15) excludes from the CPI, for any given month, those 15% of goods with the highest and those 15% with the lowest price variation. Dynamic factor inflation (DFI), which the SNB has published regularly since May, takes into account not only prices but also numerous data

pertaining to the real economy and the financial markets as well as monetary variables (cf. box, p. 24), in order to forecast long-term price developments. In addition, the SNB also takes account of the two SFSO core inflation rates, which both exclude the same goods from the commodities basket in each period. In the case of core inflation 1 (SFSO1), these are food, beverages, tobacco, seasonal products, energy and fuel. Core inflation 2 (SFSO2) also factors out products with administered prices.

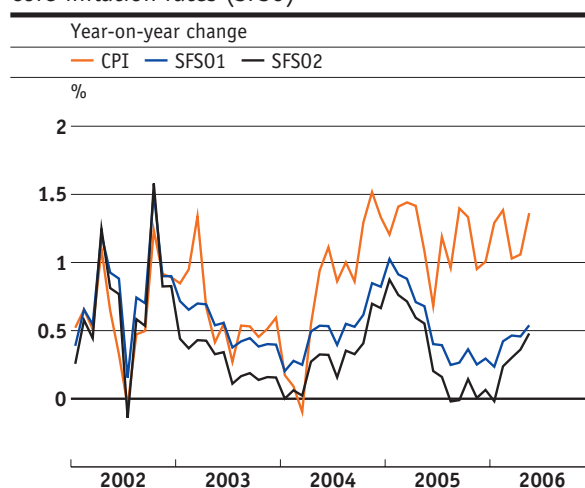
The trimmed-mean core inflation rate climbed 0.3 percentage points to 1.1% between February and May, suggesting a slightly stronger, yet still moderate inflation trend. A similar picture is given by dynamic factor inflation, which has indicated a stable inflation trend of 1.0% since September 2004 and nudged up to 1.1% by the end of the period under review. The improved economic environment coupled with the expansionary monetary conditions contributed to this development. The two core inflation rates published by the SFSO also edged up: Core inflation 1 increased by 0.1 percentage points to 0.5% from February to May, and core inflation 2 rose from 0.2% to 0.5%.

Graph 2.17  
Core inflation rates (SNB)



Sources: SFSO, SNB

Graph 2.18  
Core inflation rates (SFSO)



Source: SFSO

**National consumer price index and components**  
Year-on-year change in percent

Table 2.2

	2005		2006		2006			
		Q3	Q4	Q1	February	March	April	May
<b>Overall CPI</b>	<b>1.2</b>	<b>1.2</b>	<b>1.1</b>	<b>1.2</b>	<b>1.4</b>	<b>1.0</b>	<b>1.1</b>	<b>1.4</b>
Domestic goods and services	0.6	0.5	0.3	0.4	0.5	0.4	0.5	0.6
Goods	-0.4	-0.4	-0.7	-0.2	0.0	-0.4	-0.4	-0.3
Services	1.0	0.8	0.6	0.6	0.7	0.7	0.7	0.8
Private services excluding rents	0.5	0.3	0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Rents	1.4	1.2	1.0	1.5	1.8	1.8	1.8	2.2
Public services	1.5	1.5	1.3	0.9	0.9	0.9	1.0	1.0
Imported goods and services	2.7	3.2	3.5	3.8	4.0	2.9	2.7	3.6
Excluding oil products	-0.3	-0.8	-0.0	0.3	0.3	0.3	0.2	0.3
Oil products	18.5	23.5	21.0	21.4	23.5	15.6	15.0	20.0

Sources: SFSO, SNB

## Box: New measure for core inflation – dynamic factor inflation

Traditional core inflation computations all exclude the most volatile components from the CPI basket of commodities. One method – applied by the SFSO – is to always exclude the same components, such as in “SFSO core inflation 1” (excluding energy sources and food) and “SFSO core inflation 2” (excluding energy sources, food and administered prices). Alternatively, the CPI components that are excluded may vary from one period to the next, such as in the trimmed mean computed by the SNB, which factors out those 15% of goods with the highest and those 15% with the lowest price increases from the CPI basket of commodities. This type of core inflation calculation entails the risk of eliminating part of the trend along with the element of volatility, for example in situations when energy prices rise or fall drastically over a long period. Moreover, such measures are based solely on CPI data and fail to take into account any further information that may be useful in determining the inflation trend.

“Dynamic factor inflation” (DFI) was developed to counter the shortcomings of the traditional core inflation measures. Instead of excluding certain components from the CPI commodities basket, DFI compares the CPI components with one another and with numerous other economic series (data pertaining to the real economy and the financial markets as well as monetary aggregates). Those changes in the CPI that are reflected in a large number of CPI subcomponents and other economic series are considered to be a persistent trend. In simplistic terms, the method can be described as follows. Each individual indicator is divided into a common and an idiosyncratic component. The common component is then subdivided into a cyclical and a high-frequency part. The cyclical part of the common component corresponds to DFI.

DFI is described in detail in the SNB *Monthly Statistical Bulletin*, May 2006, pp. V–VI.

### 3 Monetary developments

#### 3.1 Interest rates

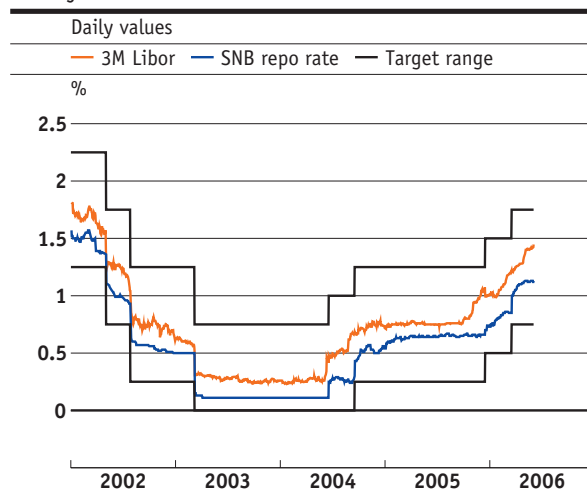
At its monetary policy assessment in March 2006, the National Bank decided to increase the target range for the three-month Libor by 0.25 percentage points to 0.75–1.75%, a change which took immediate effect. It announced that it intended to hold the rate in the middle of the target range for the time being. There were two reasons why a further adjustment to monetary policy was needed, following the 0.25 percentage point increase in the target range already undertaken at the December 2005 monetary policy assessment. The first was to counter an excessive supply of liquidity, while the second was to prevent over-utilisation of production capacity. The SNB indicated that it would further pursue its gradual adjustment to monetary policy if the economy continued to develop as expected.

##### Further tightening of monetary policy expected

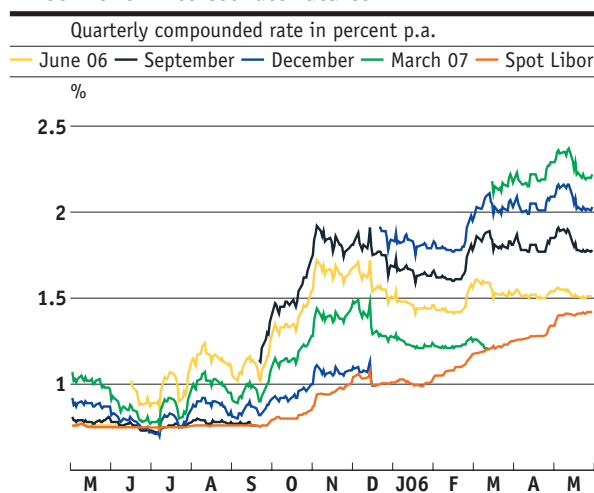
From mid-March to mid-June 2006, the three-month Libor rose continuously, climbing from 1.22% on the day of the March monetary policy assessment to 1.47% in mid-June. Clearly, the markets were expecting another hike in the target range for the three-month Libor. This increase was consistent with the increasing momentum in the economy, and was tolerated by the SNB.

Expectations of an imminent increase in the target interest rate range were also apparent on the futures market. From mid-March to the end of May, the interest rate on futures contracts with a mid-March 2006 maturity was more than 1.5%, corresponding to expectations of a 25 basis point rise in the interest rate. In the same time period, interest rates on contracts for September and December 2006, as well as for March 2007, continued to climb. In the case of futures contracts with an even later maturity date, the rise in interest rates was relatively greater. This suggests that more market participants are expecting further interest rate hikes in the course of 2006.

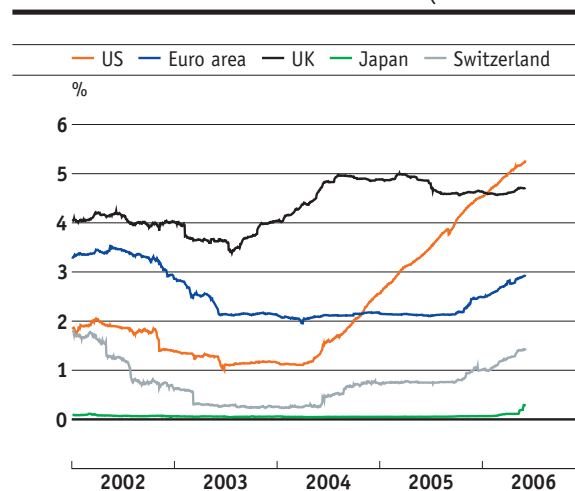
Graph 3.1  
Money market rates



Graph 3.2  
Three-month interest rate futures



Graph 3.3  
International short-term interest rates (three months)



Graphs 3.1, 3.2 and 3.3:  
Source: SNB

### International short-term rates also rising

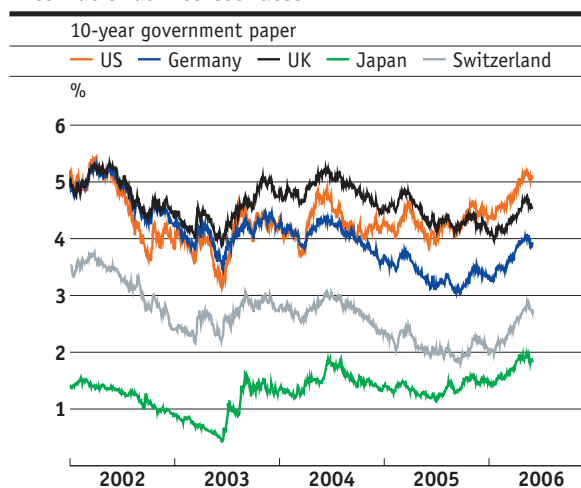
Short-term rates rose in other countries as well (graph 3.3). The European Central Bank (ECB) and the US Fed both continued lifting their key interest rates on a step-by-step basis. The three-month Libor for investments in euros climbed from 2.71% in mid-March to 2.95% in mid-June, while short-term dollar rates advanced from 4.93% to 5.32% in the same time period. The yield spread between short-term Swiss franc investments and investments in euros, as measured by the 3M Libor, remained almost unchanged at 1.48 percentage points, while that between Swiss francs and US dollar investments rose further, from 3.71 percentage points in mid-March to 3.85 points in mid-June.

### Rise in long-term rates

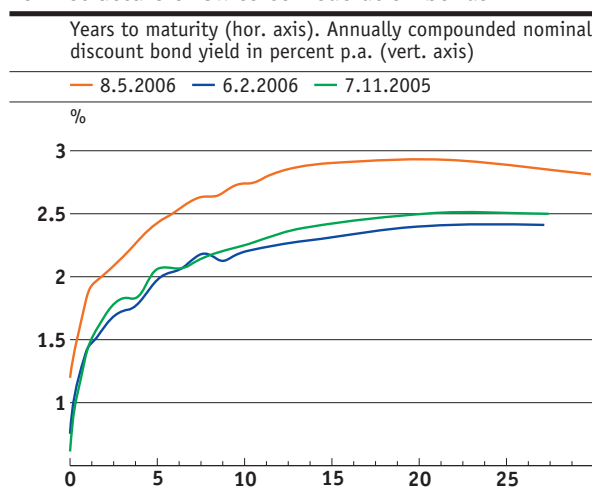
Alongside the advance in short-term rates, long-term interest rates also continued their upward movement. In mid-June, the yield on 10-year US government bonds was 4.99%, 34 basis points higher than in mid-March. In the same period, the yield on German government bonds rose by 24 basis points to 4.00%. Similar, although somewhat more pronounced, was the rise in long-term yields on bonds issued by the Swiss Confederation, which stood at 2.67% in mid-June – 27 basis points higher than in mid-March. The persistence of a favourable economic climate and the tightening of monetary policy are probably the main drivers of the worldwide rise in capital market yields.

Graph 3.6 depicts the yields on nominal discount bonds issued by the Swiss Confederation with various maturities and shows that yields have risen markedly both at the short-term and at the long-term end of the scale. This is also reflected in the shape of the interest rate curve (graph 3.5).

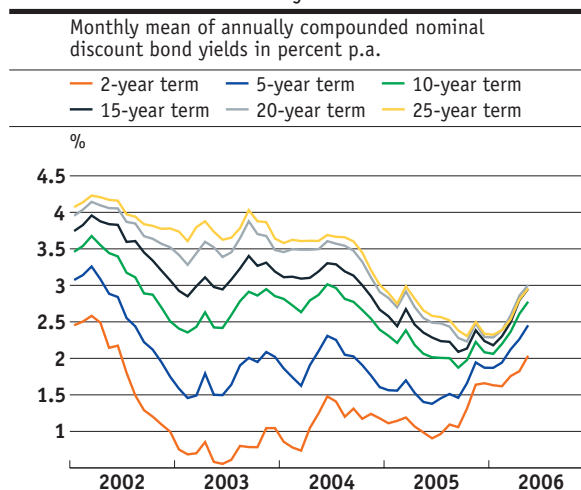
Graph 3.4  
International interest rates



Graph 3.5  
Term structure of Swiss Confederation bonds



Graph 3.6  
Swiss Confederation bond yields



Graph 3.4:  
Sources: Thomson Datastream, SNB

Graphs 3.5 and 3.6:  
Source: SNB

### Credit interest rate spreads at a historic low

Credit spreads can be used to depict the changes in financing conditions for bond issuers. They correspond to the difference between the yield on cantonal and corporate bond issues, on the one hand, and that on government bonds, on the other. This difference can be interpreted as a credit risk premium (cf. "Box: Assignment of bonds to ratings classes", p. 33, Monetary Policy Report 1/2004). Graphs 3.7 and 3.8 show that credit spreads on first and third-class industry bonds on the Swiss capital market have dropped noticeably. In April, yields on first-class industry bonds were only very slightly higher than those on comparable government bonds. The yields used in these calculations relate to discount bonds with a five-year maturity.

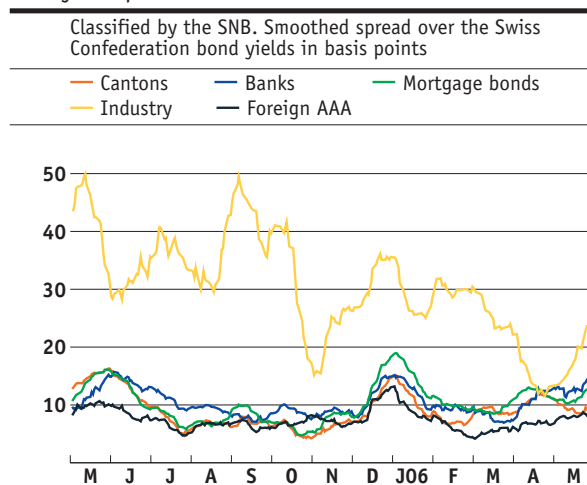
In an economic upswing, the risk of a company being unable to service its bonds is considerably lower than in a downturn. Consequently, the historically low spreads suggest that the economic climate is favourable.

### Short-term real interest rates still positive

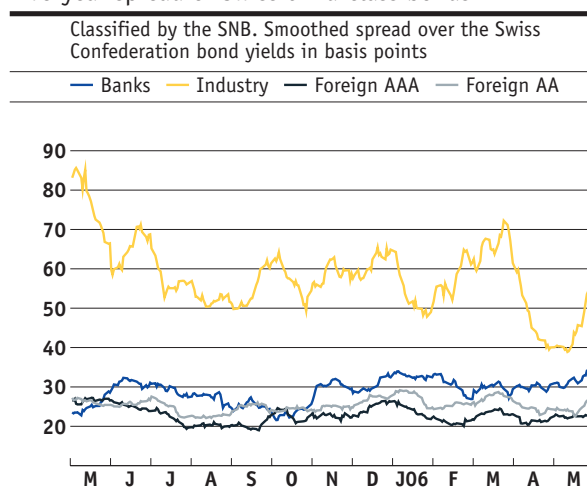
Graph 3.9 shows movements in the one-year real interest rate. This interest rate is defined as the difference between the 12-month nominal interest rate and the expected rise in consumer prices during the period in question. Inflation expectations are taken as an average of the forecasts published by a number of different institutions ("Consensus Forecast", May 2006).<sup>1</sup> In the first quarter, the real interest rate obtained in this manner was again positive at 0.7%, the same figure as that recorded in the previous quarter. Evidently, the rise in nominal interest rates was offset by slightly higher inflation expectations.

1 Cf. table 1.1.

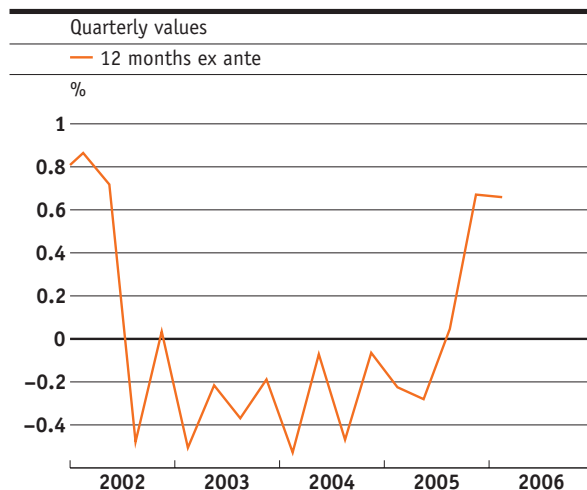
Graph 3.7  
Five-year spread of Swiss first-class bonds



Graph 3.8  
Five-year spread of Swiss third-class bonds



Graph 3.9  
Estimated real interest rate



Graphs 3.7, 3.8 and 3.9:  
Source: SNB

## 3.2 Exchange rates

### Dollar weaker

The US dollar has lost about 5% against the euro and the Swiss franc since the quarterly assessment in March. During the same period, the Swiss franc has remained more or less stable with respect to the euro, apart from some fluctuations in April. This was because economic recovery moved in parallel in the two areas and there were similar developments on the interest rate front. In mid-June, the dollar stood at CHF/USD 1.231, as compared to CHF/USD 1.296 at the quarterly assessment in March. This was almost the same level as in September 2005. The Swiss franc exchange rate against the euro was 1.554 in mid-June, as compared to 1.567 in mid-March.

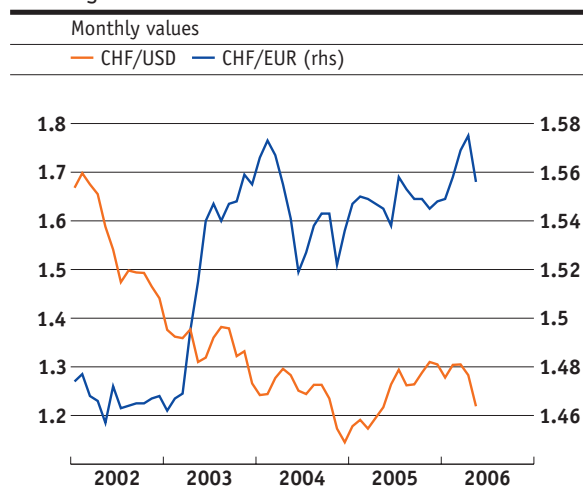
With respect to the 24 most important trading partners as well as the euro area, the real export-weighted external value of the Swiss franc, which takes account of the differing inflation rates for other currencies, barely altered during the period under review (graph 3.11).

### Less expansionary monetary conditions

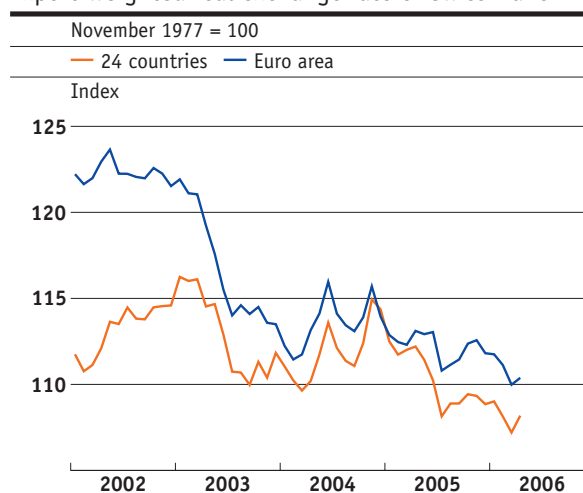
The Monetary Conditions Index (MCI) combines the three-month interest rate and the nominal trade-weighted external value of the Swiss franc to measure the degree of monetary expansion. Consequently, it gives a picture of monetary conditions in Switzerland. In order to take account of uncertainty with respect to the significance of interest rates and exchange rates, two different weighting methods are used for the two variables in the MCI (5:1 and 3:1). The MCI is reset to zero at the time of each monetary policy assessment. An increase to positive values (decline to negative values) signifies a tightening (loosening) of monetary conditions (cf. "Box: The Monetary Conditions Index (MCI)", Monetary Policy Report 1/2004, p. 27).

Looking at the MCI curve, it is evident that, until the end of April, monetary conditions in Switzerland were more expansionary than at the last monetary policy assessment. Since short-term interest rates were almost unchanged, this situation reflected a fall in the value of the Swiss franc. After the end of April, this trend was reversed. The MCI rose gradually, reaching 52 basis points at the end of May (at a 5:1 weighting), or 73 basis points with a 3:1 weighting. This indicates a tightening in monetary conditions, which can be attributed to a rise in three-month interest rates and a slight appreciation in the Swiss franc.

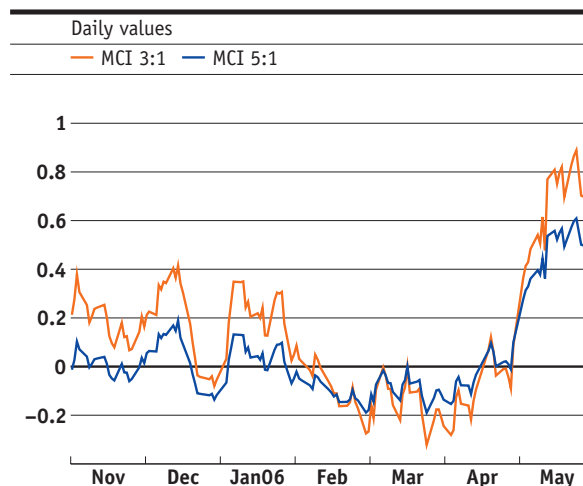
Graph 3.10  
Exchange rates



Graph 3.11  
Export-weighted real exchange rate of Swiss franc



Graph 3.12  
MCI nominal



Graphs 3.11, 3.12 and 3.13:  
Source: SNB

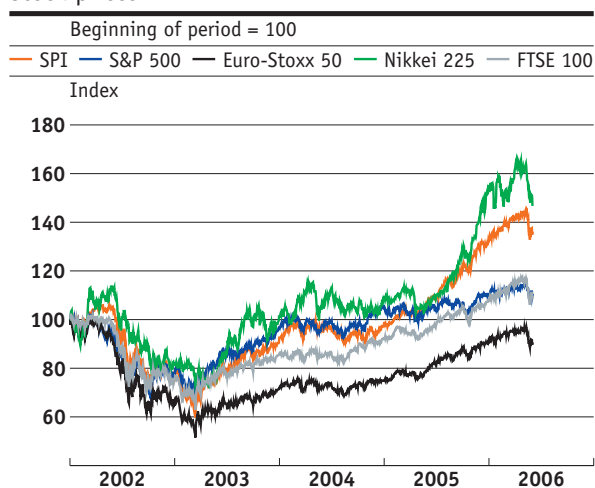
### 3.3 Equity, commodity and real estate prices

#### Stock market corrections

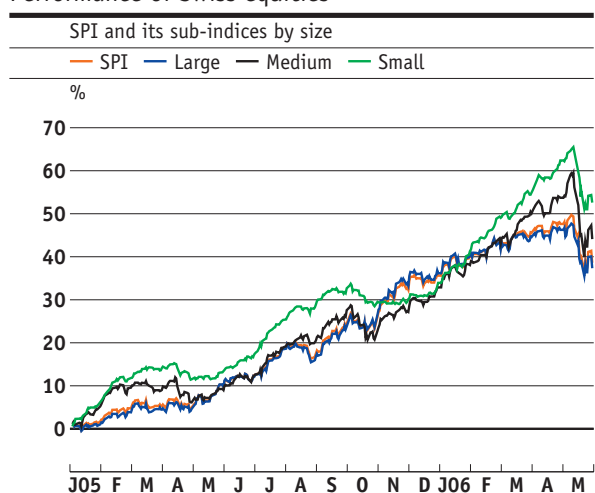
Most stock markets have lost ground since the last monetary policy assessment. At the end of May, some of them were below the level recorded at the beginning of 2006, or only just above it. The S&P 500 in the US declined by 2.7% between mid-March and the end of May 2006, while the European Euro-Stoxx 50 fell by as much as 5.1%. The Swiss Performance Index (SPI) had exceeded the gains recorded by the US stock market in the first quarter, and subsequently experienced a stronger downward correction (-3.5%). Large companies suffered most, with their stock falling by 4.2%. Until mid-May, the rise experienced by small and medium-sized companies was above average, but losses were also recorded by this market segment thereafter. Looking at the entire period from mid-March to the end of May 2006, share prices for small companies still managed a 1.2% increase, while those of medium-sized companies retreated to the level recorded in mid-March (graph 3.14). While the technology sector was most heavily affected (-8.7%), manufacturing shares gained 0.9% (graph 3.15). The stock market correction may possibly reflect worries about economic developments in the US as well as inflation concerns.

The movements depicted in graph 3.16 reflect the equity return volatility, which is a sign of uncertainty. On most stock markets, this became more pronounced in May. The Japanese stock market was an exception to the general rule since volatility was already high there at the beginning of the year. The Nikkei 225 has fallen by 4.0% since the beginning of 2006.

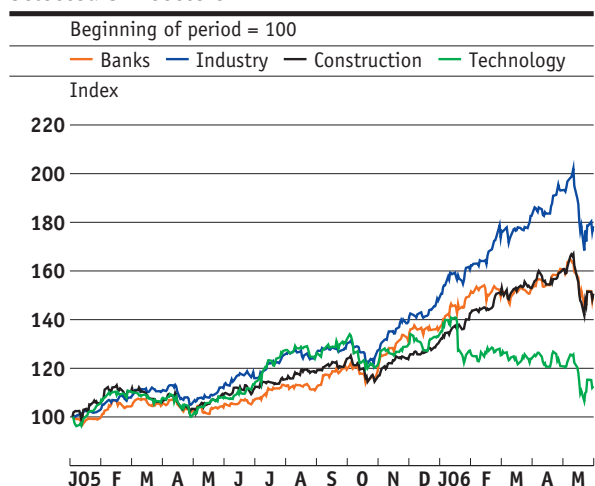
Graph 3.13  
Stock prices



Graph 3.14  
Performance of Swiss equities



Graph 3.15  
Selected SPI sectors



Graph 3.13:  
Sources: Thomson Datastream, Bloomberg

Graph 3.14:  
Source: SWX Swiss Exchange

Graph 3.15:  
Sources: Thomson Datastream

### Further increase in crude oil prices

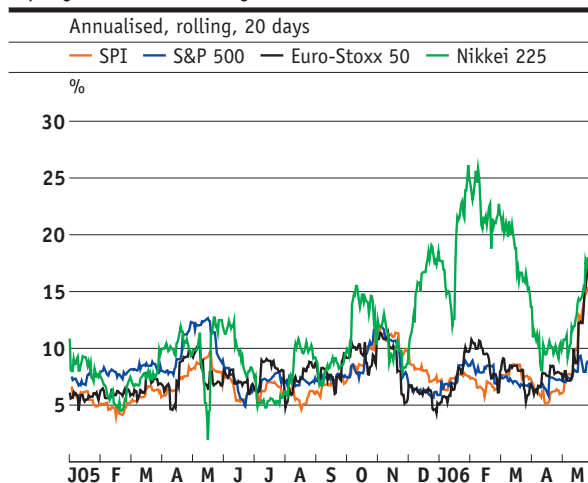
Crude oil prices have continued to climb since the last monetary policy assessment. The price has stood at some 70 dollars a barrel since mid-April. This may be due to concerns about the nuclear power dispute with Iran, or else to nationalisation of gas and oil reserves in Bolivia. Those affected by this latter development included leading companies in the energy sector.

In mid-May the upward trend in metal prices subsided considerably. For a few days, prices were extremely volatile and sharp declines were recorded. For instance, the price of copper, nickel and aluminium traded in London on 15 May 2006 dropped by 7%. These price movements may have been triggered by profit-taking, although it is also possible that they were attributable to a change in market expectations.

### Stable real estate market in Switzerland

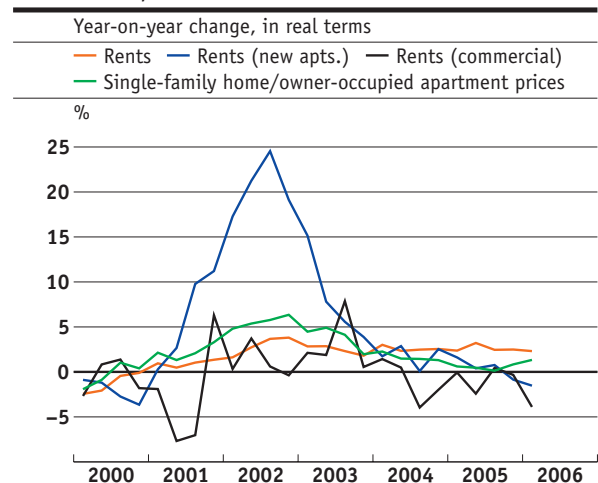
In the first quarter of 2006, real prices (i.e. as compared to the CPI) for single-family homes and owner-occupied apartments were 1.3% above the level of the year-before quarter. In the same period, residential rents rose by 2.3%. However, it should be noted that this measurement relates mainly to old apartments. Rents for new apartments fell (by 1.5%), as had been the case in the previous quarter, suggesting a reduction in the pressure on prices in the rented apartment sector. Rents for commercial buildings also declined for the second quarter in succession (-3.9%). Prices for single-family homes and owner-occupied apartments rose much less quickly than they had in the period from the beginning of 2002 to mid-2003, as did rents for new apartments. Current developments on the property market suggest that inflation expectations are moderate.

Graph 3.16  
Equity return volatility



Sources: Thomson Datastream, SNB

Graph 3.17  
Real estate prices and rents



Source: Wüest & Partner



## 3.4 Monetary aggregates

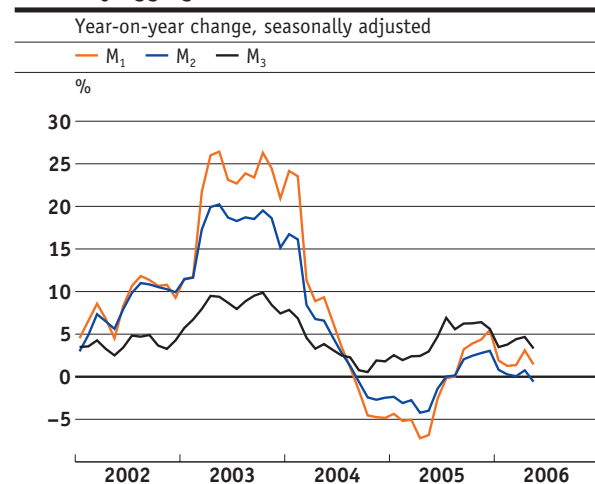
### Moderate growth in the supply of money

In May,  $M_1$  (note and coin circulation, sight deposits and transaction accounts) increased by 1.4% year-on-year, while  $M_3$  ( $M_1$  plus savings deposits and time deposits) was up by 3.3%. At -0.6%,  $M_2$  ( $M_1$  plus savings deposits) remained almost constant. This represented a continuation in April and May of the more moderate growth of the first quarter of 2006, following the strong expansion in money aggregates experienced in the second half of 2005. A surge in time deposits (23.3%) dominates movements in the  $M_3$  aggregate figures at present, and has done so since the beginning of 2006. By contrast, savings deposits contracted, as did time deposits, although to a lesser extent.

A way of assessing potential inflationary threats due to an excessive supply of liquidity to the economy is to calculate a money overhang. There are various ways of doing this. Here, the ECM approach is used (see "Box: Money supply growth and inflation", p.33, Monetary Policy Report 1/2005). An equilibrium money supply is calculated on the basis of the transaction volume in the economy and the opportunity costs of holding money. This serves as a benchmark for an appropriate supply of money to the economy. If the actual money supply exceeds this level, there is too much liquidity available and thus a danger of increased inflation

in the next four to six quarters. Graph 3.19 shows the percentage deviations of the  $M_3$  money stock from the calculated equilibrium value. In order to take account of statistical uncertainty, the money overhang is presented as a range that spans one standard deviation. For the next quarter, the zero line is located at roughly the central point between the upper money overhang and the lower money overhang. This suggests that there will be no monetary pressure on prices in the next few quarters.

Graph 3.18  
Monetary aggregates



Source: SNB

Monetary aggregates<sup>1</sup>

Table 3.1

	2004	2005	2005				2006			
			Q1	Q2	Q3	Q4	Q1	March	April	May
<b>Monetary base<sup>2</sup></b>	<b>41.7</b>	<b>41.9</b>	<b>42.1</b>	<b>41.6</b>	<b>41.2</b>	<b>42.7</b>	<b>43.3</b>	<b>43.3</b>	<b>42.7</b>	<b>43.9</b>
<i>Change<sup>3</sup></i>	3.2	0.4	-0.5	-0.2	0.3	2.0	3.0	4.2	2.3	5.6
<b><math>M_1</math><sup>2</sup></b>	<b>288.5</b>	<b>284.6</b>	<b>283.0</b>	<b>279.0</b>	<b>284.8</b>	<b>291.7</b>	<b>287.3</b>	<b>283.6</b>	<b>285.2</b>	<b>281.0</b>
<i>Change<sup>3</sup></i>	5.5	-1.3	-4.9	-5.6	1.0	4.5	1.5	1.3	3.2	1.4
<b><math>M_2</math><sup>2</sup></b>	<b>495.6</b>	<b>492.3</b>	<b>491.2</b>	<b>487.3</b>	<b>492.1</b>	<b>498.7</b>	<b>493.1</b>	<b>488.0</b>	<b>488.8</b>	<b>482.9</b>
<i>Change<sup>3</sup></i>	4.3	-0.7	-2.8	-3.2	0.8	2.7	0.4	-0.0	0.8	-0.6
<b><math>M_3</math><sup>2</sup></b>	<b>562.5</b>	<b>587.8</b>	<b>576.6</b>	<b>582.4</b>	<b>593.0</b>	<b>599.1</b>	<b>599.0</b>	<b>599.9</b>	<b>605.1</b>	<b>600.3</b>
<i>Change<sup>3</sup></i>	3.2	4.5	2.3	3.3	6.3	6.1	3.9	4.4	4.6	3.3

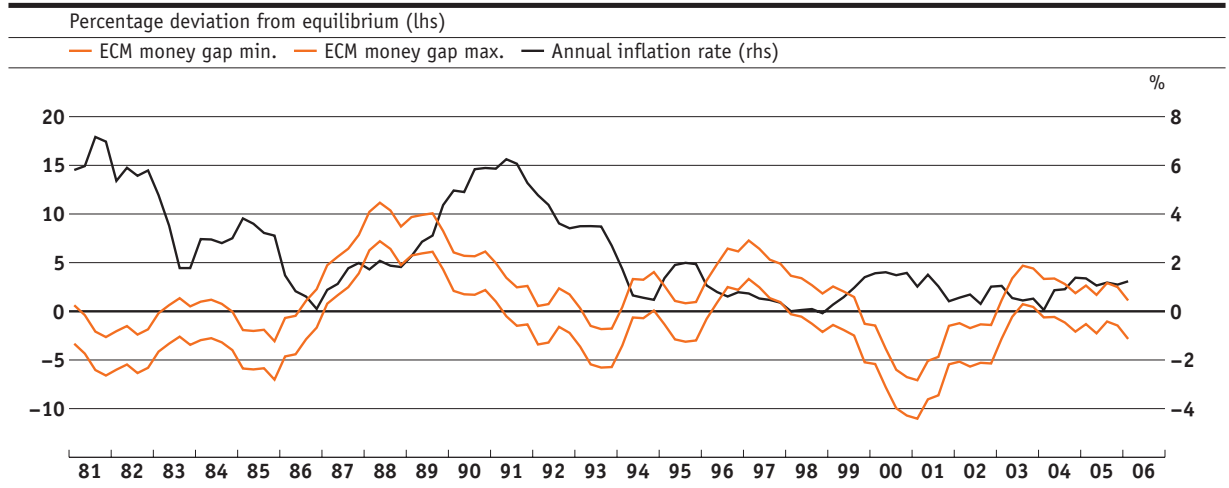
1 1995 definition

2 Level in CHF billions

3 Year-on-year change in percent

Source: SNB

Graph 3.19  
 Money gap and annual inflation rate



Source: SNB

## 3.5 Loans

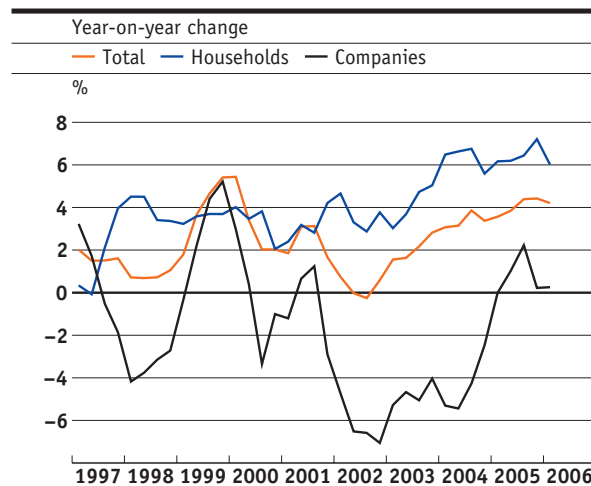
### Growth in lending slows a little

In the first quarter of 2006, bank loans rose a little less strongly, at 4.2%, than they had in the fourth quarter of 2005 (4.4%). This development paralleled the movement in money aggregates. Graph 3.20 shows that the reduction in the growth of bank loans was attributable to slower growth in loans to households, which expanded by 6.0% in the first quarter of 2006, as compared to 7.2% in the previous quarter. Corporate loans remained almost unchanged.

The slowdown in the rate of growth of loans to households was attributable to changes in mortgage lending, which accounts for more than 80% of all bank loans. In the first quarter of 2006, mortgage lending as a whole expanded by 5.0%, slightly below the 5.4% increase recorded in the previous quarter. Mortgage lending slowed for both households and companies. The rate of growth in mortgage claims against households declined to 5.7% (6.9% at the end of 2005), while the growth rate for mortgage claims against companies was down from 2.8% to 1.8%.

Other loans, which account for just 18% of all loans, rose moderately, by 0.8%. This was the third such increase in succession. Once again, this growth was attributable to an increase in secured loans, which rose by 3.6% in the first quarter, while unsecured loans contracted further (by 1.4% in Q1).

Graph 3.20  
Bank loans



Source: SNB

### Bank loans

Year-on-year change in percent

Table 3.2

	2004	2005	2005				2006	2006		
			Q1	Q2	Q3	Q4	Q1	February	March	April
<b>Total</b>	<b>3.4</b>	<b>4.1</b>	<b>3.6</b>	<b>3.8</b>	<b>4.4</b>	<b>4.4</b>	<b>4.2</b>	<b>4.1</b>	<b>4.2</b>	<b>4.8</b>
Households	6.4	6.5	6.2	6.2	6.4	7.2	6.0	5.2	6.7	6.6
Companies	-4.4	0.9	-0.0	1.0	2.2	0.2	0.2	1.3	-0.8	1.0
Mortgage claims	5.4	5.2	5.1	5.1	5.3	5.4	5.0	5.0	5.0	4.9
of which households	6.4	6.9	6.9	6.8	6.9	6.9	5.7	5.5	5.7	5.6
of which companies	-1.7	3.1	2.8	3.1	3.9	2.8	1.8	2.1	1.6	1.5
Other loans	-4.2	-0.7	-2.5	-1.1	0.5	0.3	0.8	0.1	1.1	4.5
of which secured	3.0	2.6	3.2	-0.4	3.5	4.0	3.6	2.8	4.5	5.6
of which unsecured	-8.8	-3.1	-6.4	-1.6	-1.8	-2.4	-1.4	-2.0	-1.4	3.7

Source: SNB

## 4 Inflation forecast of the SNB

Monetary policy impacts on production and prices with a considerable time lag. In Switzerland, monetary policy stimuli have their maximum effect on inflation after a period of approximately three years. For this reason, the SNB's monetary policy is guided not by current inflation, but by the inflation rate to be expected in two to three years if monetary policy were to remain unchanged. The inflation forecast is one of the three key elements of the SNB's monetary policy concept, together with its definition of price stability and the target corridor for the three-month Libor.

### 4.1 Assumptions for global economic developments

The SNB's inflation forecasts are embedded in an international economic scenario. This represents what the SNB considers to be the most likely development over the next three years. Table 4.1 contains the main exogenous assumptions and the corresponding assumptions underlying the March forecast.

#### **Assumption of further acceleration in global economy**

The global economy remains in good shape. Only the short-term assumptions for the global economic outlook were adjusted slightly. According to the revised GDP figures, growth in Europe weakened more dramatically in the fourth quarter of 2005 than anticipated. The decline in GDP in Europe and in the US is being attributed to special effects, however. In the first quarter of 2006, economic growth picked up substantially in both economic regions. Growth is still anticipated to be robust in the medium term, trending towards the potential growth rate of approximately 3% (US) and 2% (EU15) until the end of the forecasting period. The oil price assumptions were revised upwards and foreign prices were adjusted accordingly. The USD/EUR exchange rate is expected to be 1.23, almost exactly in line with the March forecast.

#### **Assumptions for inflation forecasts**

Table 4.1

	2006	2007	2008
<b>Inflation forecast of June 2006</b>			
GDP US <sup>1</sup>	3.5	3.3	3.2
GDP EU15 <sup>1</sup>	2.3	2.2	2.2
Exchange rate USD/EUR <sup>2</sup>	1.22	1.23	1.23
Oil price in USD/barrel <sup>2</sup>	68.5	71.0	71.0
<b>Inflation forecast of March 2006</b>			
GDP US <sup>1</sup>	3.3	3.6	3.4
GDP EU15 <sup>1</sup>	2.3	2.3	2.2
Exchange rate USD/EUR <sup>2</sup>	1.21	1.21	1.21
Oil price in USD/barrel <sup>2</sup>	63.0	63.0	63.0

1 Change in percent

2 Level

## Box: Inflation forecasting as part of the monetary policy concept

The Swiss National Bank (SNB) has the statutory mandate to ensure price stability while at the same time taking due account of economic developments.

The SNB has specified the way in which it exercises this mandate in a three-part monetary policy concept. First, it regards prices as stable when the national consumer price index (CPI) rises by less than 2% per annum. This allows it to take account of the fact that the CPI slightly overstates actual inflation. At the same time, it allows inflation to fluctuate somewhat with the economic cycle. Second, the

SNB summarises its assessment of the situation and of the need for monetary policy action in a quarterly inflation forecast. This forecast, which is based on the assumption of a constant short-term interest rate, shows the CPI development expected by the SNB over the next three years. Third, the SNB sets its operational goal in the form of a target range for the three-month Swiss franc Libor rate. The target range provides the SNB with a certain amount of leeway, enabling it to react to unexpected developments in the money and foreign exchange markets without having to change its basic monetary policy course.

## 4.2 Inflation forecast Q2 2006 to Q1 2009

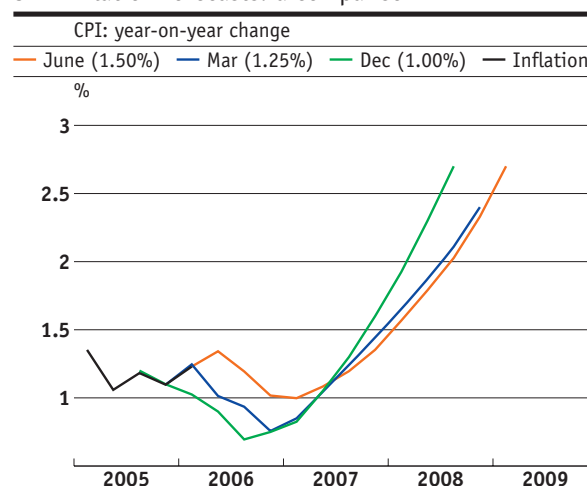
The inflation forecast is derived from the analysis of different indicators, model estimates and the assessment of any special factors. Graph 4.1 depicts the inflation forecast of June 2006 alongside those of March and December 2005. The new forecast, which extends from the second quarter of 2006 to the first quarter of 2009, is based on a steady three-month Libor of 1.50%, i.e. the midpoint in the 1.0–2.0% target range for the three-month rate which the SNB lifted by 25 basis points on 15 June. The March and December forecasts were based on a three-month Libor of 1.25% and 1.0% respectively.

As a result of the sharp increase in the oil price in the first few months of the current year, inflation is expected to average 1.2% in 2006. This is somewhat higher than back in March (1.0%). In line with the assumption on the future development of the oil price (cf. section 4.1), the SNB expects that the oil components included in the consumer price index will continue to make a significant contribution to inflation in the months ahead. Inflation will remain moderate, however. Annual inflation is expected to amount to 1.3% in the second quarter and will probably retreat to 1% by the end of 2006.

The economy continues to develop favourably. The macroeconomic output gap almost closed in the first half of the year. But by further tightening monetary policy in June, the SNB has headed off an overutilisation of production capacity, thereby minimising the risk of price stability in the medium term. Monetary aggregates have developed smoothly.  $M_1$  and  $M_2$  remained below the high level recorded at the end of 2003, while  $M_3$  was approximately on a par with the figure reached in November 2005. Since demand for liquidity will go up as a result of solid economic growth, any money overhang that might have been created in 2003 will probably continue to shrink. In spite of the interest rate hikes of December 2005 and March 2006, mortgages are continuing to grow at a rate of roughly 5%. The ratio of mortgage loans to GDP topped the 1999 peak by more than 6 percentage points in the first quarter. However, higher interest rates are likely to have a dampening effect on growth in lending in the course of time.

The inflation rate forecast for 2007 and 2008 remained virtually unchanged as compared with the March assessment. This is because the expected increase in the utilisation rate and the dampening effects of the interest rate increase balance each other out. As the forecast shows, there is no immediate inflation risk. Based on an unchanged three-month Libor of 1.50%, inflation in 2007 is projected to reach 1.2% on average. At an interest rate of 1.5%, however, inflationary pressure is building up gradually so that, at the beginning of 2008, inflation threatens to exceed the 2% mark which is still consistent with price stability. If the economy continues to recover as expected, the SNB will further pursue the gradual adjustment of its monetary policy.

Graph 4.1  
SNB inflation forecasts: a comparison





# The economic situation from the vantage point of the delegates for regional economic relations

Summary report to the attention of the Governing Board of the Swiss National Bank for its quarterly assessment of June 2006

The Swiss National Bank's delegates for regional economic relations are constantly in touch with a large number of enterprises from the different industries and economic sectors. Their reports, which contain the evaluations of these companies, are an important additional source of information for assessing the economic situation. In the following, the most important results of the talks held from March to May on the current and future economic situation are summarised.



## Summary

The talks held by the SNB delegates for regional economic relations with around 160 representatives from various economic sectors and industries yielded a largely positive picture of the economy for the period from March to May 2006. Following the good start to the new year, the representatives of almost all industries were very satisfied with the business trend to date. The retail trade was again the least optimistic sector, but even here some improvement in consumer sentiment was felt.

Given the buoyant corporate earnings – and, in some places, very high level of capacity utilisation – businesses were reporting a greater willingness both to invest and to hire staff. The survey participants were decidedly optimistic about the future. Turnover targets for 2006 seem likely to be met, and in some cases budget targets were being beaten. Two issues that were frequently mentioned were the shortage of skilled labour and the general uptrend in energy and raw materials prices.

# 1 Production

## **Manufacturing**

The manufacturing sector witnessed very strong order intake, and the substantial backlog of orders will ensure that capacity is fully utilised for the foreseeable future. Once again, the good business performance was underpinned by high demand from Asia, Latin America, Eastern Europe (including Russia) and the US. The trend in business with EU countries, especially Germany, has also recently started giving greater cause for optimism. In order to cope with the large volume of orders, companies took advantage of the flexibility offered by annual working time. In some cases, extra shifts were introduced, while other businesses outsourced certain activities. Despite these measures, delivery times became longer in many cases.

The upturn extended to almost all manufacturing industries by now. The various segments of the chemical industry as well as medical technology and the metal and watchmaking industries continued to record excellent business activity. Mechanical, systems and electrical engineering as well as energy utilities derived particular benefit from the firmer investment climate both at home and abroad, as did machine-tool manufacturers – though in a more subdued fashion so far. Representatives of the food and cosmetics industries and other consumer-related industries also reported a pick-up in trading conditions.

## **Services**

The slight upturn in retail business – already apparent in the preceding months – continued in the period under review. Many contacts, including major retailers, mentioned the general improvement in sentiment; smaller specialist retailers benefited not least from freer spending by foreign tourists. However, all segments stressed that customers are still very price conscious. The general view seems to be that the retail sector's current problems are largely of a structural nature, reflecting the process of adjustment to fiercer foreign competition.

The talks with representatives of holiday resorts yielded a mixed picture. Assessments of the winter season and Easter business ranged from

barely satisfactory to excellent, though in the luxury segment this period was universally rated as very satisfactory. While spending per visitor was generally up, bookings in particular exhibited marked regional variations. Most survey participants were, however, optimistic about prospects for the summer season. In the towns, the hospitality trade benefited from numerous conferences and trade fairs as well as from the rising popularity of city breaks.

The economic upturn also made itself felt in the area of company and consumer-related services. While transport and logistics companies (including air transport and air freight in particular) had been reporting improved conditions for quite some time already, other sectors – including business and Human Resources consultants and auditors – now also adopted a more upbeat stance. The number of mandates rose, and client sentiment was markedly brighter. IT service providers, too, said that, in the light of their clients' increased spending on hardware and software, they were satisfied, although they did mention strong competitive pressure in their line of business.

The survey participants from the banking industry reported a consistently good level of business activity. Despite pressure on margins, mortgage business flourished, while corporate lending appeared to be gradually gaining ground. Not only did demand for corporate loans increase slightly, but with the improvement in their clients' earnings situation, banks were less reluctant to lend. Leasing business performed very well. Up to April, commission business was excellent, too, but the subsequent slump on the equity markets dampened confidence somewhat.

## **Construction**

According to the companies surveyed, construction activity is vigorous, and there were no signs of a slowdown. The construction boom continued to be driven by residential construction, though some industry representatives also mentioned a revival in commercial and public-sector construction. Furthermore, construction-related trades and the numerous manufacturing suppliers benefited from the strength of demand for building work.

## 2 Labour market

Staff hiring was on the rise again by and large, though the trend was generally cautious and gradual. In some cases, vacancies were still being filled by temporary manpower. Many companies mentioned a marked shortage of labour and saw this as limiting their growth potential. Internal training and apprenticeships therefore assumed greater importance at some companies. The Swiss labour market is currently suffering from a dearth of technicians and construction specialists in particular. To an increasing extent, bank staff and qualified sales personnel are also in short supply. In some cases, staff can be recruited from the border regions of neighbouring countries. Companies that operate on a shift basis are almost entirely reliant on foreign labour.

## 3 Prices, margins and earnings situation

Thanks to the buoyant economy, corporate profitability has generally improved. This was also true for small and medium-sized enterprises. The representatives of the construction industry were still dissatisfied with their earnings situation, though even here it appears to have improved over the last few quarters.

One frequent topic of conversation was the steep increase in prices for energy, fuels and raw materials, especially metals and plastics. The ability to pass the higher costs on to customers varied from industry to industry. In most cases, however, companies were having little success in passing the cost increases on in full since their customers are very cost-conscious. This was especially true of suppliers operating on the European market, who continued to face strong price pressure. Companies were still generally holding back on price hikes, trying instead to maintain their margins primarily through productivity increases. More mention was made this quarter of the exchange rate situation: The weakening of the US dollar, in particular, was viewed with concern.

# Opening speech by the President of the Bank Council at the General Meeting of Shareholders of the Swiss National Bank

Hansueli Raggenbass  
Berne, 28 April 2006

Dear shareholders, dear guests,  
ladies and gentlemen

I will begin my address today with a look at the 2005 financial statements, before moving on to say a few words about the operating costs of the Swiss National Bank.

Please allow me now to make a few remarks on the financial statements for 2005.

## 2005 Financial Report

### Introduction

At CHF 12.8 billion, the annual result for 2005 was unusually high. This was mainly due to valuation gains on gold and on assets denominated in US dollars. However, the impressive result in no way reflects the long-term earnings potential of the Swiss National Bank.

### Gross income

Last year, the SNB's gross income was CHF 13.1 billion. Of this, valuation gains on gold alone – whose price rose by more than one-third during the course of the year – accounted for CHF 7.4 billion.

Almost half of SNB assets are invested in foreign currencies, and consist essentially of fixed-interest securities. Since the beginning of 2005, the National Bank has also placed a small amount of assets in foreign shares, in the interests of greater diversification and a better risk/return profile.

Earnings from foreign currency investments totalled CHF 5.3 billion, just under half of which came from exchange rate gains. A 17% appreciation in the US dollar contributed the largest share, although the other investment currencies also generated exchange rate gains. Some CHF 2.1 billion was attributable to interest and capital gains. The equity portfolio built up in 2005 performed well. Investments in foreign shares are managed passively by replicating broad-based indices. At the end of the year, this category accounted for 10% of for-

ign currency investments. Because of the good performance of stock markets, it generated total income of CHF 0.7 billion.

Total income earned on Swiss franc assets amounted to CHF 0.3 billion, which was comparable to the previous year's figure. While earnings on Swiss franc securities declined, higher interest rates in the money market boosted revenues from repo transactions.

### Earnings down after exclusion of valuation gains

Once again, last year's results demonstrated the strong dependence of the SNB's financial results on fluctuations in exchange rates and the price of gold. Of an overall result amounting to CHF 12.8 billion, CHF 9.9 billion was attributable to changes in valuation (CHF 7.4 billion for gold and CHF 2.5 billion for exchange rates). In the longer term, however, it is not these extreme fluctuations in valuation gains and losses that are the determinants of earnings potential. What is important is the level of those assets that can generate earnings, plus current earnings on these assets. Looking back at the results of the past years we note that, if we exclude income from valuation changes, the earnings trend has been downwards. There are two reasons for this. First, the drop in interest rates has resulted in lower current earnings. Second, the stock of interest-bearing investments has fallen because of the distribution of the proceeds from gold sales and the reduction in the distribution reserve. The figures for the last few business years make this clear. In the past five years, current investment income has fallen from over CHF 3 billion to CHF 2.4 billion in 2005.

All in all, we note that unusually high book profits were recorded in the 2005 business year, resulting in an inflated annual result. This was attributable in particular to a surge in the gold price and the appreciation of the US dollar. If these two factors are excluded, we see that income figures were anything but spectacular and that the average return on assets was in line with the long-term expectations of a 2–3% return.

### **Profit distribution to Confederation, cantons and shareholders unchanged**

Following the statutory allocation to provisions for currency reserves, distributable profit amounted to CHF 12.0 billion. According to the agreement between the Swiss Federal Department of Finance and the SNB, CHF 2.5 billion is to be distributed to the Confederation and cantons for the 2005 business year. The shareholders will receive the customary 6% of profit, which is the statutory maximum.

The remaining CHF 9.5 billion will be allocated to the distribution reserve. This will make it possible to smooth out earnings fluctuations and secure a steady flow of distributed profits. Just as 2005 saw an unusually favourable result, substantial losses could be recorded in future years due to the volatility of earnings. I would like to take this opportunity of reminding you that a total of CHF 6.4 billion had to be withdrawn from the distribution reserve in the previous four years in order to carry out the agreed distribution of profit.

Based on the current position, the SNB estimates its long-term distribution potential at about CHF 1 billion. The annual distribution of CHF 2.5 billion which has been agreed for the medium-term is considerably higher than this figure. Consequently, the distribution reserve is likely to shrink over the course of the next few years, in line with the SNB's intentions.

## **Operating costs at the SNB**

I will now make a few remarks on the SNB's operating costs.

### **Background**

The National Bank has its own public mandate, and this distinguishes it from private companies or the public administration in a number of respects. As the "banker's bank", it has a monopoly position and is not, in principle, subject to the laws of the market. The SNB's core mandate is to conduct monetary policy, and this shapes its operating procedures and activities. Moreover, the SNB's note-issuing monopoly and its key position in the system of cashless payment transactions necessitate a high level of security. This places particular demands on operational management, with the need for continual consideration of the competing claims of cost-efficiency and fulfilment of the bank's mandate. Nevertheless, in the past few years SNB management has directed increased attention to the goal of improved cost-management.

Consequently, three years ago, the Governing Board decided to introduce an integrated planning and budgeting process which links the strategic elements based on the statutory mandate, on the one hand, to project and staff planning as well as budgeting, on the other. Detailed annual budgets ensure transparency and promote the responsible use of resources at all levels of management.

### **Operating expenses in 2005**

The SNB attaches great importance to keeping a check on its operating expenses. Consequently, the ordinary part of operating expenses experienced only moderate growth last year. The constant efforts to keep costs under control have had a beneficial effect. Operating expenses in 2005 totalled CHF 272 million, or CHF 59 million above the previous year's figure. This is due to two special factors.

The first factor was the posting of an impairment loss on real estate (unscheduled depreciation) of some CHF 49 million. An external estimate of the recoverable value of SNB real estate conducted last year revealed that the comprehensive renovation measures of the past few years are only partially reflected in the market value of the properties. Consequently, a large part of the investment in security technology required by the SNB is not covered by the current market value. Moreover, some of the National Bank properties are historical buildings, and this makes renewal and renovation work more expensive. The regulations on financial reporting specify that an appropriate write-down should be made.

Second, operating expenses were also strongly affected by expenditure on planned restructuring measures in the cash area. These measures represent the SNB's reaction to changed market conditions in the supply and distribution of cash. The most important business partners for cash transaction activities are increasingly shifting transport, storage and processing of bank notes and coins to third parties. For this reason, the Lugano branch is to be closed at the end of 2006. The associated financial arrangements contributed an additional amount of approximately CHF 5 million to personnel expenses in 2005.

If these factors are excluded, the increase in total operating expenses amounted to only about 2%.

#### **Operating expenses over the past five years**

In the past five years, operating expenses at the SNB have risen by about 15% in nominal terms. At first glance, this might not appear particularly restrained. A closer look, however, reveals that these increases were due essentially to higher depreciation and developments in personnel expenses.

The higher figure for depreciation is in part attributable to the growing use of information technology in everyday SNB operations. In order to fulfil its mandate, the bank requires information systems of increasing complexity, and the automation of operating processes is taking on greater importance.

Personnel costs have also contributed to the mounting operating expenses over the past five years. This is due, in the first place, to the payment of appropriate salaries that maintain the SNB's position as an attractive employer. The second reason is an increasing shift in emphasis from activities focusing more on operations and implementation to fields of work that are geared to research and knowledge-based activities. As a result, the bank is employing better qualified staff with higher salaries. While 25 years ago, only one in eight employees were university graduates, the current level is almost one in three.

#### **International comparison**

A comparison of the SNB's operating costs with those of other central banks reflects well on the Swiss institution. Although it is still hard to find official statistics with reliable figures, more attention is now being paid to the cost efficiency of central banks. Personnel constitute the bulk of costs faced by most of these banks, as confirmed in a study of operating expenses at European central banks which was published recently by Central Banking magazine. At the banks investigated for the study, personnel expenses accounted for an average 60% of total operating expenses. Despite the diversity of functions performed by the different central banks, cost comparisons are often based on key figures relating to personnel. A standard comparison is to express the number of employees as a proportion of the total population of the individual countries. With the aid of this key figure, rough comparisons can be made between institu-

tions and it is also possible to trace changes over time at an individual bank.

Based on population statistics, an internal evaluation of annual reports published by European central banks for the year 2004 showed that the Swiss National Bank has one of the lowest levels of staff of all central banks in Europe. At about 83 employees per million inhabitants, the Swiss National Bank is considerably below the average of some 155 for all of the institutions investigated. However, these figures should be treated with care since the individual institutions have varying functions as well as very differing structures.

Over time too, the SNB's figures have remained steady. The relevant figure was already 84 employees per million inhabitants in 1990. Thus, in relative terms, the number of SNB employees is unchanged. Although caution should be exercised in interpreting these figures, they still show that the SNB's operating resources are not unreasonably high, and – as compared to other central banks – are perfectly justifiable. Even without such international comparisons, the SNB will continue to use the resources at its disposal both sensibly and carefully.

## Concluding remarks

To conclude, I would like to express my sincere thanks to the Governing Board and the staff of the Swiss National Bank for their competent and dedicated service to our institution.





# Speech by the Chairman of the Governing Board at the General Meeting of Shareholders of the Swiss National Bank

Jean-Pierre Roth  
Berne, 28 April 2006

Dear shareholders, dear guests

### **Faltering economic activity in 2005**

As we now know from the revised figures for the Swiss national accounts, 2005 was better than anticipated. An economic slow-down became apparent from autumn 2004, but the lost ground was more than regained in 2005 thanks to the strength of our exports.

The temporary lull in the economy had resulted mainly from uncertainties following the rise in energy prices. These concerns were further augmented by the fact that part of US refinery production was out of service in autumn. From January to August, the price of crude oil surged by 50% to reach a peak level of some USD 65, before a partial correction set in. As a result, business and consumer confidence was shaken. Demand for capital goods softened while at the same time the growth in consumer demand was slow. Not until the second half of 2005 did unmistakable buoyancy in economic activity become apparent.

The indecisiveness in the economy did not affect all parts of the global economy equally. The United States remained the driving force in the industrialised world, with growth rates maintained close to potential and above the OECD average. The emerging Asian economies again provided a particularly vigorous growth hub, and the rise in manufacturing production in China stimulated international trade. Consequently, all of Asia – and especially Japan – benefited from the strength of the Chinese economy. The European economy, meanwhile, lacked vigour in the first part of the year. This was due, in particular, to chronic weakness in domestic demand. In early 2005, Germany, France and Italy even experienced a situation of near-stagnation. Although the economic climate recovered subsequently, this improvement was often hesitant.

To a large extent, the Swiss economy escaped the European lethargy due to its relatively diversified export markets. Our foreign trade sagged in the first quarter of 2005 but returned to a strongly expansionary course thereafter. Consumption was relatively firm even if the rate of growth remained extremely modest. Investments failed to show the strength exhibited in 2004 because of the hesitations about the soundness of the recovery. Even construction had a difficult start to the year because of the adverse weather conditions – despite the strong support provided by low interest rates. Although

this industry subsequently rallied, it was unable to recover the strength it had enjoyed in 2004.

For the year as a whole, the Swiss economy grew 1.9%, which was slightly below the figure reached in 2004.

In the uncertain economic environment that prevailed in 2005, the Swiss National Bank did not continue with the normalisation of interest rates which it had embarked on in spring 2004. Not until the end of the year, when the indications of economic recovery had been clearly confirmed, did we decide to resume the gradual normalisation of interest rates. In December 2005 and March 2006, we increased the target range for the three-month Libor by 25 basis points on each occasion. This rate now stands at 1.25%, which is comparable to the current rate of increase in prices. In other words, it remains extremely attractive, given the healthy state of the economy.

### **2005: another year of price stability**

Despite the increase in oil product prices, 2005 was again a year of price stability. Indeed, it was the twelfth in succession, since the annual rise in consumer prices in Switzerland has remained below 2% since 1994. Consequently, the SNB has fulfilled its mandate.

The low knock-on effects of the rise in energy prices surprised many observers. In this respect, the current situation is very different from that experienced at the time of the oil shocks in the 1970s. This is because the Swiss economy is more exposed to competition than in the past and there are major under-utilised productive resources around the world. Nevertheless, this favourable constellation should not cause us to relax our vigilance with respect to inflationary phenomena.

### **Favourable outlook for 2006**

The prospects for the Swiss economy in 2006 are good, although the most recent rise in oil prices constitutes a new source of uncertainty. The world economy continues to grow and the US economy remains robust despite the interest rate hikes by the Fed and the slight softening in the property market that ensued. The Asian economies are deriving increasing benefits from China's vitality. An economic upturn is also visible in Europe, especially in Germany, even though it is still moderate. In addition, the fact that world growth is generating more demand for investment goods is creating a particularly favourable situation for our exports.

We may expect a positive spin-off from this good foreign trade performance for all areas of the Swiss economy – in production as in employment. To date, the rise in sales abroad has been handled through substantial gains in productivity, but we may hope that this will now be followed by a resumption of investment in equipment, along with increased recruitment. Consequently, the overall economic climate in Switzerland is likely to continue improving over the next few months, thereby supporting consumption. We project growth of slightly over 2% for the year as a whole.

This return to growth does not constitute a threat to price stability. Our forecasts indicate that average inflation for this year is likely to be about 1%, and the outlook remains just as favourable for 2007. Compared with other countries, Switzerland will continue to enjoy a privileged position in this respect.

What may we expect from monetary policy? The inflation forecast we published in March clearly indicates that the current interest rate level is incompatible with long-term price stability. Consequently, we will continue to implement the strategy of monetary normalisation pursued since June 2004. We will be doing so in the conviction that a preventive approach is much less painful for our economy than belated corrective measures.

While the resumption of growth is heartening, we should not rest on our laurels since the expected figures are still lower than those needed to cope with the increasing financial requirements of our aging population. Much still needs to be done to raise potential growth in our economy. The proposals on liberalisation of the domestic market that have been put to the Federal Parliament by the Federal Council are a step in the right direction. Additional reforms should be planned, with the objective of stimulating internal competition and reducing the level of market regulation. It is certainly worrying to see our country's frequent low ranking in terms of the indicators that measure market liberalisation. The vitality of countries that have created more room for private initiative should serve as an inspiration to us. Given the healthy state of our economy, the timing is excellent for pursuing a programme of economic reform. We would be making a grave mistake if we declared ourselves content with the results we have already achieved. By ensuring price stability, the SNB, for its part, creates an environment that favours both general economic expansion and structural adjustment.

### **Stable financial markets**

2005 was a year of great uncertainties, with the surge in oil prices, disruptions to refining capacity in the United States, and geopolitical tensions. What is more, the world economy is still characterised by profound imbalances, such as the deficit in US external accounts and the lack of flexibility in the Chinese monetary system. Turning now to monetary policy, there were often considerable disparities in 2005, for instance, the progressive hikes in the rate of interest in the United States at a time when monetary policy in Europe was characterised by a waiting-game approach.

Despite these potentially destabilising factors, financial markets remained relatively calm. In currency markets, the dollar picked up in the wake of tighter US monetary policy, while the yen moved only slightly against the Swiss franc. The exchange rate of the euro against the Swiss franc fluctuated within a narrow range, thereby reflecting the strong convergence of fundamentals in Switzerland and the euro area. Over the past few months, the Swiss franc has even trended downward – a decline that is hard to explain given the low rate of Swiss inflation as compared to the rest of Europe. If this trend were to accelerate and give rise to an excessive relaxation in monetary conditions with respect to economic developments, a normalisation of interest rates would become even more essential.

Generally speaking, the capacity of financial markets to absorb shocks and to cope with imbalances is one result of globalisation and the progress in financial intermediation. In addition to stimulating goods markets, globalisation has also enlarged and deepened financial markets, and is doing so to a growing extent. Freedom of movement of capital is now the rule between industrialised countries and is also becoming more widespread in emerging countries. This makes it easier for the deficits of one group of countries to be financed by the surpluses of the others.

In itself, the greater efficiency of financial markets is an additional factor contributing to growth, and is therefore a good thing. However, it is still possible that the continued indebtedness of some countries (due to the substantial disparity in national savings efforts) could dangerously weaken financial markets in the event of a crisis of confidence.

The stability of global financial markets last year was a positive factor for our country, with its manifold connections to the global economy and

a currency that has often suffered from external monetary turbulence. However, this high level of market stability should not be regarded as permanent. There are still major underlying risks and there is no justification for diminishing our vigilance as regards possible market instability. Meanwhile, companies need to remain cautious about exchange rate risks, despite the fact that the volatility of the Swiss franc has been low over the past few years. For its part, the SNB is aware of the vulnerability of financial markets and takes particular care to ensure that its monetary policy is properly understood by economic agents. We command a high level of credibility because of the attention we pay to communicating our decisions and the monetary stability results achieved in our country. This makes our interest rate policies very effective.

### **The SNB in the centre of political debate**

Nowadays, credibility is even more important because of the fact that financial markets are extensive and closely linked. In the past, central banks were able to demonstrate their regulatory power by intervening in markets to influence rates and prices, particularly exchange rates. These days, they face global markets where the relative paucity of their means requires them to use tact rather than force to achieve their objectives. To this end, they depend upon their credibility. This smoothes out price volatility and makes it possible for monetary decisions to impact fully on market expectations.

In other words, credibility is a precious monetary policy asset. We need to devote all our efforts to maintaining it. The SNB cannot merely rely on the good results it has achieved in the past. It must be able to convince markets of its determination to deploy all the means at its disposal to maintain monetary stability in the country, now and in the future.

Nowadays it is generally recognised that a central bank is only credible if it can deploy its resources without having to obtain prior authorisation from the government, and without the risk of being penalised by the state authorities. This is why it is essential that a central bank be independent. In Switzerland, the independence of the National Bank is guaranteed under article 99 of the Federal Constitution and article 6 of the National Bank Act. This legal framework is sufficient.

However, credibility is not merely a matter of legal independence. It also depends on the political

environment within which a central bank operates, since markets are concerned about more than just the formal autonomy of the monetary authorities. They also pay attention to the degree of political acceptance of central bank decisions. If monetary affairs are subject to permanent political debate, this can become a hindrance to credibility.

Recognising that monetary matters should be conducted in a relatively calm setting does not mean that the policies adopted by the central bank should escape all democratic controls. Nowadays this form of control is tighter than ever before. Indeed, most monetary regimes now require that the central bank report to the legislative authorities on the execution of its mandate. This is also the case in Switzerland, since article 7 of the National Bank Act requires that we present a report on the fulfilment of our tasks to the Federal Assembly each year.

Despite these measures, National Bank affairs are often the focus of animated political debate. Paradoxically, these debates do not relate to monetary policy in the narrow sense of the word, but rather to other aspects of a more operational nature – such as the level of the monetary reserves or the distribution of the profits.

Allow me to give you an example. Following recent deliberations by the National Council's Control Committee, information was published to the effect that an additional part of the SNB's gold stocks might be liquidated to fund another extraordinary distribution of profits amounting to some CHF 10 billion. This created the totally mistaken impression that the National Bank was oversupplied with monetary reserves.

Now that half our gold stocks have been sold and the proceeds distributed to the Confederation and the cantons, the SNB holds an appropriate level of monetary reserves in the form of gold and foreign exchange for the conduct of monetary policy. Bearing in mind the economic importance of our country, however, our level of currency reserves does not place us in a leading position amongst the group of the best endowed countries. Far from it, in fact. In 1950, our reserves amounted to 30% of GDP. This percentage has now fallen to 12.5%, situating us in a respectable middle position on the international scale – along with the Scandinavian countries. If we bear in mind that, unlike these nations, Switzerland is also an important international banking centre, we cannot reasonably conclude that our current monetary reserves are excessive.

What is more, the law is perfectly clear on who has the final word in this matter. It is the Bank Council – not parliamentary committees – that is authorised to assess the SNB's reserves policy, including any augmentation or depletion of the bank's monetary reserves. The reserves policy adopted by the Bank Council bears the hallmark of common sense, aiming for a gradual rise in the level of monetary reserves so that the relationship of reserves to GDP does not deteriorate over time. This approach is consistent with the fact that, at present, we only have a moderate level of reserves.

Those who believe that the SNB has surplus monetary reserves overlook the fact that Switzerland's central bank constitutes a form of insurance with respect to the monetary stability of the country. Like all kinds of insurance, the National Bank – faced as it is with expanding markets and increasing risks – must be able to rely on its reserves growing in tandem with the economy. If they did not do so, its ability to operate on the markets would be weakened. In this respect, it is the country's long-term interests that must not be lost sight of.

The debate on the Cosa initiative (under which SNB profits would be used for the AHV/AVS, the Swiss old age and survivors' insurance scheme) is another example of a political move that could lead to a weakening in our monetary credibility. This initiative would hinder us in fulfilling our mandate, and last year I had the opportunity of explaining to you in detail why this is so. Allow me to briefly reiterate these reasons.

First of all, by creating a direct relationship between our profits and the funding of an important element in our system of social security, the initiative would establish a dangerous link, since it would certainly place the SNB under constant pressure to distribute more profits in the future. Higher profit distribution would only be possible if we took bigger investment risks or if we reduced our monetary reserves. Markets would start to ask themselves whether the SNB's goal was to ensure the monetary stability of the country or to generate profits. As I pointed out before, there is a risk that constant debate on this topic could sap market perception of our independence. This would damage our credibility and hamper our monetary policy. At the end of the day, implementation of this initiative would undermine confidence in the Swiss franc.

Second, the initiative assumes that our profit distribution can be held permanently at a level above CHF 1 billion a year. This is an illusion. The only possible outcome is bitter disappointment on the part of our fellow Swiss. All our calculations show that, as confirmed in the remarks made by the President of the Bank Council on the results for 2005, the SNB's medium-term profit distribution potential amounts to only CHF 1 billion a year. If we deduct the gains due to the spectacular increase in the price of gold and to exchange rate gains from the CHF 12 billion profit recorded for 2005, the distributable profit falls to CHF 2 billion. This would mean that last year's results were good, but no more than that.

To hope that the SNB could distribute considerably more than CHF 1 billion in profits over a sustained period is tantamount either to forcing it to take more risks in managing its reserves, or to cutting back the level of funds set aside as currency reserves. In other words, its position on the markets would be weakened. Given our current level of reserves, this would be unwise.

Dear shareholders, dear guests

The Swiss National Bank must retain the confidence of the population and the markets if it is to conduct its policies effectively. The Cosa initiative is playing with fire. It constitutes a permanent invitation to press never-ending financial demands. It places the SNB at the centre of a permanent political debate which threatens both its credibility and the effectiveness of its policies. That is why good sense dictates that it be rejected.

The SNB needs the support of everyone in this tricky phase and, in particular, the support of its shareholders. I would like to thank you for your attendance today, and for your continual interest in our activities.



# Policy-relevant models for central banks

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## Introduction<sup>1</sup>

In the autumn of 2005, the Swiss National Bank (SNB) hosted an academic conference entitled "Policy-relevant models for central banks". This event, bringing together outstanding academics and central bankers from all over the world, was the fourth gathering to be co-organised together with the Federal Reserve Bank of Cleveland (FRBC) and the Bank of Canada (BC).<sup>2</sup>

Such meetings are valuable for both central bankers and academics, because researchers from both groups complement one another in terms of their expertise. On the one hand, the central banks base their monetary policy decisions upon theory-based models and constantly adapt these models to new advances in monetary economics research. Thus, central bankers provide academics with constructive feedback, while testing, using, and improving their prototype models. On the other hand, academics continuously develop the central bank models of the future. Therefore, such academic conferences help participants maintain and further develop their current models as well as design future ones.

After presenting the portfolio of forecasting models used at the SNB, this paper reviews the different methodological approaches to economic modelling in central banks. It then briefly discusses and sums up the papers presented at the conference,<sup>3</sup> revealing the links between the models used in central banks and the various topics touched upon at the conference.

1 The author would like to thank Katrin Assenmacher-Wesche, Enzo Rossi, Marcel Savioz and Peter Stalder for their valuable comments and suggestions.

2 Cf. Amstad and Berentsen (2002) for a summary of the first workshop on monetary economics, which took place at the SNB. The second conference was held at the BC (2003, Dynamic models useful for policy) and the third one at the FRBC (2004, Dynamic models and policymaking). Presented contributions are available on the Swiss National Bank website.

(<http://www.snb.ch/e/publikationen/forschung/forschung.html>).

3 Although invited participants discussed each paper, this summary does not consider these discussions. It is based exclusively on the paper versions available during the conference.

## 1 Why do central bank economists use models?

Economists generally cannot perform experiments as natural scientists usually do.<sup>4</sup> Instead, they view reality in a simplified form, using models. A quantitative economic model is a set of behavioural equations, combined with definitional relationships, representing the mechanisms of an economy. Thus, in the form of equations, quantitative economic models reflect a set of thoughts about how an economy works.

Virtually all central banks have to ensure price stability and, in so doing, take due account of the business cycle. The transmission mechanism from monetary policy actions to the economy, in terms of inflation and economic activity, is subject to time lags and uncertainty. Hence, before taking monetary policy decisions, central bankers assess the economic outlook and the probable extent of the inflationary pressures that will prevail in the coming quarters. In order to ensure this forward-looking orientation of their policy, central banks thoroughly analyse economic and financial data so that they can react to all kinds of developments and make the appropriate monetary policy decisions.

The centrepiece of this analysis consists of quantitative economic models.<sup>5</sup> Models do not, however, replace judgment in the conduct of monetary policy. In assessing the output of their models, central bankers enjoy considerable scope for judgmental adjustments. Yet quantitative economic models support the judgment capability of central bankers in several ways. First, with a representation of the mechanisms at work in the economy, models give an understanding of the determinative forces in the economy. Second, models help to formulate monetary policy decisions and simulate alternatives. They also help central banks communicate their decisions. Third, central banks use models for forecasting purposes. Finally, models contribute to enhancing the consistency of the debate among central bank economists.

4 Experimental economics is a notable exception. Cf. Hagel and Roth (1995) for an introduction.

5 Cf. e.g. Blinder (1998), Coletti and Murchison (2002), and Stockton (2002) for an introduction to the use of models in central banks.

## 2 One model is no model

The eclectic conference programme reflected the pluralistic approach to economic modelling observed in the main central banks. Various factors have led central bankers to use a suite of models instead of a single one. The main explanation lies in the uncertainty regarding the true structure of the economy and the shocks faced by it. In order to minimise the risk linked to a wrongly specified model, central banks generally use several models and weight them according to either their characteristics or the topic examined, or both. Another aspect relates to the fact that, being gross simplifications of a complex reality, no single model answers all relevant questions for monetary authorities. Most models are designed to address a set of specific questions or problems that need to be investigated. Finally, the presence of many models in central banks encourages sound competition among modellers.

## 3 Suite of models used in central banks

A cursory look at the quantitative economic models used by the main central banks shows that they have been developed parallel to advances made in macroeconomics and econometrics in recent decades. Pagan (2003) ranks these models according to their theoretical foundations and their ability to match the data. All models currently used in central banks fulfil, to some extent, both criteria. Nevertheless, depending on their relative strength, central bank models can be sorted in two categories. The first one, with a strong focus on structural foundations, contains simultaneous equation models, which may represent a general equilibrium. The second category of models, with a strong emphasis on data matching, essentially comprises econometric, mostly time series models.

The foundation stone of models belonging to the first category was laid by the Cowles Commission for Research in Economics, founded in the US in the 1930s by Alfred Cowles. The Commission's economists were among the first to dedicate their research to the junction between macroeconomics, mathematics and statistics. In implementing Tinbergen's (1952) idea of quantifying theory in a simultaneous system of equations, they developed the first models that allowed for the economy to be steered by certain economic variables. The work of the Commission was also influenced by Haavelmo (1944), who asserted that models have to assign probability distributions for model variables to best assess the match between a model and the observable data. The main contribution of the Commission was to consolidate economic theory and econometrics, leading to the estimation of large, simultaneous equation models. Almost all central banks have adopted – and still have – one or more of these models in their suite of models.

In the 1950s and 1960s, due to several methodological debates on empirical economics, these large-scale models were the target of an initial wave of criticism. A second wave of criticism came from the rational expectations school in the 1970s, in particular from Lucas (1976). He showed that the parameters of traditional quantitative economic models implicitly depend on economic agents' rational expectations of the policy process in place. These parameters are unlikely to remain stable as policy changes. This makes such models

unsuitable for policy analysis. In order to avoid this critique, models have to be microfounded, i.e. based upon the behaviour of individual economic agents and built on “deep” parameters invariant to policy changes. Finally, a third wave of criticism paved the way for the second category of central bank models. In criticising the structural multiple-equation models – stressing in particular the arbitrary division between endogenous and exogenous variables – Sims (1980, 2005) proposed a powerful, atheoretical alternative: the vector autoregressive (VAR) models. His approach, which underscores the role of data with no particular theoretical foundation, suggests treating all variables as endogenous and exploiting their autoregressive behaviour. Each variable is explained by a linear function of its own lagged values and the lagged values of all other variables.

Since the 1980s, the main central banks have accordingly extended their suite of models. However, VAR models have not ended the development of simultaneous equation models. Nevertheless, both model classes have seen tremendous improvements since the beginning of this coexistence. They have both been evolving into handy models, thanks to a continuous research effort and increased computing power, thus correcting most of the problems that the first model generations had and reducing the gap between the two classes of models.

In the wake of the real business cycles (RBC) crusade, led in particular by Kydland and Prescott (1982) and King et al. (1988), simultaneous equation models have gained better microfoundations. They no longer suffer from the Lucas critique and are suitable for policy analysis and simulation. More recently, in an effort to bring these models closer to reality, economists such as Christiano et al. (2003, 2005) have been extending them by including more shocks and frictions – the so-called New Keynesian features developed by authors such as Mankiw (1985) and Ball and Romer (1990). What separates these recent models from RBC models is their reliance on nominal and real rigidities, which allows monetary policy to have a real effect. These improved simultaneous equation models now exist under the label “dynamic stochastic general equilibrium (DSGE)” models and are the most advanced models currently used or under construction in central banks. Moreover, thanks to their modern estimation procedures, they are credible probabilistic models of the data.

Despite their successful forecasting performance, VAR models were criticised because they lacked an economic structure. This black-box property did not allow central bankers to elaborate realistic stories about how the economy works. To overcome this criticism, VAR models have gained, over the years, better theoretical foundations. This has transformed them into structural VAR models and vector error-correction models (VECM) in the spirit of authors such as Engle and Granger (1987), King et al. (1991), and Watson (1994). These VECM allow modellers to incorporate information from theory about long-run equilibrium forces and, at the same time, allow the data to play an important role in the short-run dynamics. More recently, some economists, such as Del Negro and Schorfheide (2004), have used VAR and DSGE models in a complementary way in order to create models benefiting from the strengths of both model categories.

## 4 Conference papers – DSGE models

The next two sections present short summaries of the conference papers.<sup>6</sup> Of ten papers, seven focus on general equilibrium models, and can be split into two groups. The first papers describe new features added to existing DSGE models. These extensions focus, first, on financial frictions faced by households (Gammoudi and Mendes, 2005) and firms (De Fiore and Uhlig, 2005), on better modelling of firms' behaviour (De Walque et al., 2005, Bilbiie et al., 2005), on stabilisation policy (Berentsen and Waller, 2005) and on the integration of monetary aggregates into this class of models (Andrés et al., 2004). The second group consists of a new estimation procedure for DSGE models (Boivin and Giannoni, 2005).

Over the past few years, economists have been improving general equilibrium models to capture empirical facts that are important to central banks. In this respect, Mohamed Gammoudi and Rhys Mendes offer a good example with their paper *"Household sector financial frictions in Canada"*. Observing that, in recent years, real estate prices have rapidly increased, the authors are concerned with the link between this phenomenon and monetary policy. Moreover, there exists some empirical evidence that household financial restrictions may amplify and propagate the effects of monetary policy shocks on residential investment, house prices and consumption.

The authors analyse these problems in a DSGE model for a small open economy, Canada. They complete the traditional DSGE framework with financial frictions in the household sector and introduce them by splitting the households into two groups. Some households can only borrow up to a fraction of the value of their housing assets, while others do not face this constraint. The authors find that the model extended this way better fits the Canadian data in several dimensions. In particular, the financial frictions generate significant house price volatility and a positive correlation between consumption and house prices. Finally, house prices are sensitive to monetary policy shocks. The authors estimate that a change of 250 basis points in the short-term interest rate causes a decline in real house prices of almost ten percent.

In *"Bank finance versus bond finance: What explains the differences between US and Europe"*, Fiorella De Fiore and Harald Uhlig look at another

market imperfection: credit restrictions faced by the corporate sector. The authors analyse firms' external finance and its composition, as an important channel through which firms affect the economy. Moreover, the empirical evidence reveals some differences in the financial structure across countries. The traditional distinction between bank-based (credits) and market-based (bonds) financial systems applies to the euro area and the US. According to the authors, corporate investment relies more on bank credits in the euro area than in the US.

The authors introduce heterogeneous firms and agency costs in a DSGE model. In the presence of such costs, financial intermediaries reduce the information asymmetry between lenders and borrowers and offer financing instruments that best fit the needs of each borrower. Thus, bank-based and market-based systems differ, because banks spend resources to acquire information about the firms' risk of defaulting, while bond buyers do not. This implies that bond finance is less costly for firms than financing through banks. However, bond finance is a risky choice, because a situation of financial distress can only be solved through liquidation. Hence, the firms' optimal choice of financing instruments endogenously determines the financial structure of the economy.

Calibrating their model, the authors are able to explain the observed differences between Europe and America. They find that a higher share of bank finance in the euro area relative to the US is, first, due to lower availability of public information about firms' creditworthiness and, second, due to higher efficiency of banks in acquiring such information. Finally, the authors find that differences in the financial structure have a non-negligible impact on GDP per capita.

Another DSGE improvement is better modelling of the behaviour of firms, in particular their price setting behaviour. Gregory De Walque, Frank Smets and Raf Wouters reveal, in *"Firm-specific production factors in a DSGE model with Taylor price setting"*, a disturbing feature of most DSGE models. The estimated parameters lead to an implausibly high degree of nominal price stickiness. Firms would not re-optimize their price during an average period of more than two years. This implication is not in line with the empirical evidence showing that prices are generally sticky for less than one year.

<sup>6</sup> All papers are listed at the end of this article. These summaries are solely the responsibility of the author of this article and not of the authors of the papers.

The main idea of the paper is to allow firm-specific production factors to create real rigidities, i.e. less factor mobility between firms, and help reduce the nominal price stickiness. Firm-specific factors imply that firms no longer share the same marginal cost. This means that not only does a change in demand for the firm's output influence its optimal price, it also affects its marginal cost. A fall in the marginal cost can thus reduce the incentive to raise prices. The combination of the two effects is to reduce the overall price effect of various shocks. On the one hand, the elasticity of substitution between the goods produced by the firm and those produced by its competitors governs the price effect. On the other hand, the elasticity of the individual firm's marginal cost with respect to the demand for its products governs the marginal cost effect. Consequently, high elasticities maximise the marginal cost effect and minimise the price effect, thereby reducing the need for a high estimated degree of nominal price stickiness.

After estimation, the authors find that firm-specific capital leads to a fall in the estimated stickiness period to four quarters. This specificity also improves the empirical fit of the model. However, the results with sector-specific labour are less promising. The reason is that sector-specific labour markets only reduce the overall price effect if wages strongly respond to changes in the demand for labour. However, according to the authors, such wage flexibility is incompatible with the empirical evidence concerning the aggregate wage behaviour.

In *"Business cycles and firm dynamics"*, Florin Bilbiie, Fabio Ghironi and Marc Melitz model the empirical fact that the number of firms in the economy varies over the business cycle. Net entry – at least in the US – is strongly procyclical and comoves with real profits. This means that firm entry and exit may play an important role in propagating shocks and influencing the business cycle. The authors build a DSGE model, which endogenously determines the number of producers over the business cycle. On the one hand, economic expansion induces higher entry rates in the expectation of future profits. Firms are, on the other hand, subject to irreversible investment costs associated with market entry.

The main results are twofold. First, the authors show that net entry plays an important role in the propagation of shocks. Their model is thus

consistent with the data. Second, they design an innovative mechanism of labour relocation between existing and new firms. A GDP expansion initially takes place with an output increase from existing firms (the so-called intensive margin). Entry then becomes more attractive and labour is relocated to the creation of new firms. Existing firms' output decreases, while the number of firms in the economy increases (the so-called extensive margin).

Stabilisation of the economy in case of aggregate shocks has always been an important issue among central bankers. Aleksander Berentsen and Christopher Waller, in *"Optimal stabilization policy with flexible prices"*, analyse this issue in a model with flexible prices. Generally, the design and implementation of stabilising monetary policies take place in models with sticky prices due to the presence of nominal rigidities. Without them, there is no role for stabilisation policy because money is always neutral. Thus, one may be tempted to conclude that price stickiness is necessary to generate a role for stabilisation policy.

In a DSGE model with search markets, the authors show that this is not necessarily the case and that there is a welfare-improving role for stabilisation policy even if prices are fully flexible. The key element for an effective stabilisation policy is the central bank's commitment to a price path allowing it to control inflation expectations. The optimal policy then involves smoothing nominal interest rates, which in turn smooths consumption across the aggregate shocks.

In the last paper of the group focusing on DSGE extensions: *"Money and the natural rate of interest: Structural estimates for the UK, the US, and the euro area"*, Javier Andrés, David López-Salido and Edward Nelson give money an explicit role in the DSGE framework. Generally, in standard DSGE models, money shows up as a noisy indicator of current output, hardly a role that conveys great significance to money in prospective macroeconomic analysis. The authors assert the monetarist view that money contains information about determinants of aggregate demand, e.g. the natural rate of interest, which is neglected in the current DSGE models.

The authors propose different money demand equations in the same DSGE framework. They demonstrate that money is better able to capture the transmission mechanism of monetary policy when money demand has a forward-looking element.

Hence, they illustrate that the role of money, as a proxy for future variations in the natural interest rate, is increased. Their econometric analysis of the US, the euro area, and the UK shows that the relationship between real balances and the natural rate of interest is negative. The rationale is that money demand fundamentally depends upon the expected path of nominal rates. If expected future values of the natural rate move in the same direction as the nominal rate in response to shocks, a negative relationship between real balances and the natural rate emerges.

The second group focused on estimation methods. In *"DSGE models in a data-rich environment"*, Jean Boivin and Marc Giannoni challenge the standard practice for the estimation of DSGE models, whereby economists generally assume that each model variable is properly measured by a single observed indicator. Such an assumption implies that a small number of time series adequately summarises all necessary information for the estimation. However, research has shown that information contained in large data sets is relevant for the evolution of time series. Moreover, central banks analyse hundreds of series and, for almost every model variable, are confronted with several series. There exist, for example, various measures of real economic activity, which is calculated and deflated using different methods. Ignoring this fact may distort the model estimates and the inference based on them.

The authors propose a procedure that exploits the information contained in large data sets. They treat the model variables as unobserved common factors for which various observed time series are merely imperfect indicators. The authors apply this procedure to different DSGE models and show that the estimates of some parameters differ significantly, depending on the assumed link between model variables and data. Thus, the additional information provided by the data-rich environment is highly relevant for the model estimation. Finally, the proposed procedure improves the forecasts of some US indicators such as inflation, consumption, output and interest rates.

## 5 Conference papers – Econometric models

Three authors presented papers with econometric models. These papers focus on the role of monetary aggregates in predicting inflation (Reynard, 2005), on the VAR approach for helping design DSGE models (Christiano et al., 2005), and on the recovery of market expectations from financial data (Carlson et al., 2005).

In *"Money and the great disinflation"*, Samuel Reynard challenges the main empirical studies that take in the post-1980 period – a low inflation period – and that tend to reject the idea that money growth has a significant impact on inflation. It seems that both the link between money and inflation and stable money demand have vanished. According to the author, the cause of the weak relationship between money growth and inflation is the neglect of equilibrium interest rates changes associated with disinflation. One should consider that the opportunity cost of holding money has dramatically decreased during the past twenty-five years. As the level of money balances has shifted upwards following this development, not controlling for the change in money velocity may lead to long-run money demand misspecifications.

Using long-run money demand estimates to adjust monetary aggregates for changes in velocity, the author finds a proportional link between money growth and inflation in the US and the euro area. Moreover, ignoring such changes allows the author to show the insignificant influence of money growth on inflation reported in the literature. Finally, he shows that inflation responds significantly to a money growth shock, but that an inflation shock does not significantly affect money growth. The author reports that the estimated impact of changes in money growth rates on inflation includes longer lags in the US than in the euro area.

Central banks have been using VAR models essentially for forecasting purposes. In their paper *"Assessing structural VARs"*, Lawrence Christiano, Martin Eichenbaum and Robert Vigfusson focus on another potential of structural VAR models, namely their use for DSGE modellers. They respond to recent critical literature – in particular by Chari et al. (2005) – which challenges the idea that structural VAR models allow modellers to estimate

the dynamic effects of economic shocks and that the impulse response functions (IRF) provide an appropriate way to assess the empirical plausibility of a DSGE model under construction.

The link between VAR and DSGE models works as follows. Modellers estimate a VAR model using the data and impose some identifying assumptions to compute IRF for various shocks. Then, these IRF are compared with theoretical IRF from a DSGE model and a good fit validates the structural model. The reverse approach, artificial data generated by the structural model and then used in a VAR model to compute the dynamics, should allow modellers to retrieve the dynamics of their model. When performed by Chari et al. (2005), this test fails. Therefore, they conclude that structural VAR models are misleading.

According to the authors, this experiment fails for two reasons. First, Chari et al. (2005) do not consider the case when structural VAR models are identified using short-run restrictions, and only focus on long-run restrictions. Based on different DSGE variants, Christiano et al. (2005) find that structural VAR models perform remarkably well for their purpose as a checking tool. Second, the choice of the model is crucial, in the sense that misspecification or simplicity of the model are not solved by the experiment with standard VAR models. Accordingly, the authors develop a modification to the usual VAR methods, which works well with artificial data generated by the models used by Chari et al. (2005).

For many years, central banks have been screening the financial markets in order to extract market expectations about key variables, in particular inflation and interest rates. In *“Recovering market expectations of FOMC rate changes with options on federal funds futures”*, John Carlson, Ben Craig and William Melick demonstrate that options on federal funds futures provide more information about expected moves of the FOMC than the expectations extracted from futures alone. Futures do not allow for the extraction of anything more than information on whether the market expects the central bank to move its interest rate or not. Options, however, allow for the extraction of market expectations for various possible outcomes of FOMC meetings.

The authors present an estimator of the probabilities for an array of federal funds rate outcomes before a specific FOMC meeting. Their procedure

also allows for the estimation of probabilities for two or more upcoming meetings. The suggested technique is a valuable way for central banks to ascertain the view of financial markets on the future stance of monetary policy. Although probabilities extracted from futures are often sufficient, the authors highlight the fact that options-based probabilities are most useful during periods of high uncertainty about the future course of monetary policy, e.g. after an important crisis.

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## Credit Reporting, Relationship Banking, and Loan Repayment

**Martin Brown and Christian Zehnder**  
**Working Paper 2006-3**

Cross-country evidence suggests that the protection of creditor rights is crucial for the development of the financial sector. Without effective legal protection, banks are hesitant to lend, since they fear that borrowers may not repay their loans. How can banks create incentives for borrowers to repay, even when the legal environment does not protect their creditor rights? One potential solution is credit reporting – the exchange of information between lenders on the past behaviour of their borrowers. If borrowers know that their repayment behaviour is reported to all banks, they may repay their loans on time even if there are no legal consequences of default. They will do so because they know that once they are “blacklisted” they are unlikely to receive any loans in future. Not surprisingly, many developing and transition economies, where the legal environment is particularly weak, have encouraged credit reporting among banks in the hope of fostering credit growth.

In this paper, we use experimental methods to examine how credit reporting affects loan repayment and credit market performance. We first implement a credit market in which loan repayment is not enforceable and credit reporting is not possible. We then implement the same credit market, but with a public credit registry which collects and disburses credit information to lenders. By comparing repayment behaviour and lending volumes between the two markets, we can identify the impact of a credit registry on credit market performance.

Our results suggest that the impact of credit reporting depends strongly on the nature of credit transactions. In a market where lenders and borrowers interact on a one-off basis, the credit market collapses without a credit registry, as lenders rightly fear that borrowers will default. The introduction of a registry in this environment significantly raises repayment rates and the lending volume. When repeat transactions between lenders and borrowers are possible, a credit registry is not necessary to sustain high market performance as relationship banking alone seems to enforce repayment.

# The Exposure of Swiss Banks to Macroeconomic Shocks – an Empirical Investigation

**Hans-Jörg Lehmann and Michael Manz**  
**Working Paper 2006-4**

Assessing financial stability is an issue of rapidly growing importance to central banks and banking authorities. This paper provides a first comprehensive assessment of the relationship between the cyclical performance of the economy and bank profitability in Switzerland. The objective of the analysis is threefold: (i) to identify macroeconomic factors which are systematically linked to the profitability of the banking sector, (ii) to simulate the present and future profitability of the banking sector on the basis of these variables, and (iii) to provide an additional instrument to assess the resilience of the Swiss banking system.

In a first step, three essential components of bank earnings – net interest income, provisions, and revenues from commission business and trading – are regressed on a set of macroeconomic variables and individual bank characteristics, using a panel regression. The set of macro variables includes short and long-term interest rates, real GDP growth, real estate prices, the unemployment rate, the spread between corporate and government bond yields, as well as the volatility and the return on the Swiss stock market. The regression results suggest that net interest income is relatively insensitive to macroeconomic developments. While the expected negative relationship between interest rate changes and the interest margin is supported by the data, the impact is negligible in economic terms. By comparison, the relationship between interest rates, GDP and other macro variables and bank provisions is positive or negative, as expected, and more pronounced. Likewise, we find evidence of a positive but not particularly strong relationship between stock returns and revenues from commission business and trading.

In a second step, the regression results are then used to simulate the banking sector's profitability in various macroeconomic scenarios which include a sharp rise in interest rates, a recession, a fall in stock prices and a worst case scenario combining the former three scenarios. The analysis suggests that the Swiss banking system is still profitable, even in the event of a very unfavourable interest rate shock. Similarly, while a recession or a stock market crash would substantially reduce profits, this would not jeopardise the capitalisation of the banking sector. Only a joint occurrence of an interest rate increase, a recession and a decline in stock prices would result in a considerable decrease in excess capital in the banking industry. We arrive at a clear conclusion, which is that the Swiss banking industry is currently well prepared to absorb reasonable macroeconomic shocks.

# Money Growth, Output Gaps and Inflation at Low and High Frequency: Spectral Estimates for Switzerland

**Katrin Assenmacher-Wesche and  
Stefan Gerlach**  
**Working Paper 2006-5**

While monetary targeting has become increasingly rare, many central banks attach weight to money growth in the setting of interest rates. This raises the question of how money can be combined with other variables, in particular with the output gap, when analysing inflation. The Swiss National Bank (SNB) emphasises that the indicators it uses for this purpose vary across forecasting horizons. While real indicators are employed for short-run forecasts, money growth is more important at longer horizons.

Using band spectral regressions and causality tests in the frequency domain, this paper analyses the behaviour and the determination of inflation in Switzerland across high and low frequencies, incorporating quarterly data for the period 1970–2005. We define the cutoff between the low and high frequency, i.e. the long and short run, at a periodicity of four years. Our results, however, are robust with respect to alternative cut-off points at periodicities of two and eight years.

We focus on three findings in particular. First, Swiss data are well characterised by the view that movements in steady-state inflation depend on long-run money growth, and fluctuations around this steady state depend on the output gap, which underlies both the European Central Bank's two-pillar framework and the SNB's monetary policy concept.

Second, the direction of causality runs from money growth to inflation, but not conversely. This finding casts doubts on the notion that the strong correlation between the two variables that we observe in the data merely reflects the existence of a stable money demand function. Rather, it suggests that sustained variations in money growth have over time led to fluctuations in the rate of inflation.

Third, at higher frequencies the output gap causes inflation. This suggests that analysing inflation by solely considering the information in the monetary aggregates would forego important information. While the SNB employed a range of indicators to assess the state of the economy and to set policy – even during the monetary targeting period – the shift to the new monetary concept has served to clarify the fact that monetary aggregates, while important, are not the only information variables used.

Overall, we interpret the results as providing ample support for the notion that extracting information from money growth is helpful in guarding against the development of inflation pressures and in setting monetary policy in Switzerland.

# Time-Varying Pass-Through from Import Prices to Consumer Prices: Evidence from an Event Study with Real-Time Data

**Marlene Amstad and Andreas M. Fischer**  
**Working Paper 2006-6**

The literature on the pass-through divides the impact of exchange rates on domestic prices into two stages. The first stage is defined as the influence of exchange rate fluctuations on import prices; the second concerns the impact of import price movements on consumer prices. This paper focuses on the latter stage in a real-time set-up. Real time refers to the information set available to policy makers at the time they take policy decisions. Little is known as to how central bankers should weigh import price fluctuations against other incoming information when deciding on monetary policy over the business cycle. The vast empirical literature on import price pass-through relies on time series or cross country analysis that assumes parameter constancy for specific samples. Such analysis is useful in identifying the links between low pass-through estimates and low inflation regimes, but it offers little guidance as to how policy makers should act over different phases of the business cycle within a low inflation regime. Our objective is to use the actual data available to policy makers in real time so as to estimate how pass-through estimates are affected by broad information sets (panels) during low inflation periods.

This paper presents a new estimation strategy that provides real time estimates of the pass-through from import prices to consumer prices based on Swiss data. The empirical methodology is similar in spirit to event study procedures used in empirical finance. Event studies compare returns before and after a given event. In our setting, the event is the monthly release of import prices. Unlike studies in empirical finance, this study does not compare returns, but inflation forecasts.

The pass-through estimates are constructed as the one-day difference in the inflation forecast. The inflation forecasts are estimated by using a dynamic factor model. The empirical analysis focuses on daily panels which encompass 450 time series and are divided into four main information blocks: sub-components of non-regulated prices in the consumer price index (CPI), CPI components, asset prices and real variables. These information blocks are motivated by various pass-through channels that were analysed in the literature.

The study has led to three new empirical findings. First, the median pass-through from import prices to consumer prices is small and exhibits considerable time-varying behaviour. Second, the pass-through estimates are highly dependent on the breadth of information contained in the panels: The broader the panel, the smaller the average pass-through. The median pass-through estimate is reduced by half when based on information panels with asset prices against panels without asset prices. Third, for the broadest information panel, the hypothesis that the pass-through in Switzerland is completely compensated by other effects cannot be rejected.

# Money and the Great Disinflation

**Samuel Reynard**  
**Working Paper 2006-7**

Recent years have been characterised by low and stable inflation, and many economists now maintain that the link between monetary aggregates and inflation has disappeared. Several empirical studies have reached this conclusion; moreover, many studies that include monetary aggregates have resulted in differing specifications regarding money demand or the precise relationship between money and inflation.

The paper on “Money and the Great Disinflation” by Samuel Reynard shows that, by failing to account for the decline in equilibrium interest rates due to the worldwide disinflation that has occurred over the past 20 years, assessments of the empirical relationship between monetary aggregates and inflation have arrived at flawed estimates.

Due to decreasing inflation, interest rates have fallen worldwide and with this there has been a rise in monetary aggregates, given that the cost of holding money has decreased. As a result, monetary aggregates have risen sharply without corresponding subsequent increases in inflation. This has led many people to argue that the link between money and inflation has either weakened or disappeared in the current low-inflation environment.

This study shows that it is crucial to account for changes in equilibrium interest rates when assessing monetary fluctuations. When adjusting for equilibrium interest rate changes, a clear relationship between monetary aggregates and subsequent inflation is revealed. This conflicts with claims that the relationship between money and inflation has disappeared. The paper also explains why there are different estimates for the demand for money in the relevant literature.

# Chronicle of monetary events



## Increase in the target range for the three-month Libor

On 15 June 2006, following its June quarterly assessment, the Swiss National Bank increased the target range for the three-month Libor with immediate effect by 0.25 percentage points to 1.0–2.0%. The SNB intends to hold the rate in the middle of the target range for the time being.

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