Quarterly Bulletin

Swiss National Bank
Quarterly Bulletin

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On 12 December 2003, the Swiss National Bank decided to leave the target range for the three-month Libor rate at 0%–0.75%. For the time being, the three-month Libor is to be kept at around 0.25%. Now the signs of an economic recovery in Switzerland are intensifying. The upswing is not yet assured, though. At the same time, the inflation potential is small. For this reason, the National Bank is adhering to its expansionary monetary policy and is keeping down the attractiveness of Swiss franc investments.

Economic and monetary developments (p. 12)

In the second half of 2003, the global economic situation brightened. Strong stimuli emanated from the US economy and from the Asian economic area. In Europe, economic growth picked up in the United Kingdom, and the euro area emerged from stagnation. The leading indicators point to a sustained economic recovery in the coming months. The worldwide recovery was supported by a continuously expansionary monetary and fiscal policy.

In Switzerland, for the first time in a year, real gross domestic product again rose slightly quarter-on-quarter in the third quarter. Yet it still fell 0.6% short of the corresponding year-earlier level. Notably, a vigorous revival in exports of goods contributed to the recovery. The brighter economic situation also benefited the manufacturing sector. Orders and production increased, with the turnaround being particularly conspicuous in the export-oriented enterprises. For the coming months most enterprises expected unchanged or expanding orders and accordingly adjusted their production plans upward. The emerging economic recovery has so far had little impact on the labour market. In the third quarter, employment did not decline further compared with the previous quarter, and the unemployment rate stabilised at 3.9% between August and November; the rate of job-seekers, by contrast, rose by 0.1 percentage point to 5.6%.

The National Bank continued its expansionary monetary policy in the second half-year, with short-term money market rates still close to zero percent. Long-term interest rates, measured by the yield on a ten-year Confederation bond, increased only slightly between August and November. While the euro continued to move between CHF 1.54 and 1.56, the Swiss franc appreciated markedly vis-à-vis the dollar. The export-weighted real Swiss franc rate remained virtually unchanged.

Development of direct investment in 2002 (p. 44)

Swiss capital outflows for direct investment abroad amounted to CHF 12 billion in 2002, down from CHF 31 billion a year earlier. The stock of direct investment abroad contracted by CHF 15 billion to CHF 410 billion. Income from direct investment abroad diminished from CHF 31 billion to CHF 17 billion.

Capital inflows for foreign direct investment in Switzerland dropped by CHF 6 billion to CHF 9 billion in 2002. The stock of foreign capital in Switzerland expanded by 17% to CHF 173 billion. Income from foreign direct investment in Switzerland declined by one-third to CHF 9 billion.

Switzerland's international investment position in 2002 (p. 72)

As a result of valuation losses, Switzerland's net assets abroad declined by CHF 13 billion to CHF 584 billion in 2002. Both foreign assets at CHF 2099 billion and foreign liabilities at CHF 1515 billion fell short of their previous year's level once more due to the persistent stock market slump and the lower valuation of the US dollar. The share of foreign assets in Swiss francs rose from 14% to 16%. The Swiss franc share of foreign liabilities, by contrast, dropped from 52% to 50%.

Does it make sense to combine forecasts from VAR models? (p. 80)

Inflation forecasts are of central importance to the Swiss National Bank in preparing and explaining its monetary policy decisions. Inflation forecasts rest on several models rather than a single one. In the end, the various model forecasts are combined to form the actual inflation forecast. The empirical results of the present study underpin this pluralistic approach. The study shows that combined inflation forecasts are more precise than the individual forecasts from which they are derived. This applies in particular to long-term forecasts. The inflation forecasts were drawn up based on VAR models. The results, however, are generally valid as every (linear) model may be transferred into a VAR model.

Übersicht

Geldpolitische Lagebeurteilung am Jahresende (S. 8)

Die Nationalbank beschloss am 12. Dezember 2003, das Zielband für den Dreimonats-Libor bei 0%–0,75% zu belassen. Der Dreimonats-Libor soll bis auf weiteres um 0,25% gehalten werden. Die Anzeichen einer wirtschaftlichen Erholung in der Schweiz verdichten sich. Der Aufschwung ist aber noch nicht gesichert. Gleichzeitig ist das Inflationspotenzial gering. Aus diesem Grund führt die Nationalbank die expansive Geldpolitik unverändert fort und hält die Attraktivität von Frankenanlagen weiterhin tief.

Wirtschafts- und Währungslage (S. 12)

Im zweiten Halbjahr 2003 hellte sich die Konjunkturlage weltweit auf. Kräftige Impulse gingen von der amerikanischen Wirtschaft und vom asiatischen Wirtschaftsraum aus. In Europa zog das Wirtschaftswachstum im Vereinigten Königreich an und die Eurozone vermochte sich aus der Stagnation zu lösen. Die vorlaufenden Indikatoren deuten auf eine Fortsetzung der Konjunkturerholung in den nächsten Monaten hin. Die weltweite Erholung wurde durch eine anhaltend expansive Geld- und Finanzpolitik gestützt.

In der Schweiz nahm das reale Bruttoinlandprodukt im dritten Quartal gegenüber der Vorperiode erstmals seit einem Jahr wieder leicht zu. Es lag damit noch 0,6% unter dem entsprechenden Vorjahresstand. Zur Erholung trug vor allem eine deutliche Belebung der Warenausfuhren bei. Die konjunkturelle Aufhellung zeigte sich auch im Industriesektor. Die Bestellungen und die Produktion zogen an, wobei die Wende bei den exportorientierten Unternehmen besonders ausgeprägt war. Für die kommenden Monate rechneten die meisten Unternehmen mit unveränderten oder steigenden Bestellungen und passten dementsprechend ihre Produktionspläne nach oben an. Die sich abzeichnende Konjunkturerholung wirkte sich erst wenig auf den Arbeitsmarkt aus. Im dritten Quartal bildete sich die Beschäftigung gegenüber dem Vorquartal nicht mehr weiter zurück und die Arbeitslosenquote stabilisierte sich zwischen August und November bei 3,9%; die Quote der Stellensuchenden nahm dagegen um 0,1 Prozentpunkte auf 5,6% zu.

Die Nationalbank setzte im zweiten Halbjahr ihre expansive Geldpolitik fort; die kurzfristigen Geldmarktsätze lagen weiterhin nahe bei Null Prozent. Die langfristigen Zinssätze, gemessen an der Rendite einer zehnjährigen Bundesanleihe, stiegen zwischen August und November nur noch leicht. Während sich der Euro weiterhin zwischen 1,54 und 1,56 Franken bewegte, gewann der Franken gegenüber dem Dollar deutlich an Wert. Der exportgewichtete reale Frankenkurs blieb nahezu unverändert.

Die Entwicklung der Direktinvestitionen im Jahr 2002 (S. 44)

Die schweizerischen Kapitalexporte für Direktinvestitionen im Ausland beliefen sich im Jahr 2002 auf 12 Mrd. Franken, nachdem sie im Vorjahr noch 31 Mrd. Franken betragen hatten. Der Direktinvestitionsbestand im Ausland ging um 15 Mrd. auf 410 Mrd. Franken zurück. Die Erträge auf dem Direktinvestitionskapital im Ausland verminderten sich von 31 Mrd. auf 17 Mrd. Franken.

Die Kapitalimporte für ausländische Direktinvestitionen in der Schweiz sanken im Jahr 2002 um 6 Mrd. auf 9 Mrd. Franken. Der ausländische Kapitalbestand in der Schweiz erhöhte sich um 17% auf 173 Mrd. Franken. Die Kapitalerträge auf dem ausländischen Direktinvestitionskapital in der Schweiz nahmen um einen Drittel auf 9 Mrd. Franken ab.

Das Auslandvermögen der Schweiz im Jahr 2002 (S. 72)

Das Nettovermögen der Schweiz im Ausland sank im Jahr 2002 infolge von Bewertungsverlusten um 13 Mrd. auf 584 Mrd. Franken. Sowohl die Auslandaktiven mit 2099 Mrd. Franken als auch die Auslandpassiven mit 1515 Mrd. Franken lagen wegen der anhaltenden Aktienbaisse und der tieferen Bewertung des US-Dollars ein weiteres Mal unter ihrem Vorjahreswert. Der Anteil der Auslandaktiven in Schweizer Franken stieg von 14% auf 16%. Bei den Auslandpassiven dagegen sank der Anteil des Schweizer Frankens von 52% auf 50%.

Sind Kombinationen von Prognosen aus VAR-Modellen sinnvoll? (S. 80)

Inflationsprognosen kommt bei der Schweizerischen Nationalbank ein zentraler Stellenwert in der Vorbereitung und Begründung der geldpolitischen Entscheidungen zu. Dabei beruhen die Inflationsprognosen nicht nur auf einem einzelnen, sondern auf mehreren Modellen. Die verschiedenen Modellprognosen werden schliesslich zur eigentlichen Inflationsprognose kombiniert. Die empirischen Ergebnisse dieser Studie untermauern diesen pluralistischen Ansatz. Die Untersuchung zeigt, dass kombinierte Inflationsprognosen genauer sind als die einzelnen Prognosen, aus denen sie gewonnen werden. Dies trifft vor allem für langfristige Prognosen zu. Die Inflationsprognosen wurden anhand von VAR-Modellen erstellt. Die Ergebnisse sind jedoch allgemein gültig, weil sich jedes (lineare) Modell in ein VAR-Modell überführen lässt.

Sommaire

Appréciation de la situation économique et monétaire en fin d'année (p. 8)

Le 12 décembre 2003, la Banque nationale a décidé de laisser inchangée à 0%–0,75% la marge de fluctuation du Libor pour dépôts à trois mois en francs. Jusqu'à nouvel avis, elle vise à maintenir le Libor à trois mois autour de 0,25%. Les signes d'une reprise de la conjoncture en Suisse s'intensifient. Mais la reprise n'est pas encore assurée. En outre, le potentiel inflationniste est faible. Par conséquent, la Banque nationale entend poursuivre sa politique monétaire expansionniste et maintenir l'attrait des placements en francs à un niveau bas.

Situation économique et monétaire (p. 12)

Au second semestre de 2003, la conjoncture économique s'est améliorée dans le monde entier. De vigoureuses impulsions sont venues des Etats-Unis et de la zone asiatique. En Europe, la croissance économique s'est accélérée au Royaume-Uni, et la zone euro est parvenue à sortir de la stagnation. Les indicateurs avancés annoncent une poursuite du redressement de la conjoncture au cours des prochains mois. Les politiques monétaires et budgétaires toujours expansionnistes ont soutenu la reprise observée sur le plan mondial.

En Suisse, le produit intérieur brut réel a augmenté légèrement du deuxième au troisième trimestre, enregistrant ainsi sa première progression depuis un an. Il était cependant encore inférieur de 0,6% à son niveau de la période correspondante de 2002. Les exportations de marchandises, en sensible hausse, ont contribué à la reprise. L'amélioration de la conjoncture était visible également dans l'industrie. Les commandes et la production se sont accrues. Le retournement de tendance a été particulièrement marqué du côté des entreprises à vocation exportatrice. La plupart des entreprises tablaient, pour les prochains mois, sur des commandes inchangées ou en progression et prévoyaient d'adapter à la hausse leur plan de production. La reprise de la conjoncture qui se dessine a eu peu d'effets, jusque-là, sur le marché du travail. L'emploi a cessé de reculer d'un trimestre à l'autre, et le taux de chômage s'est stabilisé à 3,9% entre août et novembre. Toutefois, le taux des demandeurs d'emploi a encore augmenté de 0,1 point pour s'établir à 5,6%.

Au second semestre, la Banque nationale a poursuivi sa politique monétaire expansionniste; les rémunérations à très court terme sont restées proches de 0% sur le marché monétaire. Les taux d'intérêt à long terme – rendement des obligations à dix ans de la Confédération – ont augmenté légèrement entre août et novembre. Face au franc, l'euro a continué à fluctuer entre 1,54 et 1,56, mais le dollar a faibli nettement. Le cours réel du franc, pondéré par les exportations, est resté presque inchangé.

Evolution des investissements directs en 2002 (p. 44)

Les exportations suisses de capitaux en vue d'investissements directs à l'étranger ont porté sur 12 milliards de francs en 2002, après 31 milliards l'année précédente. Le volume des capitaux suisses d'investissement direct à l'étranger a diminué de 15 milliards pour s'établir à 410 milliards de francs. Les revenus tirés des capitaux suisses d'investissement direct à l'étranger ont fléchi, passant de 31 milliards en 2001 à 17 milliards de francs en 2002.

D'une année à l'autre, les importations de capitaux au titre des investissements directs étrangers en Suisse ont marqué un sensible repli. Elles ont porté sur 9 milliards de francs en 2002, contre 15 milliards en 2001. Les capitaux étrangers d'investissement direct en Suisse atteignaient 173 milliards de francs à fin 2002. En un an, ils ont progressé de 17%. Les revenus tirés des capitaux d'investissement direct étrangers en Suisse se sont inscrits à 9 milliards de francs, soit à un montant inférieur d'un tiers à ce qui avait été enregistré l'année précédente.

La position extérieure nette de la Suisse en 2002 (p. 72)

A fin 2002, les actifs suisses à l'étranger dépassaient de 584 milliards de francs les passifs suisses envers l'étranger. En un an, la position extérieure nette de la Suisse a diminué de 13 milliards de francs du fait de pertes dues aux ajustements de valeur. Les actifs suisses à l'étranger s'établissaient à 2099 milliards de francs, et les passifs suisses envers l'étranger, à 1515 milliards. Les uns comme les autres ont une nouvelle fois reculé à la suite de la baisse persistante des cours des actions et de l'affaiblissement du dollar des Etats-Unis. Dans les actifs suisses à l'étranger, la part du franc a augmenté, passant de 14% à 16%. Par contre, elle a diminué du côté des passifs. En effet, 50% des passifs suisses étaient libellés en francs à fin 2002, contre 52% un an auparavant.

Faut-il combiner les prévisions de modèles VAR? (p. 80)

Pour la Banque nationale, les prévisions d'inflation jouent un rôle important dans la préparation et l'argumentation des décisions de politique monétaire. Les prévisions d'inflation qu'elle établit reposent sur plusieurs modèles. Les résultats tirés des divers modèles sont finalement combinés pour donner la prévision d'inflation qui est utilisée. Les résultats empiriques auxquels aboutit la présente étude confortent cette approche pluraliste. En effet, des prévisions d'inflation combinées sont plus fiables que les prévisions individuelles sur lesquelles elles se basent. Cela se vérifie en particulier dans le cas des prévisions à long terme. Les prévisions d'inflation ont été faites à l'aide de modèles VAR. Néanmoins, les résultats ont une portée générale, tout modèle (linéaire) pouvant être converti en un modèle VAR.

Sommario

Valutazione della situazione monetaria alla fine dell'anno (p. 8)

Il 12 dicembre 2003, la Banca nazionale ha deciso di mantenere il margine di oscillazione del Libor a tre mesi allo 0–0,75%. Fino a nuovo avviso, l'istituto di emissione manterrà il Libor a tre mesi allo 0,25% circa. Sebbene gli indizi di un rilancio dell'economia svizzera si stiano moltiplicando, la ripresa congiunturale non si è ancora consolidata. D'altra parte, il potenziale inflazionistico rimane esiguo. La Banca nazionale intende perciò mantenere immutata la sua politica monetaria espansiva e limitare l'attrattiva degli investimenti in franchi svizzeri.

Situazione economica e monetaria (p. 12)

La situazione congiunturale è migliorata durante il secondo semestre del 2003. Gli Stati Uniti e la zona asiatica hanno fornito importanti impulsi all'economia. In Europa, la crescita economica si è accelerata in Gran Bretagna, mentre la zona dell'euro ha superato la fase di ristagno. Gli indicatori anticipatori lasciano presumere che la ripresa congiunturale si protrarrà nei prossimi mesi. La ripresa dell'economia mondiale è stata sostenuta da una politica economica e finanziaria espansiva.

In Svizzera, il prodotto interno lordo ha registrato, dal secondo al terzo trimestre, il primo aumento di quest'anno, pur rimanendo rispetto al medesimo periodo del 2002 inferiore dello 0,6%. Alla ripresa ha contribuito soprattutto il netto incremento delle esportazioni di merci. Il miglioramento della situazione congiunturale ha interessato anche il settore industriale. Le ordinazioni e la produzione sono aumentate. Ne hanno beneficiato in particolar modo le imprese orientate all'esportazione. La maggior parte delle aziende, prevedendo ordinazioni stabili o in aumento, ha adeguato i propri piani di produzione. Sul mercato del lavoro, gli effetti della ripresa congiunturale sono finora rimasti modesti. Nel terzo trimestre, l'occupazione non si è più contratta rispetto al periodo precedente, e il tasso di disoccupazione si è stabilizzato, da agosto a novembre, al 3,9%. La quota di persone in cerca di un'occupazione è invece aumentata di 0,1 punti percentuale, al 5,6%.

Durante la seconda metà dell'anno, la Banca nazionale ha mantenuto una politica monetaria espansiva, con tassi a breve pressoché nulli. Da agosto a novembre, i tassi d'interesse a lungo termine, misurati attraverso il rendimento dei prestiti svizzeri con una durata di dieci anni, non hanno registrato che un leggero aumento. Se il prezzo dell'euro ha continuato ad oscillare tra 1,54 e 1,56 franchi, il franco svizzero si è invece nettamente apprezzato rispetto al dollaro statunitense. Il corso reale del franco svizzero ponderato all'esportazione è rimasto essenzialmente invariato.

Investimenti diretti nel 2002 (p. 44)

Le esportazioni di capitali per investimenti diretti svizzeri all'estero sono calate da 31 miliardi di franchi nel 2001 a 12 miliardi nel 2002. La consistenza degli investimenti diretti all'estero si è ridotta da 425 a 410 miliardi, il relativo reddito da 31 a 17 miliardi di franchi.

Le importazioni di capitale per investimenti diretti in Svizzera sono pure diminuite nel 2002, da 6 a 9 miliardi di franchi. La consistenza del capitale estero in Svizzera è aumentata del 17%, a 173 miliardi di franchi. I redditi del capitale estero impiegato in investimenti diretti in Svizzera sono calati di un terzo, a 9 miliardi di franchi.

Averi all'estero nel 2002 (p. 72)

Minusvalenze da valutazione hanno causato nel 2002 un calo di 13 miliardi di franchi, a 584 miliardi di franchi, del volume netto degli averi svizzeri all'estero. In seguito al persistente ribasso dei corsi azionari e al deprezzamento del dollaro statunitense, tanto gli attivi (2099 miliardi di franchi) quanto i passivi (1515 miliardi di franchi), sono nuovamente diminuiti rispetto all'anno precedente. La quota degli attivi all'estero denominati in franchi svizzeri è salita dal 14% al 16%, quella dei passivi è scesa dal 52% al 50%.

È opportuno combinare le previsioni dei modelli VAR? (p. 80)

Le previsioni d'inflazione rivestono un ruolo importante sia nella preparazione come nella motivazione delle decisioni di politica monetaria della Banca nazionale. A tale scopo, le previsioni allestite in base a diversi modelli vengono combinate tra di loro per formare la previsione d'inflazione. I risultati empirici del presente studio confermano l'adeguatezza di questa strategia. L'analisi dimostra che le previsioni combinate sono più precise delle singole previsioni che le compongono, soprattutto per un orizzonte previsivo di lungo periodo. Le previsioni d'inflazione si basano su dei modelli VAR. Le conclusioni dello studio possono tuttavia essere generalizzate, dato che ogni modello (lineare) è riconducibile ad un modello VAR.

Monetary policy assessment at year-end

Remarks by Jean-Pierre Roth, Chairman of the Governing Board of the Swiss National Bank, at the News Conference of the Governing Board in Zurich on 12 December 2003

The National Bank has decided to leave the target range for the three-month Libor rate unchanged at 0.0%–0.75%. For the time being, the three-month Libor is to be kept at around 0.25%. In the past two years, we reacted to the decline in economic activity and the upward trend of the Swiss franc by considerably relaxing our monetary policy. Now the signs of an economic recovery in Switzerland are intensifying. The upswing is not yet assured, though. At the same time, the inflation potential is small. For this reason, we are adhering to our expansionary monetary policy and are keeping down the attractiveness of Swiss franc investments. We estimate that the economy will grow by slightly over 1.5% in 2004, while a moderate decline in economic activity is expected for the current year. If monetary policy remains unchanged, average annual inflation is likely to amount to 0.4% in the coming year, to 1.0% in 2005 and to 2.3% in 2006. We are of the opinion that price stability can be maintained by tightening monetary policy at a later point in time.

In the following, I shall first focus on economic activity in Switzerland and our new inflation forecast. This will be followed by a discussion of monetary policy. Finally, I shall elaborate on the new National Bank Law.

Economic activity

In Switzerland, an economic turnaround began to emerge in the third quarter of 2003. Real GDP exceeded the previous quarter's level for the first time since the third quarter of 2002. Nevertheless, it still fell short of its year-earlier level. The Swiss economy recovered largely in line with our expectations as communicated in our September assessment of the situation. The recovery is attributable to the pickup in global economic activity, low interest rates and generally more favourable exchange rate conditions. This primarily benefited exports, which rose markedly in the third quarter. Equipment investment, too, picked up slightly following a long phase of decline. Private and government consumption continued to have a stabilising effect.

The economic situation in Switzerland should improve further in the next few months. We are expecting exports to continue developing favourably, coupled with a robust increase in equipment investment. In this way, the economic upswing in Switzerland will become increasingly broad-based and solid. In the course of 2004, unemployment should also fall, leading to a pickup in private consumption. On average, a moderate decline in economic activity will be recorded in the current year, while for 2004, as already stated, we expect the economy to grow by slightly over 1.5%. This will, however, not yet suffice to close the production gap. Production capacities will therefore still not be fully utilised in the coming year.

Even though the overall prospects have clearly improved, the situation in a number of industries remains difficult. There is still a risk that the economic upswing in our country may be short-lived. A delay in the global economic recovery in the next few quarters, an unfavourable development in the financial markets or growing geopolitical tensions could jeopardise the economic pickup in Switzerland. Overall, however, the cyclical risks today are significantly more balanced than even a few months ago. It can thus not be ruled out that the recovery will set in faster than we expect.

Inflation forecast

I shall now turn to the latest developments in inflation and our new inflation forecast. Annual inflation (inflation rate compared with previous year) measured by the national consumer price index has shown an extremely stable development for some time. In August, it rose by 0.2 percentage points to 0.5%, where it remained until November. This stability is attributable to the evenly spread price increases for domestic goods. Inflation in imported goods has been distinctly more volatile in the wake of fluctuating oil prices. The core inflation rate calculated by the National Bank currently amounts to 0.6%.

The graph shows our inflation forecast of September 2003 (the dash-dotted red curve in the graph) as well as the new forecast of December 2003 (dashed red curve). The assumptions on which the new forecast rests differ in various respects from those in September. For one thing, growth in the United States will be markedly higher in the current year than anticipated three months ago. With the present fiscal stimulus no longer a factor, however, economic growth is likely to slow down distinctly again next year but should remain robust. We still anticipate an upswing in the EU in the coming year. It is probable, however, that it will take slightly longer to close the output gap than we assumed as recently as September. Inflationary pressure from abroad will thus remain moderate although inflation in other countries will not recede as markedly either in the coming year as we expected three months ago. Furthermore, we anticipate a decline in the price of oil to approximately USD 25 per barrel in the course of 2004.

On the assumption that the three-month Libor rate will remain stable at 0.25% during the next three years, inflation should average 0.4% in 2004, 1.0% in 2005 and 2.3% in 2006. The inflation trend according to the new forecast will exceed the September forecast until mid-2005. Until the end of 2004, inflation is likely to remain fairly stable at around 0.5%, any slight fluctuations being due to statistical effects. The new forecast shows that the threat of negative inflation rates has diminished. This is the result of an improvement in the global economy and of the less marked decline in inflation abroad, as also of the weaker Swiss franc vis-à-vis the euro. As from the beginning of 2005, inflation will show a rising trend due to the expansionary monetary policy we took as an assumption. In mid-2005, it will reach 1%, in mid-2006 2% and near the end of 2006 a rate of 3%. This increase is a little flatter than forecast in September. It rests on the notion that in the next few years the output gap will narrow somewhat more slowly than predicted in September due to the productivity gains the upswing is expected to bring.

From mid-2006 onwards, forecast inflation will no longer lie within the range that the National Bank equates with price stability. It must, however, be noted that, as always, our forecast is based on an unchanged three-month Libor rate, i.e. on the assumption that monetary policy will remain as expansive as now during the next three years. It is also important to understand that the uncertainty of the forecast increases with the length of the forecasting horizon.

Continuation of expansionary monetary policy

In the past two years, we have changed over to a strongly expansionary monetary policy. In so doing, we have reacted rapidly and unequivocally to the deterioration in the economic situation and the upward pressure on the Swiss franc. The favourable development of inflation provided us with the necessary leeway for the interest rate cuts we implemented. Between March and July, the Swiss franc weakened considerably vis-à-vis the euro, and the economy is gradually beginning to gain momentum again.

The expansionary monetary policy was accompanied by growing monetary aggregates. The strong increase in the money stocks does not, however, present a significant risk for price stability at the present time. For one thing, credit creation by the banks continues to be slow-moving. For another, the growth of the money stocks is considerably influenced by portfolio shifts, which are likely to be reversed once economic activity accelerates and interest rates begin to rise. We shall, however, continue to keep a careful eye on this development.

As already stated, there are still certain risks that the economic development will not be sustained. The upswing in Switzerland should not be jeopardised by a premature changeover to a more restrictive monetary policy. We shall therefore continue our expansionary monetary policy and in this way further bolster the economic recovery. We are convinced that we shall have sufficient time to keep inflation within the bounds of price stability by tightening monetary policy at a later point in time. Should a possible marked appreciation of the Swiss franc vis-à-vis the euro threaten to cause an undesirable tightening of monetary conditions, we would again take decisive action.

Inflation forecast of September 2003 with Libor at 0.25% and of December 2003 with Libor at 0.25%

Percent change in national consumer price index from previous year

—— Inflation   ·—·— Forecast September 2003 (0.25%)   — — Forecast December 2003 (0.25%)
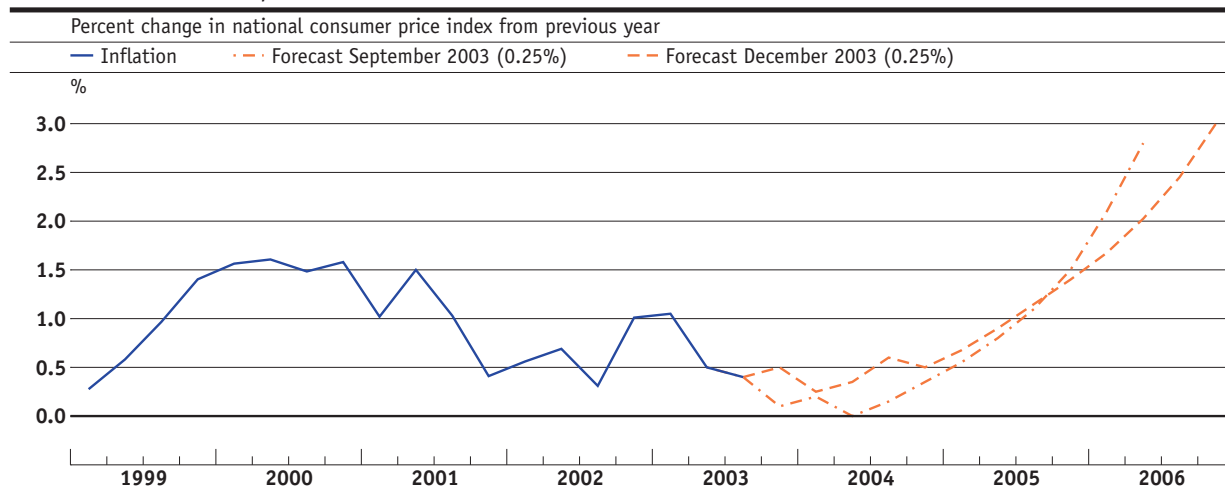
Inflation forecast December 2003 with Libor at 0.25%	2003	2004	2005	2006
Annual average inflation in %	0.6	0.4	1.0	2.3

Economic and monetary developments in Switzerland

Report to the attention of the Governing Board for its quarterly assessment of the situation and to the attention of the Bank Council.

The report was passed on 11 December 2003.
Data which became available at a later date has been included whenever possible. Unless indicated otherwise, quarter-on-quarter comparisons are based on data adjusted for seasonal and random variations.

1   International environment

In the second half of 2003, the global economic situation brightened. Strong stimuli emanated from the US economy and from the Asian economic area. In Europe, economic growth picked up markedly in the United Kingdom, and the euro area emerged from stagnation. The leading indicators point to a sustained economic recovery in the coming months.

The global recovery was supported by monetary and fiscal policy conditions that remained steadily favourable. Given the consistently low inflation expectations, the central banks of most industrialised countries continued to conduct expansionary monetary policies. In numerous countries, first and foremost in the US, fiscal policy also had the effect of buoying up demand. Together with a cyclically-induced fall in revenues, state expenditure, which grew more markedly, led to a considerable expansion of government deficits.

1.1 Economic activity

Strong growth in the US

In the US, real gross domestic product (GDP) grew extremely vigorously by an annualised 8.2% in the third quarter (2nd quarter: +3.3%); the growth was broad-based. Low interest rates combined with a certain pent-up demand triggered a surge of investment. Tax concessions drove private consumption, while exports were underpinned by the decline of the dollar and rising demand from abroad.

Following strong growth in the third quarter, economic momentum in the fourth quarter is likely to have weakened, though still remaining robust. The leading indicators in particular point to improved business activity in manufacturing. Additional stimuli are likely to emanate from stockbuilding.

Robust growth in the United Kingdom

The British economy, too, grew vigorously by an annualised 3% in the third quarter. Exports were boosted by the decline of the pound sterling and the strong demand from the US. Private consumption gained momentum, due partly to a further decline in unemployment. Leading indicators point to continued strong growth in the fourth quarter. At the same time, there were signs of overheating in the form of growing indebtedness of private households and rising real estate prices.

USA   Graph 1.1

Year-on-year change
— Consumer prices   ■ Real GDP
%
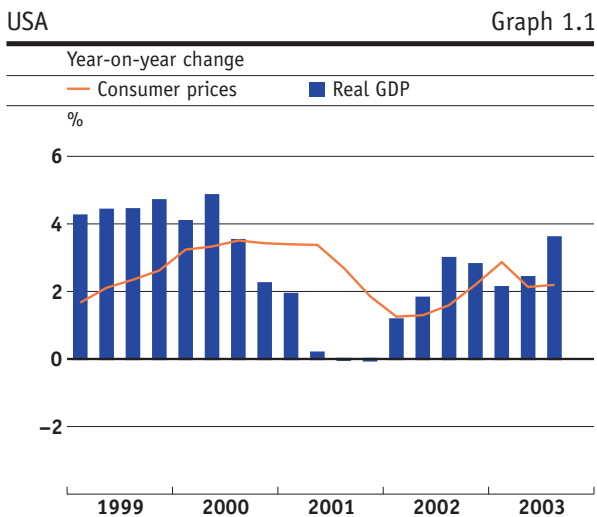
Source: Bank for International Settlements (BIS)

Japan   Graph 1.2

Year-on-year change
— Consumer prices   ■ Real GDP
%
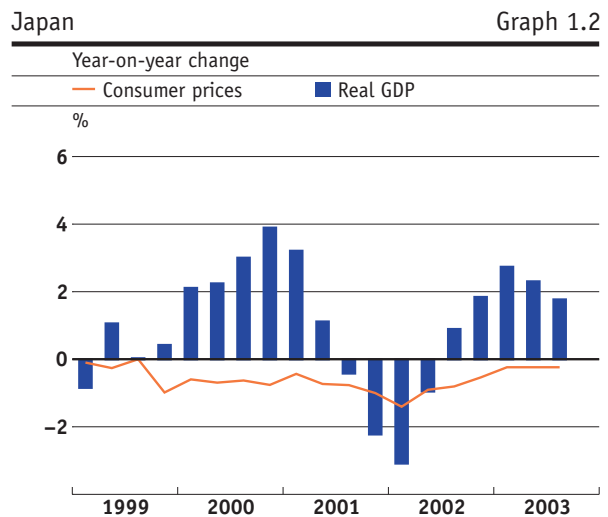
Source: BIS

Economic recovery in Japan

In Japan, real gross domestic product increased by an annualised 1.4% in the third quarter after having exhibited a marked rise in the previous quarter (2.4%). Growth was propelled mainly by exports and by private investment activity. Private consumption, however, remained sluggish. The situation on the labour market improved somewhat in the last few months. In the latest opinion polls both enterprises and consumers anticipated a renewed economic upswing.

Gradual revival in the euro area

The global recovery also had a positive impact on the euro area. Real gross domestic product rose by an annualised 1.5% in the third quarter after having contracted slightly in the first half-year. While exports expanded vigorously, overall domestic demand was on the decline.

In the fourth quarter, growth is expected to strengthen. Consumer confidence developed only hesitantly in the past few months, and the labour market situation remained difficult. Nevertheless, rising exports have improved the business situation for companies. This should also serve to boost investments, which had been flagging in the past two years.

Euro area   Graph 1.3

Year-on-year change
— Consumer prices   ■ Real GDP

Source: BIS

Switzerland   Graph 1.4

Year-on-year change
— Consumer prices   ■ Real GDP
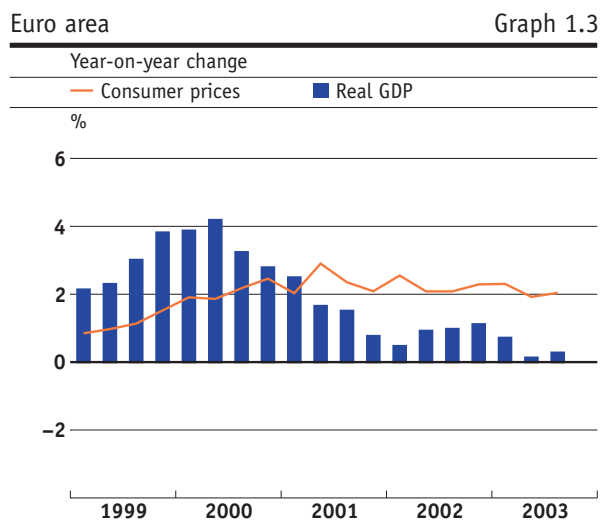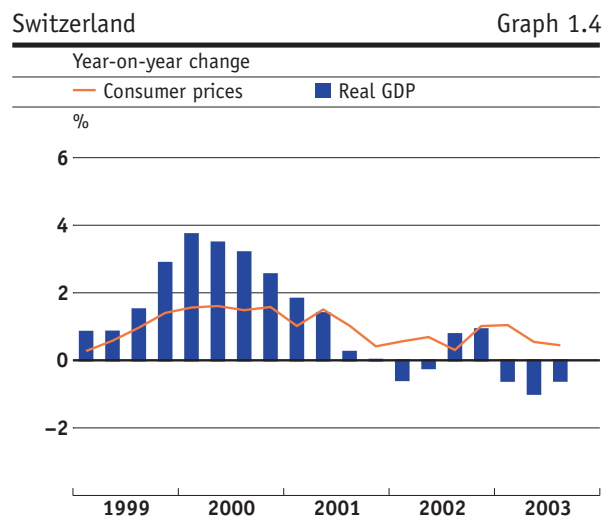
Sources: Swiss Federal Statistical Office (SFSO),
State Secretariat for Economic Affairs (seco)

1.2 Monetary policy and interest rates

Inflation still at a low level

In the OECD area, average inflation measured by consumer prices[1] amounted to 1.8% in October, thus maintaining the July level.

In the US, inflation in October stood at 2.1%, i.e. almost as high as in the third quarter (2.2%), while core inflation edged down to 1.2%. In the United Kingdom, inflation eased somewhat to 2.7% until October, but still exceeded the level of 2.5% targeted by the central bank. In the euro area, it fell to 2% in October, thus reaching the upper level for price stability laid down by the ECB. In Japan, the deflationary trend continued to weaken, and the price level measured by consumer prices remained stable in October.

Monetary policy remains largely expansionary

The Fed and the European Central Bank left the key rates unchanged at 1.0% and 2.0% respectively after last cutting these rates in June by 0.25 and 0.5 percentage points. The central banks of various other countries (Norway, Sweden, Denmark, Canada), however, lowered their key rates further in the course of the third quarter. The Bank of Japan adhered to its expansionary monetary policy.

On 6 November, the Bank of England lifted its repo rate by 0.25 percentage points to 3.75% in order to counter symptoms of overheating. This was the first rate increase in almost four years.

Higher long-term interest rates – recovery on the equity markets

In the US, long-term interest rates remained fairly stable between September and November, after having risen markedly in July and August. The yield on ten-year government bonds amounted to 4.3% in November, i.e. 1 percentage point higher than in June. In the United Kingdom, the respective yield rose by 0.6 percentage point to 5.0% between June and November, while gaining 0.7 percentage points to 4.5% in the euro area over the same period.

Equity prices continued to recover. In November, the global share index MSCI (Morgan Stanley Capital International) exceeded the annual low of March 2003 by 24%.

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1 Excluding Mexico, Poland, Hungary and Turkey

1.3 Economic outlook

The prospects for a sustained recovery of the world economy have brightened in the past few months. While in the US, the fiscal stimuli are set to decline in 2004, economic growth is nevertheless expected to remain robust as a result of an improved labour market. In the euro area, the continuous revival of exports is likely to have a positive effect on investment activity, while private consumption will probably remain a weak point owing to persistently high unemployment. In Japan, it is mainly the industries that have undergone structural adjustments in recent years which are expected to drive growth.

With the economic turnaround, the threat of deflation has diminished markedly. At the same time, the risk of a surge of inflation remains slight. Most industrialised countries have considerable excess capacities. This leaves central banks ample leeway to adjust their monetary policies in good time.

Risks in respect of future economic developments exist in both the downward and upward directions. Geopolitical tensions and increasing protectionism might well put a brake on the upswing. Moreover, the high current account deficit and growing government indebtedness in the US threaten to trigger a further decline of the dollar, which in turn could jeopardise the economic recovery in Europe and Asia. But it is also conceivable that the expansive forces around the world will strengthen each other and that economic activity, notably in the euro area, will gain more momentum than currently anticipated.

The participants in the consensus survey[1] revised their growth expectations upward in the last few months. November predictions put average GDP growth in 2004 at 4.2% in the US, 2.6% in the United Kingdom, 1.7% in the euro area and 1.3% in Japan. In its autumn forecast, the OECD predicted very much the same growth rates as in the latest consensus survey for the US and Europe, while anticipating stronger growth of 1.8% for Japan (see table).

Forecasts Table 1

| | Economic growth[2] | | | | Inflation[3] | | | |
| | OECD | | Consensus | | OECD[4] | | Consensus | |
	2003	2004	2003	2004	2003	2004	2003	2004
European Union	0.7	1.8	0.8	2.0	2.0	1.8	2.1	1.8
Germany	−0.1	0.8	0.0	1.7	0.9	0.8	1.1	1.1
France	0.2	1.8	0.2	1.6	2.0	1.0	2.0	1.6
United Kingdom	2.0	2.8	2.0	2.6	2.9	2.7	2.8	2.5
Italy	0.5	1.6	0.4	1.5	2.8	2.1	2.7	2.1
United States	2.8	4.1	2.9	4.2	2.4	1.7	2.3	1.7
Japan	2.7	1.8	2.4	1.3	−0.1	−0.1	−0.3	−0.4
Switzerland	−0.5	1.2	−0.4	1.3	0.6	0.3	0.6	0.5

1 Consensus forecasts are monthly surveys conducted among approximately 200 leading companies and economic research institutes in roughly 20 countries, covering predictions for the development of GDP, prices, interest rates and other relevant economic indicators.

The results are published by Consensus Economics Inc., London.

2 Real GDP, change from previous year in percent

3 Consumer prices, change from previous year in percent
4 Inflation EU: euro area, harmonised inflation; inflation UK: excluding mortgage costs

Sources: OECD: Economic Outlook December 2003;
Consensus: November Survey

2   Monetary situation

In summer 2003, money and capital market rates fell to a low worldwide, but have risen considerably since then. On the equity markets, the recovery that began in spring continued. In Switzerland, the monetary aggregates expanded once more; domestic loans, however, still showed only muted development.

2.1 Interest rates

Steeper interest rate curve on the money market

The National Bank adhered to its expansionary monetary policy in the second half-year. The target range for the three-month Libor rate has been unchanged since March 2003 at 0.0%–0.75%; a level of 0.25% is targeted. From March until August, the three-month Libor rate slightly exceeded this level, while since August it has been fluctuating symmetrically around the target level.

Long-term money market rates with maturities of up to 12 months fluctuated considerably between August and November. The average twelve-month Libor rate rose from 0.52% in August to 0.58% in November. During this period, federal money market debt register claims and call money were traded at an average discount of 13 and 18 basis points respectively off the three-month Libor rate. Since April, repo rates have remained unchanged at 0.1%.

The money market interest rate structure of the euro and the dollar also became somewhat steeper. The twelve-month euro rate rose from 2.28% in August to 2.41% in November, while the twelve-month dollar rate increased from 1.41% to 1.51%. The interest rate differential to the Swiss franc for three-month maturities remained largely unchanged, averaging 90 basis points against the dollar and 189 basis points against the euro between August and November.

Unchanged bond yields

Capital market yields have remained largely stable since the beginning of September. The yield on a Confederation bond with a residual maturity of ten years rose from an average of 2.79% in August to 2.94% in November. The maturity premium, i.e. the differential to the yield on three-month money market debt register claims, moved up slightly from 2.67 percentage points in August to 2.80 percentage points in November.

On average during the months August to November, ten-year US treasury bonds were traded at a premium of 1.45 percentage points and corresponding European government bonds at a premium of 1.43 percentage points compared with a Confederation bond. The discount on Japanese government bonds averaged 1.53 percentage points.

Money market rates

Graph 2.1

Daily values

— Three-month Libor — One-week repo rate — Target range

%

5 — 4 — 3 — 2 — 1 — 0

1999 2000 2001 2002

Jan. Feb. March April May June July Aug. Sept. Oct. Nov.

2003
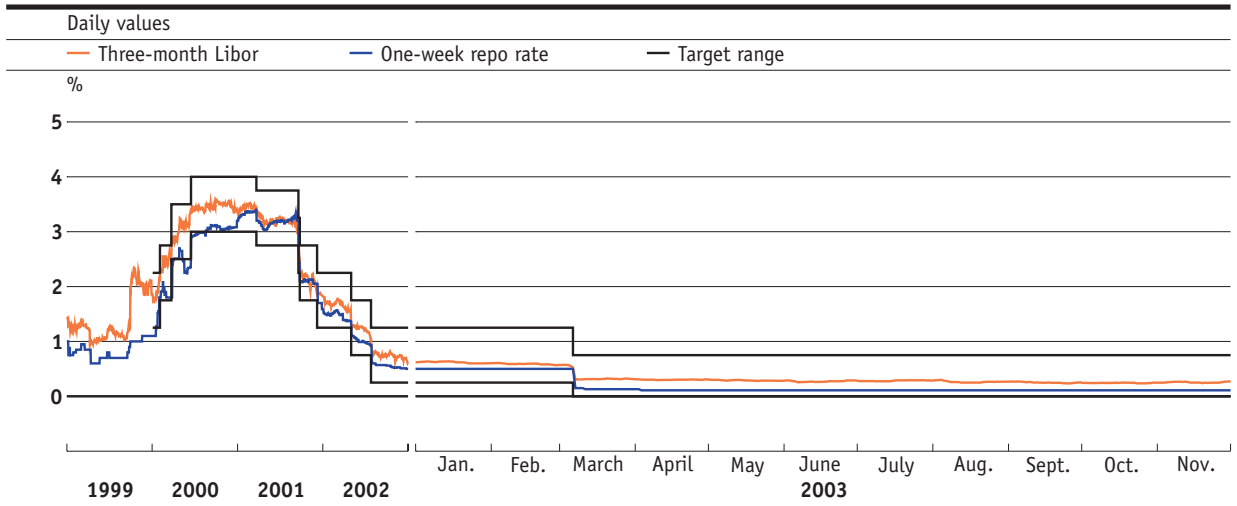
Bond yield and interest rate structure

Graph 2.2

Monthly averages and daily values

— Confederation bonds — Federal money market debt register claims (3 months) ▪ Interest rate differential

%

5 — 4 — 3 — 2 — 1 — 0

1999 2000 2001 2002

Jan. Feb. March April May June July Aug. Sept. Oct. Nov.

2003

Interest rates abroad

Graph 2.3

Three-month Libor

— USD — EUR — CHF

%

8 —

6 —

4 —

2 —

1999 2000 2001 2002 2003

Interest rates abroad

Graph 2.4

Long-term government paper

— US — Germany — Euro area — Switzerland

%

8 —

6 —

4 —

2 —

1999 2000 2001 2002 2003
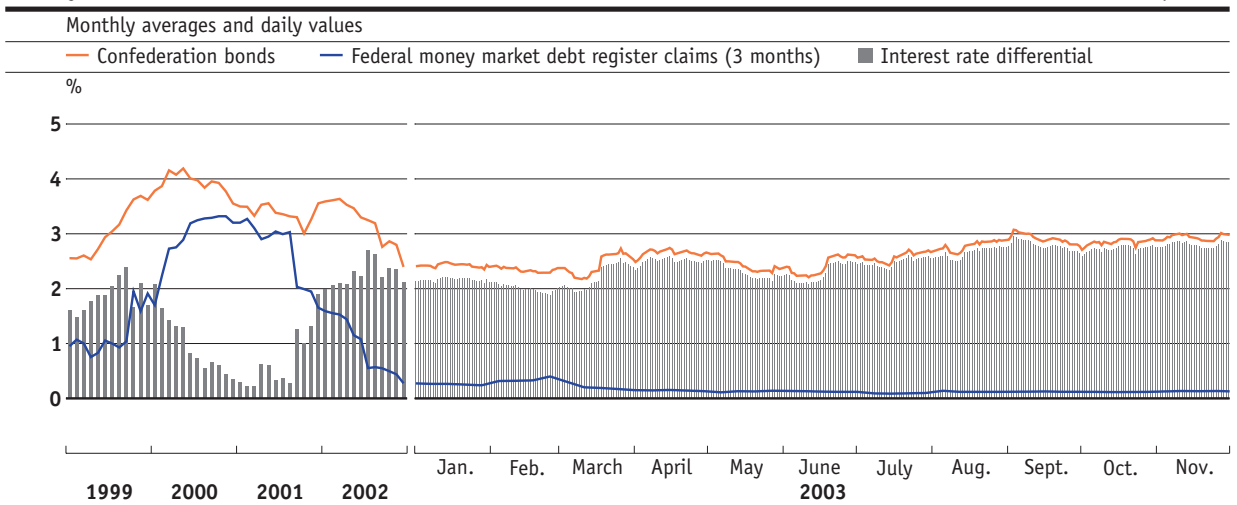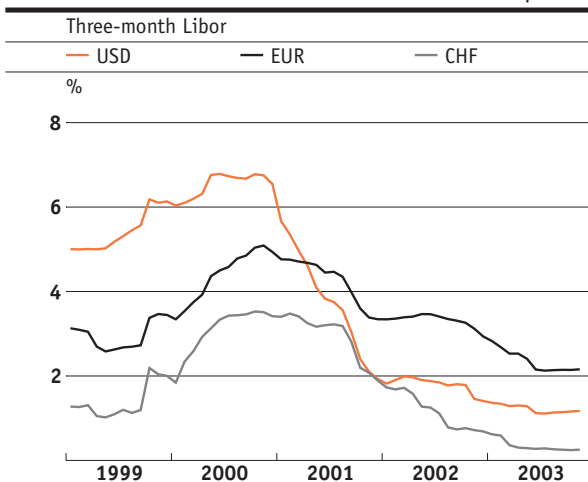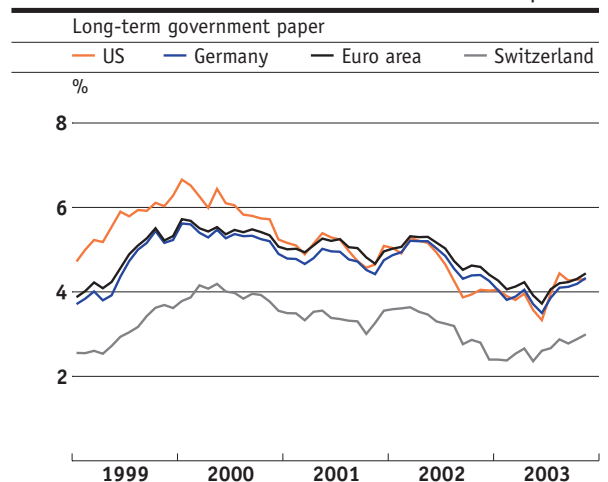
Graphs 2.1 and 2.3: Source: SNB

Graph 2.2: Confederation bonds: until the end of 2000, average yield calculated by maturity: as of 2001, spot interest rate of 10-year discount bonds. Money market debt register claims: yield at auction. If several auctions per month: the last of the month. Source: SNB

Graph 2.4: US: yield on 10-year US treasury paper, secondary market. Germany: current yield on quoted 10-year German Federal securities. Switzerland: Confederation bonds; see graph 2.2. Source: BIS

Mixed development of medium-term notes, savings deposits and mortgages

Interest rates for existing mortgages fell from 3.27% at the beginning of August to 3.20% at the beginning of November; new mortgages, by contrast, increased from 3.17% to 3.19%. The interest rate on savings deposits dropped to a low of 0.52% in November. Yields on medium-term notes of big banks, however, rose steeply from 1.48% at the start of August to 1.78% at the start of November.

Steady recovery on the equity markets

The recovery that set in on the equity markets in March 2003 continued until November. The US S&P500 index rose to 1050 points until November, but was still 31% short of the peak of 1527 which it had reached in 2000. The other stock markets also advanced significantly from March to November though, as a rule, they are still considerably further removed from their former record levels than the US stock exchanges; in November, the Swiss SMI and the British FTSE100 both fell short of their record highs to date by 37%, while the German DAX was down by 54% and the Japanese Nikkei index was a hefty 74% lower than its peak, which, however, had been reached as far back as 1989.

2.2 Exchange rates

Weak dollar

Following a brief recovery in summer, the dollar resumed its decline, which had begun at the start of 2002. The dollar's depreciation was particularly marked against the yen (−8.0%) in the period September to November. It weakened by 4.8% against the euro and stood at 1.17 dollars per euro in November. Against the pound sterling the dollar depreciated by 5.6%.

The development of the yen's external value mirrored that of the US dollar. While in August the Japanese currency had stood at 119 yen/dollar, by November it had risen to 109 yen/dollar. Higher growth expectations and capital flows in the Japanese equity market are likely to have contributed to the appreciation of the yen. Massive foreign exchange market interventions by the Bank of Japan failed to prevent the rise of the yen against the US dollar. In relation to the euro, the yen remained steady at 128 yen/euro.

Stable external value of the Swiss franc

The Swiss franc developed irregularly vis-à-vis the various currencies. It depreciated from CHF 1.54 in August to CHF 1.56 in November against the euro, fell from CHF 1.16 to 1.22/100 yen against the Japanese currency and declined from CHF 2.20 to 2.25 against the pound sterling. In relation to the US currency the Swiss franc rose from 1.38 to 1.33 CHF/dollar.

The export-weighted real value of the Swiss franc remained virtually unchanged (−0.3%) between August and November after having declined perceptibly in the previous period. In real terms, the Swiss franc moved up by 1.9% vis-à-vis North America, declined by 1.8% against Asia and remained virtually stable in relation to the European trading partners (+0.4%).

Exchange rates — Graph 2.5

Foreign exchange rates in CHF
— EUR — GBP
CHF/EUR CHF/GBP

Exchange rates — Graph 2.6

Foreign exchange rates in CHF
— USD — JPY
CHF/USD CHF/100 JPY
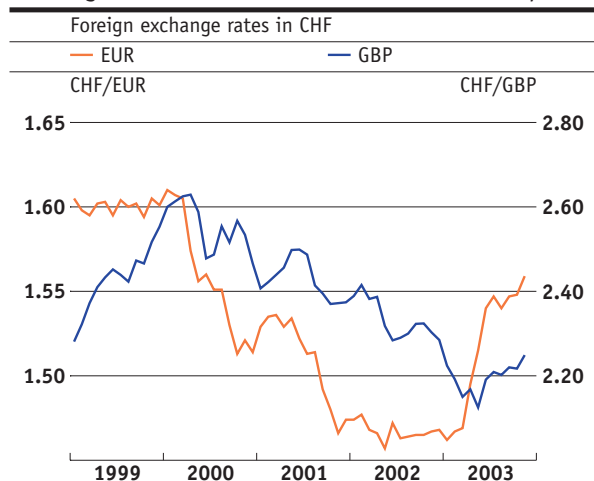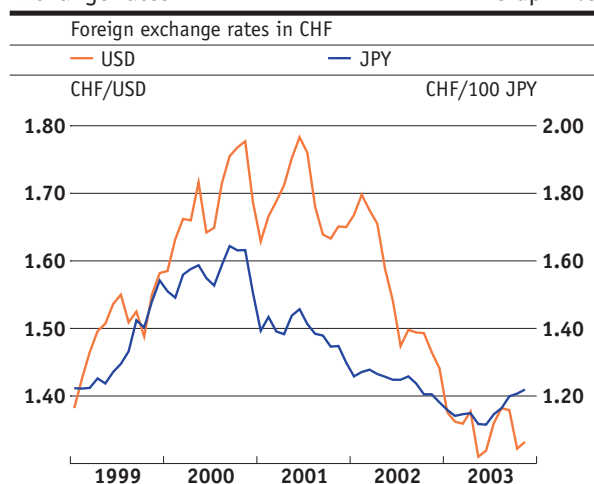
Real exchange rate indices — Graph 2.7

Index of CHF exchange rates, Nov. 1977 = 100
— 24 countries — Euro area
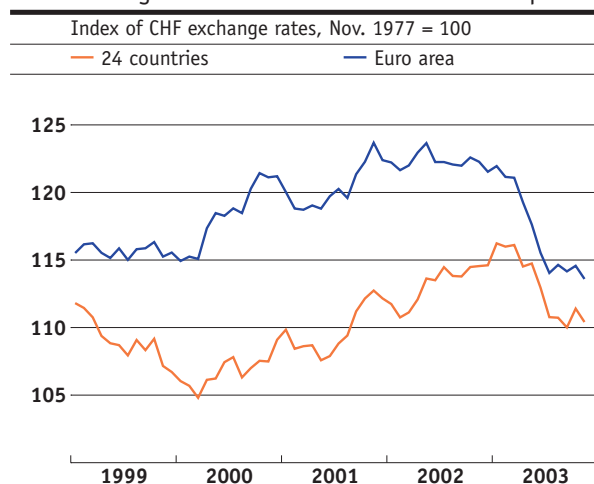
Graphs 2.5, 2.6 and 2.7:
Source: SNB

2.3 Monetary aggregates

Rise in the monetary base

As in the previous quarter, the seasonally adjusted monetary base registered a significant increase in the third quarter of 2003. This is mainly attributable to another sharp rise in sight deposits, which increased from an average of CHF 4.36 billion in the second quarter to CHF 5.71 billion in the third quarter. Banknote circulation climbed by CHF 0.24 billion, which corresponds to an annualised growth rate of 2.7%. The seasonally adjusted monetary base in the third quarter grew at an annualised growth rate of 17.1% overall, exceeding the previous year's level by 8.5%.

Growth rates of all banknotes declined significantly in the third quarter; the volume of large denominations grew at an annualised rate of 4.7% (following 7.1% in the previous quarter), the volume of medium-value notes (hundreds to five-hundreds) expanded by 1.0% (as against 5.4% in the previous quarter) and that of small notes by 1.8% (following 5.1% in the previous quarter).

Roughly 80% of the growth in banknote circulation from October 2002 to October 2003 is accounted for by large denominations, approximately 15% by medium-value notes and around 5% by small denominations.

Increase in the monetary aggregates

The broad monetary aggregates continued to rise. M_1 and M_2 registered another marked increase, notably in October, topping the corresponding year-earlier level by 26.2% and 19.5% respectively. As a result of a continued sharp decline in time deposits, M_3 grew at a distinctly slower pace. In October, it exceeded the previous year's level by 9.9%. The growth rates of M_1 and M_3 in October were higher than they had been for many a year, while the growth rate of M_2 was just below its peak of 20.6% reached in June.

In addition to the expansionary monetary policy, the steep growth in the money stock M_3 in the last two years was characterised by two trends: first, there was a catching-up effect as the money stock M_3 had grown at a below-average rate for a long time. Second, there were unusually large shifts in portfolios from fiduciary investments – which are not included in balance sheets of Swiss banks – to sight deposits, the latter being a component of M_3. The high growth of the money stock M_3, therefore, does not currently present any undue inflation potential. Should we continue to see such growth rates for an extended period of time, however, increasing inflationary dangers are to be expected.

Monetary base   Graph 2.8
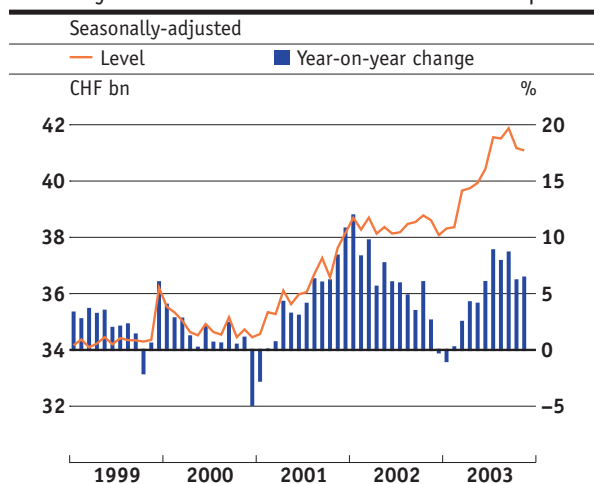
Money stock M_3 Graph 2.9
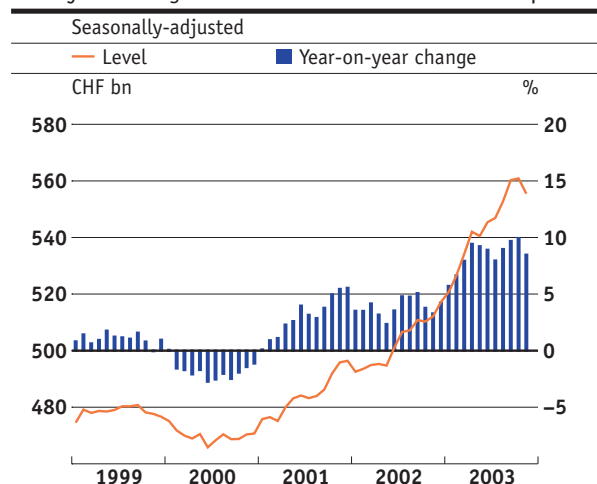
Graphs 2.8 and 2.9:
Source: SNB

Monetary base and its components Table 2

	2001	2002	2002		2003					
			Q3	Q4	Q1	Q2	Q3	Sept.	Oct.	Nov.
Banknote circulation [1]	33.0	35.1	34.4	35.3	35.6	35.5	35.3	35.3	35.3	35.3
Change [2]	4.7	6.3	5.2	2.2	−0.7	2.0	2.6	3.1	2.5	2.2
Sight deposit accounts [1]	3.3	3.3	3.3	3.3	3.6	4.3	5.7	5.9	5.3	5.4
Change [2]	0.2	0.4	−1.6	2.6	16.8	32.4	70.6	64.6	46.9	57.1
MB [1,3]	36.3	38.4	37.8	38.7	39.2	39.9	41.0	41.2	40.6	40.7
SAMB [1,4]	**36.3**	**38.4**	**38.4**	**38.5**	**38.8**	**40.0**	**41.6**	**41.9**	**41.2**	**41.1**
Change [2]	4.1	6.0	4.7	2.8	0.6	4.8	8.5	8.6	6.2	6.4

Broadly defined monetary aggregates and their components [5] Table 3

	2001	2002	2002		2003					
			Q3 [p]	Q4 [p]	Q1 [p]	Q2 [p]	Q3 [p]	Sept. [p]	Oct. [p]	Nov. [p]
Currency in circulation	5.1	5.4	3.9	0.5	−0.4	2.5	2.3	2.1	2.4	2.2
Sight deposits	−0.7	10.3	15.7	15.6	24.9	42.4	36.6	37.1	42.2	39.1
Transaction accounts	1.6	7.8	8.9	6.9	8.5	12.1	13.4	12.7	12.6	11.8
M[1]	**1.0**	**8.7**	**11.4**	**10.1**	**15.0**	**25.3**	**23.5**	**23.5**	**26.2**	**24.4**
Savings deposits	−6.1	7.5	9.8	10.3	11.4	12.8	12.6	12.4	11.1	11.3
M[2]	**−2.3**	**8.1**	**10.7**	**10.2**	**13.4**	**19.7**	**18.6**	**18.6**	**19.5**	**18.7**
Term deposits	26.9	−10.8	−14.1	−18.7	−18.2	−31.5	−32.4	−29.5	−33.4	−39.8
M[3]	**3.1**	**3.8**	**4.9**	**3.8**	**6.8**	**9.2**	**8.9**	**9.7**	**9.9**	**8.5**

1   In billions of Swiss francs; average of monthly values; monthly values are averages of daily values
2   From previous year in percent
3   MB = monetary base = bank-note circulation + sight deposit accounts

4   SAMB = seasonally-adjusted monetary base = monetary base divided by the corresponding sea-sonal factors

5   Definition 1995, change from previous year in percent
p   Provisional

2.4 Lending and capital market borrowing

Slight rise in domestic lending

Domestic lending covers loans by banks to borrowers domiciled in Switzerland and comprises the balance sheet items unsecured and secured customer claims, as well as mortgage claims. At 86%, secured domestic lending (comprising secured customer claims and mortgage claims) accounted for the lion's share of total lending; of this figure, 91% was attributable to mortgage claims.

Domestic lending has shown a slightly rising trend for roughly a year now. Even though it contracted somewhat in July, it continued to expand from August to October. At the end of October, aggregate domestic lending exceeded the level of January by 1.6%; this corresponds to an annualised growth rate of 2.1%[1].

Unsecured customer claims again fell significantly in the third quarter (−6.0% as against the previous quarter). Secured customer claims also continued their downward trend, falling by another 2.6% versus the previous quarter. The total of all customer claims, consisting of unsecured and secured customer claims, dropped by 4.7% compared with the previous quarter. Mortgage claims registered a slight quarter-on-quarter increase (+1.1%); they have shown positive growth rates since August 2000.

Domestic lending by both the cantonal banks and the big banks fell somewhat in the third quarter. The regional banks registered a slight increase in domestic lending (+0.2%), while the Raiffeisen banks saw the volume of their lending grow by 1.8% compared with the previous quarter, corresponding to an annualised growth rate of 7.6%. This divergence is likely to be attributable to the different composition of the banks' respective loan portfolios: customer claims account for a comparatively high proportion of domestic lending by the cantonal banks and the big banks (16% and 24% respectively), while the corresponding shares at the regional banks and the Raiffeisen banks are lower (9% and 6% respectively).

Annual rates of change: secured and unsecured loans   Graph 2.10
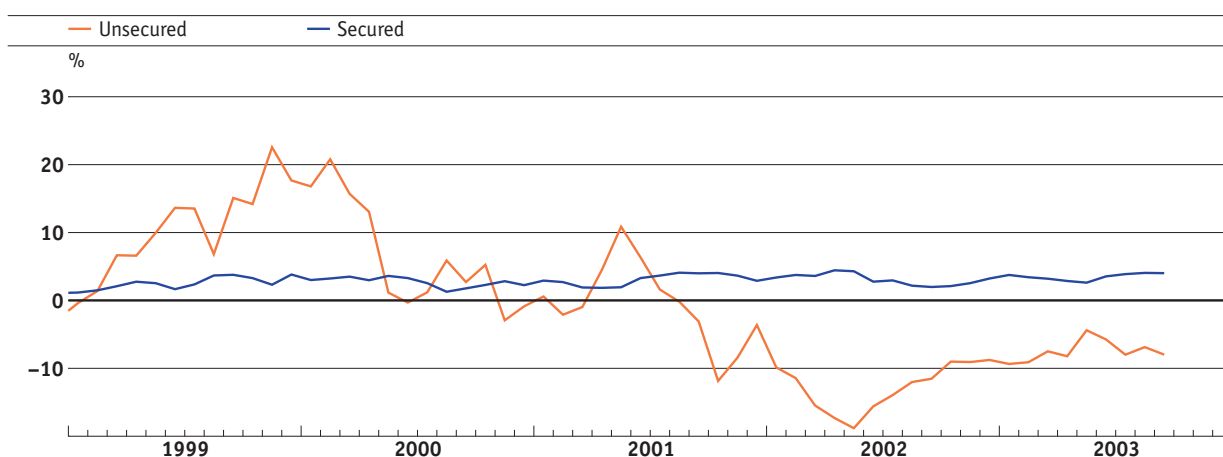
1 Owing to a change in the reporting population of the Raiffeisen banks in December 2002, an annual rate of change will not be calculated.

Continued predominance of foreign borrowers

With a volume of CHF 13.4 billion, foreign issuers continued to dominate the market for Swiss franc-denominated issues also in the third quarter. This amount corresponds to roughly two-thirds of overall capital market borrowing. Approximately half of all foreign issues were floated by borrowers domiciled in the European Union. As was the case already in the preceding quarters, the Confederation and the cantons were prevalent among domestic borrowers. Together they issued approximately CHF 3.8 billion, a little more than half of the total issuing volume of CHF 6.4 billion. The banks issued bonds in the amount of roughly CHF 1.2 billion. While capital redemptions by the Confederation and the cantons were down slightly, they moved up in all the other borrower categories. Consequently, capital redemptions exceeded new borrowing in the case of most borrower categories in the third quarter. As a result of the increased issuing activity of foreign borrowers, this nevertheless resulted in only slightly lower net borrowing of CHF 5.1 billion for the bond issue market as a whole.

Shares were issued in the amount of approximately CHF 23 million only. This is the lowest quarterly value shown since the beginning of the 1990s. Redemptions amounted to CHF 1.9 billion; they were composed of many different positions. The largest single position concerned Swisscom. In the third quarter, the company lowered its capital by approximately CHF 0.5 billion by reducing the nominal value of its stock.

Capital market borrowing in billions of Swiss francs   Table 4

	2001	2002	2002 Q3	Q4	2003 Q1	Q2	Q3
Bonds and shares, total							
Price of issue [1]	73.4	77.3	13.6	19.3	23.2	18.8	19.8
Conversions/Redemptions	60.4	60.5	19.7	17.7	19.2	14.0	16.6
Net borrowing	13.0	16.8	−6.1	1.5	4.0	4.9	3.2
Swiss bonds							
Price of issue [1]	27.0	26.2	5.5	3.4	10.5	7.7	6.4
Conversions/Redemptions	21.1	22.5	5.5	6.0	8.9	4.5	5.7
Net borrowing	5.9	3.7	0.0	−2.6	1.5	3.3	0.7
Swiss shares							
Price of issue [1]	12.3	7.4	0.7	5.1	1.3	0.2	0.0
Redemptions	7.3	9.1	6.6	0.8	0.8	0.8	1.9
Net borrowing	5.0	−1.7	−5.9	4.3	0.5	−0.6	−1.9
Foreign bonds [2]							
Price of issue [1]	34.0	43.7	7.4	10.8	11.5	11.0	13.4
Redemptions	32.0	28.9	7.6	11.0	9.5	8.7	9.0
Net borrowing [3]	2.1	14.8	−0.2	−0.2	2.0	2.2	4.3

1 By date of payment
2 Excluding foreign-currency bonds
3 Excluding conversions

3 Aggregate demand and output

3.1 GDP and industrial output

Real GDP rising slightly

In Switzerland, for the first time in a year, real GDP in the third quarter 2003 rose slightly quarter-on-quarter. Yet it still fell 0.6% short of the corresponding year-earlier level.

A vigorous revival in exports of goods contributed to the recovery compared with the previous quarter. Demand from Asia, the US, the United Kingdom and Central and Eastern Europe registered particularly healthy expansion. Economic stimuli also emanated from domestic demand. After having diminished for almost three years, equipment investment was up again slightly. Private consumption and construction continued to underpin economic activity. Rising aggregate demand led to an accelerated increase in imports, so that stimulating effects emanating from foreign trade were only minor overall.

Upturn in the manufacturing sector

The situation in the manufacturing sector brightened steadily from July to November. The purchasing managers' index rose to just under 56% until November, thus distinctly exceeding the threshold of 50%, which indicates unchanged output. The results of the KOF/FIT survey confirmed this trend. Both orders received and output advanced until October. The composite index of industrial activity, which comprises orders received and output in a year-on-year comparison as well as the assessment of orders on hand and of finished goods inventories, saw a marked improvement, with all the sub-indices making a contribution.

The turnaround was particularly pronounced in the strongly export-oriented companies. Manufacturers of capital goods and consumer non-durables in particular were clearly more optimistic. Manufacturers of consumer durables, by contrast, were a little more cautious.

GDP and its components
At 1990 prices; percentage-point contribution to year-on-year change in GDP

Table 5

	2001	2002	2002		2003		
			Q3	Q4	Q1	Q2	Q3
Private consumption	1.2	0.4	0.3	0.2	0.1	0.5	0.6
Govt. and social insurance consumption	0.4	0.3	0.5	0.4	0.3	0.3	0.3
Investment in fixed assets	−0.9	−1.0	−0.5	−0.4	−0.1	−0.9	−0.1
Construction investment	−0.4	0.2	0.3	0.2	0.1	0.0	0.2
Equipment investment	−0.5	−1.3	−0.9	−0.6	−0.2	−0.9	−0.3
Domestic final demand	**0.7**	**−0.3**	**0.3**	**0.2**	**0.2**	**−0.1**	**0.8**
Inventories	0.0	−0.9	−2.2	−1.2	−0.4	−3.6	−1.1
Exports, total	0.0	−0.2	1.4	0.8	0.3	−0.3	−0.2
Aggregate demand	**0.7**	**−1.4**	**−0.5**	**−0.2**	**0.1**	**−4.0**	**−0.4**
Imports, total	−0.1	−1.6	−1.3	−1.1	0.7	−3.0	0.2
GDP	**0.9**	**0.2**	**0.8**	**0.9**	**−0.6**	**−1.0**	**−0.6**

Sources: SFSO, seco

The third-quarter production data published by the Swiss Federal Statistical Office (SFSO) in December confirmed the recovery of the manufacturing sector. The processing industry's output increased compared with the previous quarter and again slightly exceeded the corresponding year-earlier level.

Growing optimism

The vast majority of exporters as well as domestically oriented industries expected unchanged or expanding orders for the next three months. Accordingly, production plans and planned purchases of primary products were adjusted upward. Industrial output is thus likely to grow in the fourth quarter.

GDP   Graph 3.1

Smoothed, at 1990 prices
— Level   ■ Year-on-year change
CHF bn   %
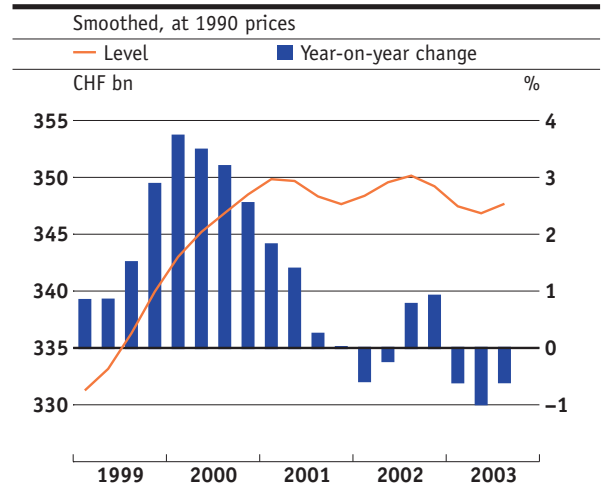
Industrial activity   Graph 3.2

Smoothed, by export shares
— 0–33%   — 66–100%   — Total
Balance
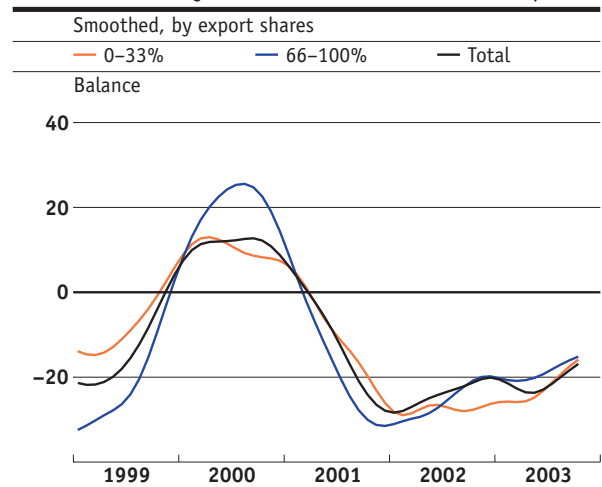
Industrial output   Graph 3.3

■ Year-on-year change
%
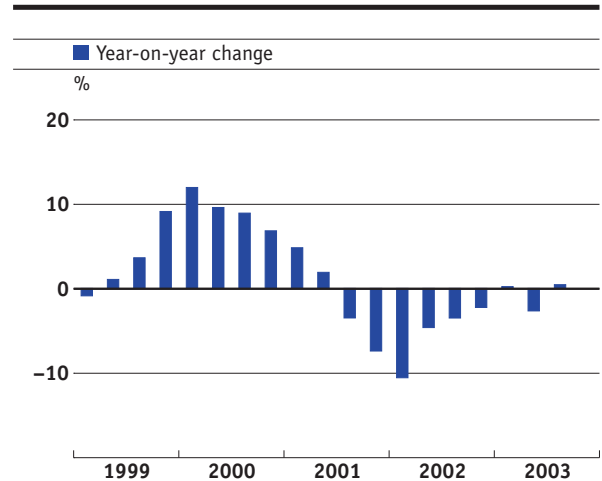
Graph 3.1:
Annualised estimate for the quarter
Source: seco

Graph 3.3: Source: SFSO

Graph 3.2: The synthetic index of industrial activity consists of the results of the following four questions: orders received and output compared with the corresponding year-earlier month, as well as evaluation of the order backlog and of the finished goods inventories.
Source: Swiss Institute for Business Cycle Research at the Federal Institute of Technology (KOF/FIT)

3.2 Foreign trade and current account

For the first time in a year, exports of goods and services rose again in the third quarter compared with the previous period. Yet they still fell 0.4% short of the corresponding year-earlier level overall.

As a result of higher imports of goods, total imports registered an accelerated increase. They topped the previous year's level by 0.4%.

Higher goods exports

According to the statistics of the Federal Customs Administration, goods exports in the third quarter mounted by 0.4% year-on-year. In the previous period they had fallen by 9%.[1] The positive development compared with the previous period was broadly supported. Exports of raw materials and semi-manufactures as well as consumer and capital goods advanced. Particularly striking, however, was the persistently sluggish trend in exports of industrial machinery. By contrast, exports of precision instruments and electronics goods made a significant contribution to the growth in capital goods exports.

Real exports by use[2]
Change from previous year in percent

Table 6

	2001	2002	2002 Q3	Q4	2003 Q1	Q2	Q2
Total	**2.9**	**1.8**	**5.3**	**5.4**	**0.2**	**−1.2**	**0.4**
Raw materials and semi-manufactures	−1.5	−0.4	1.0	5.8	3.7	−3.8	1.5
Capital goods	−0.4	−4.4	−2.0	2.8	−1.4	2.6	3.2
Consumer goods	9.4	8.5	14.6	7.3	−1.0	−2.5	−2.5
Export prices	1.2	−2.7	−3.9	−4.3	0.0	−3.5	0.2

Real imports by use[2]
Change from previous year in percent

Table 7

	2001	2002	2002 Q3	Q4	2003 Q1	Q2	Q3
Total	**1.1**	**−2.5**	**−1.3**	**−1.7**	**2.9**	**−6.4**	**0.5**
Raw materials and semi-manufactures	0.1	−2.5	0.5	2.8	5.7	−6.3	−2.3
Energy sources	7.9	−2.1	−1.7	−11.1	−11.5	−5.2	−2.2
Capital goods	−5.0	−6.2	−2.0	−2.3	2.0	−4.1	3.7
Consumer goods	5.8	0.0	−2.0	−2.9	3.2	−8.1	0.6
Import prices	0.1	−2.9	−3.5	−2.2	−1.2	−1.2	0.6

1 Real exports of goods, according to the definition of the Federal Customs Administration (total 1), correspond to real exports of goods reported by seco excluding exports of electrical energy and the "Other goods trade" subcategory.

2 Excluding precious metals, precious stones and gems as well as objets d'art and antiques (total 1).
Source: Swiss General Directorate of Customs

Continued weak demand from the EU

Nominal exports to the EU failed to show much momentum, falling 0.8% short of the corresponding year-earlier level overall. Exports to Germany and France, which account for one-third of total exports, were still on the decline. Those to the United Kingdom and Italy, by contrast, rose considerably. Exports to Central and Eastern European countries continued to expand vigorously, exceeding the previous year's level by 12.6%. The export share of the United Kingdom and Italy together makes up 13%, that of Central and Eastern Europe approximately 4%.

## Higher demand from outside the EU

Demand from outside the EU exhibited dynamic development. Shipments to Japan, China and to the Asian emerging economies, which account for 12% of Swiss exports overall, registered a sharp rise, topping the year-earlier level by just over 5%. Exports to the US picked up as well, yet they were still 4.5% lower than a year previously. Shipments to the OPEC countries gained considerable momentum as well.

Exports growing at an accelerated pace in October

Exports continued to expand in October. A strong impetus again came from the United States and Asia, while demand from Germany and France remained muted. As a result of incoming orders having risen sharply until October, the upturn in export activity is likely to continue in the months ahead.

Imports on the rise again

Real imports of goods expanded in the third quarter. After a sharp decline of 6.5% in the previous period[1], they rose by 0.4% year-on-year. Imports of capital goods registered the strongest increase, with imports of office machines exhibiting above-average growth. Imports of raw materials and semi-manufactures, by contrast, remained below the corresponding year-earlier level, while those of consumer goods increased slightly. The generally positive trend of goods imports continued in October. As in the previous month, it was somewhat overstated as a result of the import of several commercial aircraft.

Exports   Graph 3.4
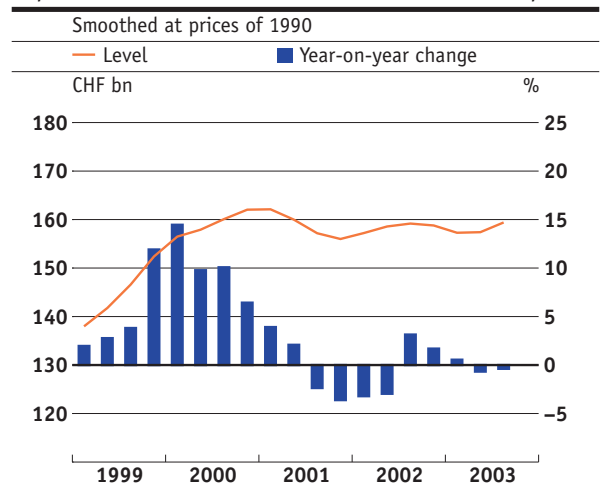
Exports by trading partners   Graph 3.5
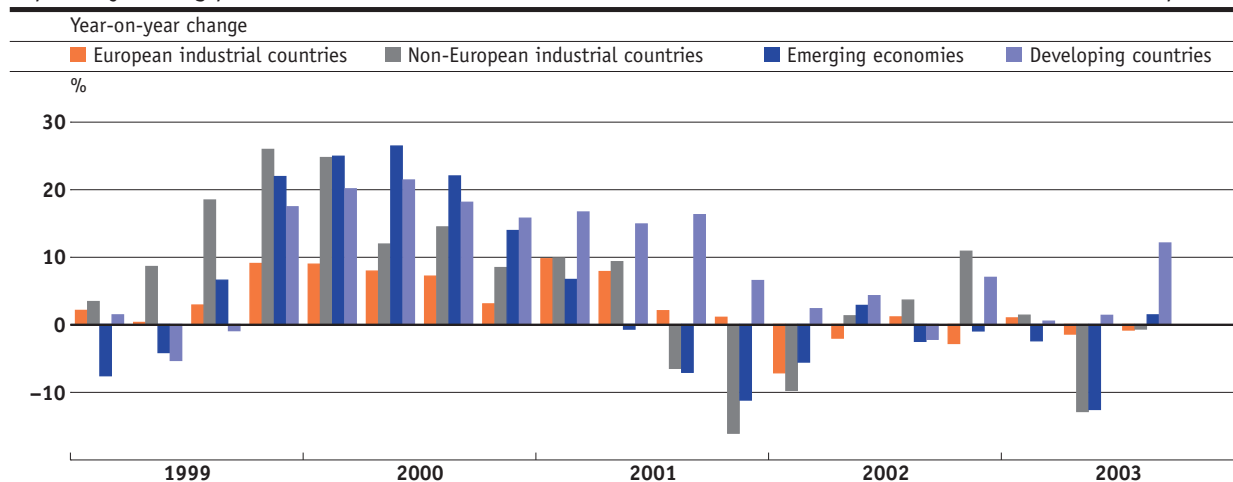
1 Real imports of goods according to the definition by the Federal Customs Administration (total 1) correspond to real imports of goods reported by the seco excluding imports of electrical energy and the subcategory "Other goods".

Graph 3.4: Annualised estimate for the quarter, excluding precious metals, precious stones and gems as well as objets d'art and antiques (total 1).
Source: seco

Graph 3.5: Excluding precious metals, precious stones and gems as well as objets d'art and antiques (total 1).
Source:
Federal Customs Administration

Slightly higher import and export prices

In the third quarter, export prices (measured by the mean prices of the Federal Customs Administration) rose by 0.2% compared with the previous year, while import prices advanced by 0.6%. This development led to a slight deterioration in the relation between export and import prices (terms of trade) from the year-earlier level.

Current account surplus unchanged

Nominal exports and imports of goods climbed by approximately 0.5% in the third quarter compared with the year-back period. The trade balance closed with a surplus of CHF 1.9 billion. Total goods trade – i.e. also including trade in electrical energy plus imports and exports of precious metals, precious stones and gems, etc. – closed with a surplus of CHF 1.6 billion.

At CHF 5.7 billion, the surplus from services equalled the figure for the year-earlier period. For the first time since the fourth quarter 2000, the banks' commission income registered a year-on-year increase again. Receipts from international transports, however, declined further. The surplus from labour income and investment income rose by CHF 0.8 billion to CHF 5.5 billion. In particular, net earnings from direct investment were higher than in the year-earlier quarter. At CHF 10.7 billion, the current account surplus in the third quarter was slightly lower than a year earlier (CHF 11 billion). The current account surplus as a percentage of nominal GDP came to 10% compared with 10.4% in the same quarter of the previous year.

Current account Balances in billions of Swiss francs   Table 8

	2001[1]	2002[2]	2002[2] Q3	Q4	2003[3] Q1	Q2	Q3
Goods	−4.6	5.2	2.0	2.1	−0.3	2.0	1.6
Special trade[4]	1.7	7.3	1.9	3.1	0.4	2.4	1.9
Services	22.1	22.1	5.7	4.7	7.2	4.9	5.7
Tourism	2.1	1.9	0.3	0.3	1.5	0.0	0.3
Labour income and investment income	25.1	15.6	4.8	4.3	4.5	5.4	5.5
Investment income	33.7	24.8	7.1	6.6	7.1	7.9	8.2
Current transfers	−6.7	−6.5	−1.5	−1.4	−1.6	−1.6	−2.1
Total current account	**35.8**	**36.3**	**11.0**	**9.6**	**9.7**	**10.6**	**10.7**

1 Revised
2 Provisional
3 Estimates
4 Total 1

3.3 Investment

Capital spending, which consists of investment in equipment and construction, grew slightly in the third quarter compared with the previous period. It was thus only marginally short of the corresponding year-earlier level (−0.3%). While equipment spending was up again for the first time in almost three years, construction investment continued to pick up somewhat.

Residential construction recovering

In the construction industry, building construction − benefiting from accelerating residential construction − proved to be a cornerstone of growth. Residential building activity, measured in terms of the number of dwellings under construction, again recorded vigorous growth in the third quarter. There were no signs yet of a turnaround in commercial construction, however. Construction activity in civil engineering remained sluggish as well.

Continuing strong demand for residential space

Residential construction should continue to drive construction activity. In the third quarter, the vacancy index was again below its year-earlier level, and rents of apartments advertised in the market continued to rise.[1] The continued vigorous demand has also been reflected in the number of building permits which has been increasing for some time now. Buoyed by the lower mortgage rates and falling building costs, residential construction is likely to grow at an accelerated pace in 2004. With the vacancy rate still on the rise, commercial construction is not expected to rebound any time soon.

Turnaround in equipment investment

Equipment investment increased somewhat in the third quarter, and the decline compared with the previous year receded slightly from −7,3% to −2,1%. Real imports of capital goods (roughly 75% of equipment investment) exceeded the previous year's level by 3.4%. As was to be expected, the turnaround was set in motion by imports of capital goods with a short operating life, such as office machines and IT equipment. By contrast, imports of industrial machinery receded further, albeit at a slower pace than in the previous quarters. According to the third-quarter survey by the Swiss mechanical and electrical engineering industries (Swissmem), domestic turnover in Swiss capital goods also edged up.

Construction investment   Graph 3.6

1   Source: Wüest & Partner

Graphs 3.6 and 3.7:
Annualised estimate for the quarter
Source: seco

Equipment investment   Graph 3.7

3.4 Consumption

Private consumption robust

Private consumption continued to buoy up economic activity in the third quarter: it rose 1.0% year-on-year, up from 0.8% in the previous quarter. The increase in real disposable household income, estimated at approximately 1.1% for 2003, continued to drive consumer spending. On the other hand, the persistently sluggish labour market remained an obstacle to household spending.

Goods consumption improving

In contrast to the preceding quarters, goods consumption exerted a mildly positive growth stimulus in the third quarter. In real terms, sales were 0.3% above the year-back level after having declined in the first half of the year. Whereas spending on food and health care continued to rise, the downtrend in cyclical consumer durables became less pronounced. Imports of consumer durables showed a 1.4% year-on-year drop in Q3 2003 while private car registrations were down 5.2% (October: −4.4%); these figures compare with year-on-year falls of 6% and 10% respectively in the first half of the year.

The monthly KOF/FIT survey confirms this upturn in the retail sector: business improved between July and October, and sales are expected to pick up further in the subsequent three months.

The domestic tourist sector, however, was not yet showing any signs of recovery. The number of overnight stays was down 0.6% year on year, after a 1.9% improvement in the second quarter. The outlook for the hotel and restaurant industry – and particularly for the hotel segment – remained gloomy. In the third quarter, too, a majority of the companies surveyed by the KOF/FIT were forecasting a fall-off in domestic demand for the near future.

Consumer sentiment in the doldrums

The consumer sentiment index edged up between July and October, but was still in the negative range. Whereas households were substantially more confident about the future economic situation than they had been in the previous survey, they were somewhat more pessimistic about financial prospects in the next twelve months. Their assessment of job security was a shade better than it had been in July. However, they still considered that it was not a good time to make large purchases.

Private consumption   Graph 3.8

Smoothed, at 1990 prices

— Level   ■ Year-on-year change

CHF bn   %

Annualised estimate for the
quarter
Source: seco

3.5 Capacity utilisation

Capacity utilisation indicators supply important information needed for assessing the cyclical and inflation situation. Full utilisation of production factors points to a cyclical overheating, whereas below-average utilisation signals a recession. Two indicators are used here: the macroeconomic output gap, and utilisation of technical capacities in industry.

Output gap unchanged

The output gap measures the difference in percent between actual real GDP and potential output. This is defined as the level of output that is attainable in the long term under conditions of price stability. A negative output gap thus signifies underutilisation of capacity, while a positive output gap is a sign that the production factors are being overutilised. Potential output and the output gap cannot be observed directly, but have to be estimated. In the third quarter, real GDP rose by an annualised 1% compared with the previous quarter. As potential output rose virtually in tandem with real GDP, the output gap remained unchanged at −3.5%.

Capacity utilisation in industry unchanged

Capacity utilisation in industry is measured by the quarterly KOF/FIT survey. Between the fourth quarter of 2000 and the end of 2001, this figure receded from 84% (long-term average) to 80.5%; since then it has remained almost static at about 80%. Most of the companies covered by the survey in the third quarter reported adequate utilisation of technical capacity and had not adjusted their capacity by comparison with the previous period.

3.6 Economic outlook and forecasts

Since mid-2003, signs of a brightening in Switzerland's economic outlook have been multiplying. After a slightly more positive figure in Q3 2003, growth in the Swiss economy should accelerate in the fourth quarter. Over 2003 as a whole, however, real GDP is likely to have fallen by about 0.5%.

For 2004, the National Bank is predicting average growth in real GDP of just over 1.5%. This expansion will probably be driven mainly by exports, as Swiss exporters will derive particular benefit from the worldwide upturn in capital spending. As the economy recovers, both capacity utilisation and corporate earnings should improve. Coupled with growing demand for replacements in the capital goods sector, this will boost investment activity at home. After something of a time lag, employment should start to grow again and push down the jobless numbers. This in turn will help to boost private consumption. With monetary conditions remaining favourable, and given the low vacancy rate for apartments, residential construction should also pick up. However, demand in the commercial construction and civil engineering sectors is set to remain sluggish. Owing to public-sector spending cuts, the economy is unlikely to receive any significant impulses from this area either.

The recovery of the Swiss economy depends to a large extent on the economic developments abroad. However, the risk of adverse cyclical movements is less acute than it was a few months ago.

Capacity utilisation   Graph 3.9
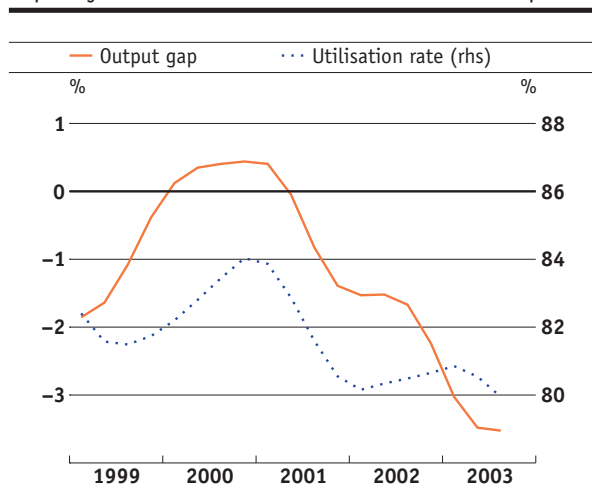
The production potential, on which the above output gap is based, was estimated based on an output function.
Sources: KOF, SNB

4 Labour market

4.1 Employment

Year-on-year fall in employment

The situation on the labour market remained unsatisfactory. In the third quarter of 2003, the number of persons employed was unchanged from the previous quarter and had fallen 1.1% below the Q3 2002 figure. Whereas the number of jobs in industry and construction dropped again from the previous quarter, employment in the service sector rose slightly. Increases were recorded in the retailing and real estate sectors in particular, and also in insur-ance and public administration. By contrast, the banks reduced headcounts for the fourth time in succession. Overall, service-sector employment was 0.6% lower than a year earlier. In industry and construction, the corresponding declines were 3.5% and 1.0% respectively.

The number of full-time equivalents (as distinct from the number of persons employed) decreased by an annualised 1.7% in the third quarter and by 1.8% year-on-year. This relatively steep decline reflects the fact that it was full-time positions in particular that were cut in the last quarters, whereas part-time jobs saw a slight rise again.

Labour market Figures not seasonally-adjusted

Table 9

| | 2001 | 2002 | 2002 | | 2003 | | | | |
			Q3	Q4	Q1	Q2	Q3	Oct.	Nov.
Full- and part-time employed[1]	1.6	0.1	0.3	−0.4	−0.8	−0.6	−1.1	–	–
Full-time employed[1]	1.9	−0.8	−1.1	−1.4	−1.9	−2.2	−2.7	–	–
Unemployment rate[2]	1.7	2.6	2.5	3.1	3.6	3.6	3.7	3.8	4.0
Unemployed[3]	67.2	100.5	97.1	120.2	140.9	140.9	144.0	151.3	156.6
Jobseekers[3]	109.4	149.6	146.3	172.6	196.6	201.2	206.3	215.1	222.3
Persons on short working hours[3]	2.4	9.1	4.4	6.8	10.6	11.2	6.3	6.6	na
Registered vacancies[1]	−16.3	−38.7	−38.6	−34.7	−37.4	−33.8	−35.0	–	–

1 Change from previous year in percent
2 Registered unemployed in percent of the economically active population according to the 2000 national census (working popula-tion: 3,946,988 persons)

3 In thousands; yearly and quarterly values are averages of monthly values
Sources: SFSO, seco

4.2 Unemployment

Slower rise in unemployment

Unemployment continued to rise in the second half of 2003, but at a slower rate. In November 154,800 people were out of work, while the number of job-seekers stood at 220,800 (seasonally adjusted). Whereas the unemployment rate remained static at 3.9% from August to November, the percentage of the population looking for work rose by 0.1 points to 5.6%. This significant slowing in the rate of increase by comparison with the previous months was due mainly to a fall-off in the number of employed persons registering for the first time at the regional labour offices.

The rise in unemployment eased off in all three language regions. In November, unemployment averaged 4.9% in French-speaking Switzerland, 4.4% in Ticino and 3.6% in German-speaking Switzerland. The figures for the larger cities were above the national average: they stood at 6.8% in Geneva, 4.8% in Zurich and 4.7% in Basel-Stadt.

Employment outlook brightens

Various indicators suggest that the employment situation will stabilise in the coming months. The number of job vacancies registered with the regional labour offices stopped declining in July. The number of job advertisements in the Internet (Jobpilot Index) likewise stabilised, and the fall in the Manpower Index, which measures the area of job ads in newspapers, came to a halt. The quarterly KOF/FIT surveys of industry, construction and the catering trade pointed in the same direction. While companies still regarded their headcounts as excessively high, their assessment was somewhat less pessimistic than it had been in the previous surveys. Moreover, the employment outlook published by the Federal Statistics Office showed its first improvement since the beginning of 2001.

Full- and part-time employment   Graph 4.1

Seasonally-adjusted
— Over 90%　— 50–90% (rhs)　— Up to 50% (rhs)
In thousands　　　　　　　　In thousands
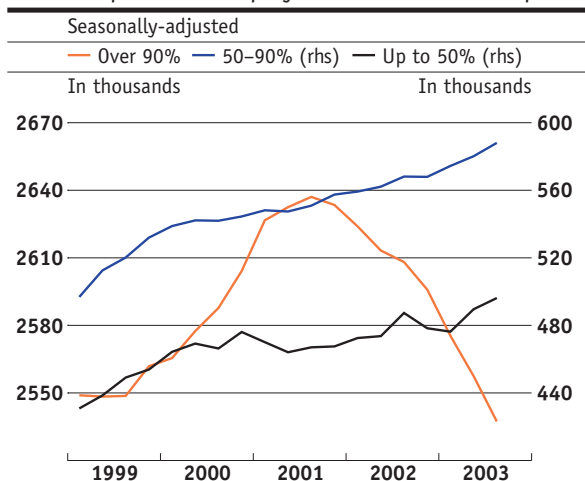
Unemployment and vacancies   Graph 4.2

Seasonally-adjusted
— Unemployed　— Job-seekers　— Manpower Index (rhs)
In thousands　　　　　　　　1971 = 100
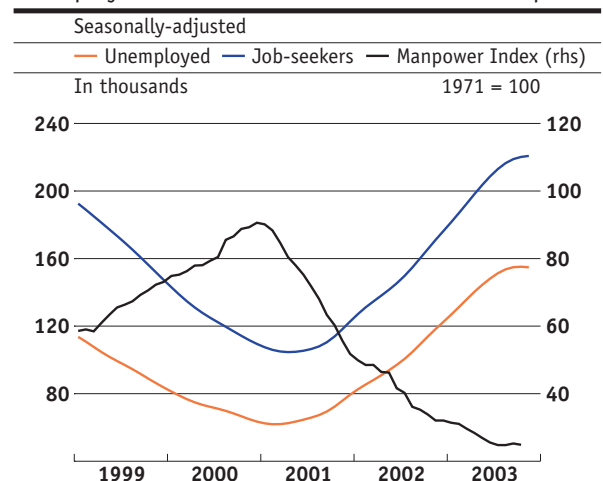
Graphs 4.1, 4.2:
Source: SFSO

4.3 Wages and salaries

Wages and salaries in 2003

According to the Swiss wage index, nominal pay (employees' annual earnings) was 1.3% higher on average in the first three quarters of 2003 than it had been a year earlier. Nominal employee earnings – calculated on the basis of the number of persons employed and the average wage – are set to have risen by 0.6% in 2003, i.e. slightly faster than had been expected in September. This is due to the fact that the employment situation seems to have developed more encouragingly in the second half of the year than had previously been assumed.

Outlook for 2004

According to the UBS survey of wages and salaries conducted in October, nominal wages are set to rise by 0.9% in 2004, i.e. less than in 2003. Broken down by sector, the size of the rises ranges from 0.4% in the graphic arts industries to 2.2% in telecommunications. In its autumn forecasts, the KOF/FIT – whose analysis of pay trends takes account of shifts in the structure of employment as well as bonus payments – was expecting nominal pay levels to rise by 1.4%.

Duration of unemployment   Graph 4.3
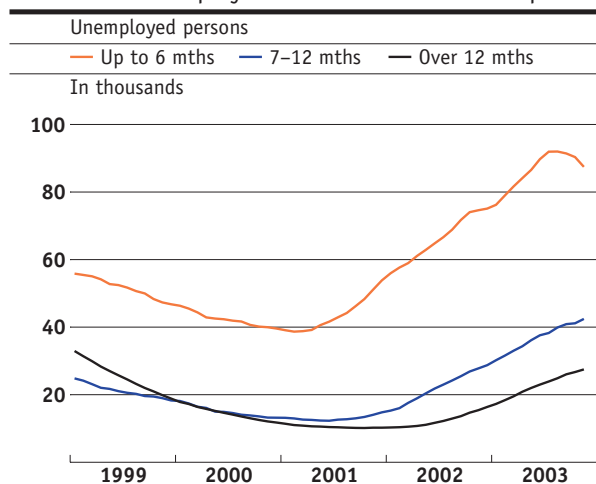
Source: SFSO

5 Prices

5.1 Consumer prices

Between August and November, annual inflation as measured by the national consumer price index remained unchanged at 0.5%. While prices of domestic goods and services did show some marginal increases, inflation in this sector remained low. Despite a fall in the export-weighted external value of the Swiss franc, prices of foreign-produced goods continued to fall. Oil products played a major role in this imported inflation trend. The general trend in inflation remained slack, as reflected in the low core inflation rates.

Domestic inflation remains stable

From August to November, annual inflation in domestic goods and services rose by 0.1 percentage points to 0.8%. This minor increase can be ascribed to higher inflation in the domestic goods sector (1.0%). By contrast, inflation in services – which account for about three-quarters of the domestic basket of goods and services – remained at 0.7%. Whereas annual inflation in public-sector services receded from 2.1% to 1.9%, inflation in private services (excluding residential rents) edged up to 0.7%. Rents, which are surveyed each quarter, remained unchanged in November, and the annual inflation figure for residential rents was likewise unchanged at 0.3%.

Import prices declining again slightly

The downturn in prices of foreign-manufactured goods resumed between September and November after having come to a halt in August. The sharp fall-off in inflation for oil products (fuel and heating oil) from 3.2% to 1.0% had a particularly marked impact. Up to November, prices of other imported goods were still slightly below their year-back levels (November: −0.7%). Again, the price reductions in the consumer electronics sector were particularly striking: PCs were down 17.9%, software 11.6%, telephones 11.1% and televisions and video recorders 6.3%. Clothing and footwear also became considerably cheaper, over 85% of these goods being imported.

Breakdown of the national consumer price index Table 10
Change in percent

	2002	2003						
		Q1	Q2	Q3	Aug.	Sept.	Oct.	Nov.
National consumer price index total	**0.6**	**1.0**	**0.5**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**
Domestic goods and services	1.4	1.0	0.9	0.7	0.7	0.8	0.8	0.8
Goods	1.1	0.1	0.6	0.6	0.7	0.8	0.8	1.0
Services	1.5	1.3	0.9	0.7	0.7	0.7	0.7	0.7
Private services without rents	1.9	1.6	1.1	0.6	0.6	0.6	0.7	0.7
Rents	1.0	0.4	0.2	0.3	0.3	0.3	0.3	0.3
Public services	1.5	2.4	2.1	2.1	2.1	2.1	1.9	1.9
Imported goods and services	−1.7	1.2	−0.4	−0.3	0.0	−0.1	−0.5	−0.4
Without oil products	−0.8	−0.4	−0.3	−0.6	−0.5	−0.5	−0.6	−0.7
Oil products	−6.8	11.7	−1.0	1.5	3.2	2.6	0.4	1.0

Sources: SFSO, SNB

5.2 Core inflation

Core inflation rates still low

Inflation, as measured by the national consumer price index, is subject to numerous short-term influences that can distort perceptions of the general price trend. The National Bank therefore calculates a core inflation rate. For any given period, this core inflation rate excludes the 15% of goods with the highest annual inflation rate and the 15% of goods with the lowest annual inflation rate from the consumer price index commodities basket. Between August and November, the core inflation rate receded by 0.1 percentage points to 0.6%. This persistently low rate is a reflection of the still generally weak inflation trend. Since inflationary and disinflationary effects more or less cancelled each other out, the core inflation rate differed only slightly from inflation as measured by the overall consumer price index.

Unlike the core inflation rate of the National Bank, the two core inflation rates calculated by the SFSO always exclude the same goods from the commodities basket in any period. In the case of core inflation 1, these are foodstuffs, beverages, tobacco, seasonal products, energy and fuel. Core inflation 2 additionally excludes products with administered prices. In November, core inflation 1 was 0.4% and core inflation 2 was 0.2%. Both of these figures were unchanged from August.

Consumer prices	Graph 5.1

Year-on-year change
— Total   — Goods   — Services

Consumer prices	Graph 5.2

Year-on-year change
— Total   — Domestic goods   — Imported goods
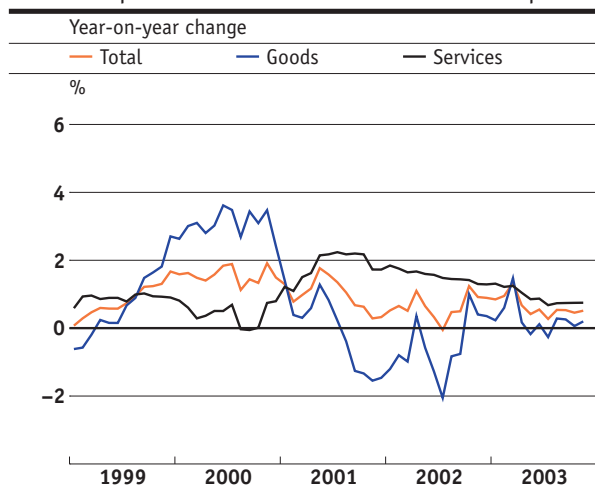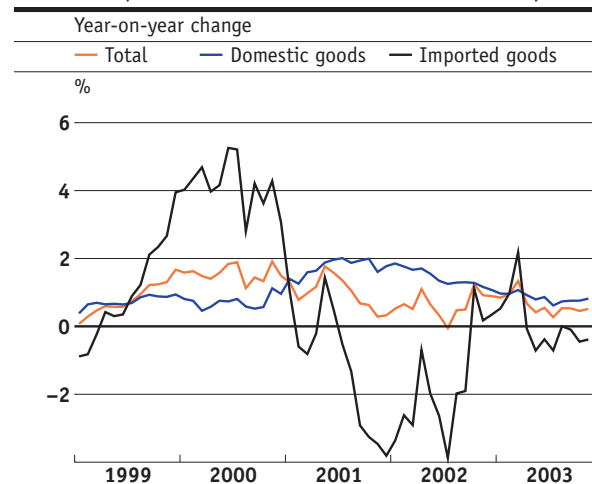
Graphs 5.1, 5.2:
Source: SFSO

5.3 Prices of total supply

Continuing downturn

Between July and October, the disinflationary effects which producer and import prices had been having on downstream consumer prices eased off slightly. The year-on-year price decline for producer prices came to a standstill in August, and by October annual inflation in this sector came to 0.2%. The biggest price rises were recorded among goods intended for sale on the domestic market (+0.4%), whereas prices of export goods stabilised. Prices of imported goods receded by 1.6% in October after having declined by 1.7% in July. Above-average falls were registered by imported investment goods such as office machines and IT devices.

Core inflation   Graph 5.3

Year-on-year change
— Consumer prices   — Core inflation (SNB)
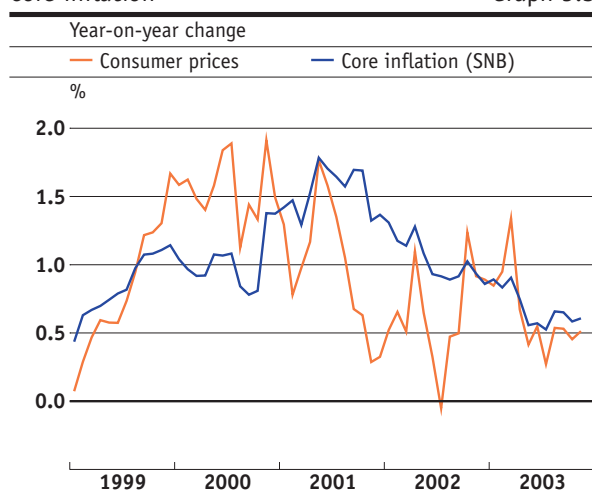
Sources: SFSO, SNB

Prices of total supply   Graph 5.4

Year-on-year change
— Total   — Producer prices   — Import prices

Source: SFSO

6   Inflation prospects
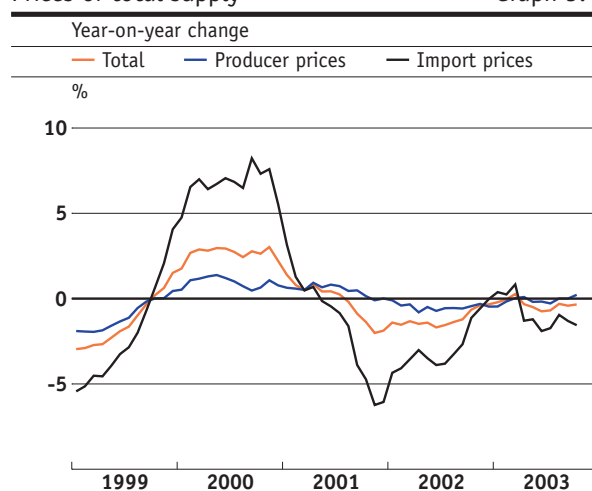
6.1 International price development

No inflationary pressures from abroad

The price per barrel of crude oil (Brent quality) hovered around USD 30 from August to November. In Swiss franc terms, it was almost 8% above its year-back level in November. Owing to the seasonal rise in demand for oil in winter, coupled with the economic recovery in most industrialised countries, the situation on the crude oil market is not expected to ease in the near term. However, assuming that oil prices stay close to the USD 30 mark for the next few months and that the Swiss franc/dollar exchange rate remains unchanged, oil products can still be expected to exert a slight dampening effect on consumer price inflation. Disinflationary effects from other imported consumer goods should soon begin to ease as the world economy picks up.

6.2 Price development in Switzerland

Little risk of inflation in the short term

Inflationary pressures stemming from domestic goods and services should remain low in the next few months. Although the macroeconomic output gap will narrow in the wake of the expected economic upswing, below-average utilisation of production capacity should initially ensure that there is little upward pressure on prices. The labour market situation in particular is unlikely to see any rapid improvement. According to the UBS survey of wages and salaries, pay rises are set to slow down to 0.9% in the coming year – a drop of 0.4 percentage points. The National Bank expects labour productivity to climb by 1.5%–2%, thus reducing unit labour costs. The quarterly KOF/FIT survey for Q3 2003 points to an absence of inflationary stimuli in the next few months, especially on the commodities front. In fact, the domestically-oriented industrial companies surveyed expected selling prices to fall rather than rise.

Gradual rise in residential rent levels

At just under 20%, residential rents have the highest weighting in the commodities basket on which the consumer price index is based. Consequently, anticipated rent levels are a particularly important factor in assessing the inflation outlook. The National Bank expects a slight upturn in rentals in the near term. For existing tenants, the rent-lowering effects of earlier mortgage rate cuts will cease to apply. Moreover, property owners will use the shortage of apartments in many areas to raise rents for new tenants or when properties are let for the first time. The vacancy rate is still very low. Even if house-building activity picks up in the coming year, the situation on the residential property market looks set to remain tight for the time being, and the upward price movement – especially in urban areas – will continue.

6.3 Inflation forecast for 2004–2006

At its end-2003 assessment, the National Bank reviewed its medium-term inflation forecast and modified its assumptions for the world economy in a number of respects by comparison with the September forecast. Growth in the United States, for example, will prove to have been substantially higher in 2003 than had been predicted in September. During the coming year, growth will fall off noticeably owing to the absence of fiscal impulses but will nevertheless remain robust. The National Bank still expects an upswing in the EU during 2004, which means that the closing of the output gap will take rather longer than assumed in September. Inflationary pressure from abroad will thus remain low, though inflation will not decline as sharply as expected three months ago. Finally, the price of oil is still expected to drop to about 25 dollars a barrel in 2004.

Assuming that the 3-month Libor will remain constant at 0.25% in the next three years, inflation should average 0.4% in 2004, 1.0% in 2005 and 2.3% in 2006. As can be seen from graph 6.1, the inflation trend of the new forecast up to mid-2005 is higher than had been predicted in the September forecast. The new forecast shows that the danger of negative inflation rates has decreased. This is due to the improved trend in the world economy, the less pronounced fall-off in foreign inflation and the weakening of the Swiss franc against the euro. As monetary policy is expected to be expansive, inflation will trend upwards again as of the beginning of 2005. It is set to reach 1% in mid-2005 and 2% in mid-2006, rising to 3% by the end of 2006. This rise is somewhat flatter than had been predicted in September because it is now assumed that – owing to the productivity gains to be expected during the upswing – the output gap in Switzerland will close rather more slowly in the coming years than was expected in September.

As of mid-2006, inflation will no longer be within the range which the National Bank equates with price stability. It should be borne in mind, however, that – as usual – the forecast is based on a constant 3-month Libor, i.e. on the assumption that monetary policy will remain steadily expansive in the next three years. It is also important to remember that the longer the forecasting horizon, the less reliable the forecast.

Inflation forecast of September 2003 with Libor at 0.25% and of December 2003 with Libor at 0.25%   Graph 6.1
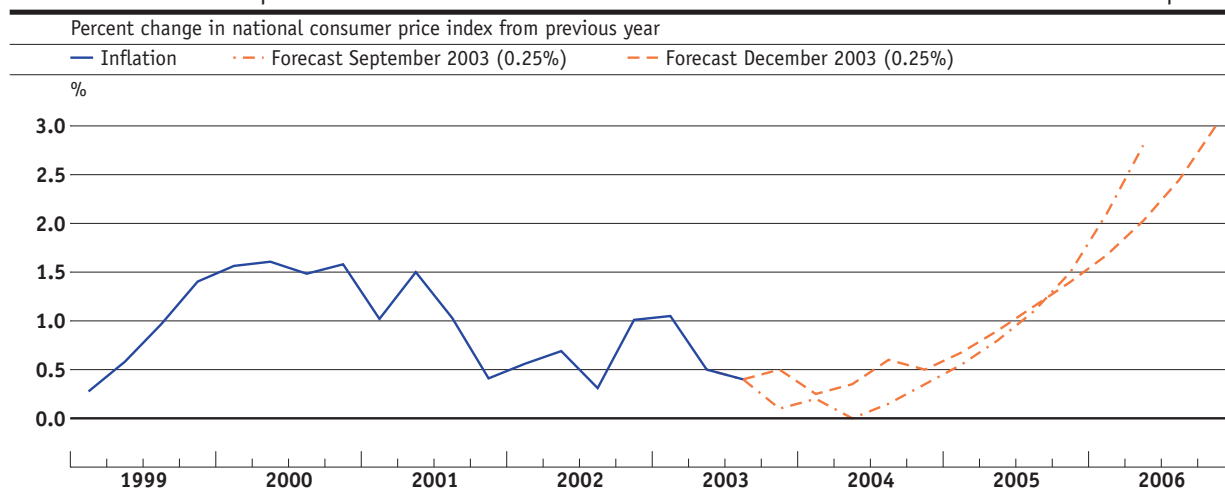
7 Assessment of the economic situation from the regional vantage point

The offices of the National Bank are constantly in touch with a large number of enterprises from various sectors of the economy. Their reports, which contain the subjective evaluations of the enterprises, are an important additional source of information for assessing the economic situation. Below we summarise the main results of the talks held between August and November on the current and future economic situation.

7.1 Production

Sentiment in the corporate sector has brightened in the last few months, though developments have varied greatly from one region and sector to another. A broad-based upswing has not yet materialised.

Many of the companies surveyed were expecting business to pick up in 2004, but thought the recovery would only be moderate. As utilisation of staff and plant capacity is still rated as insufficient, companies are not planning to expand production capacity for the time being, even if the economy picks up. Many of them are, however, planning investments to increase the efficiency of production processes and thereby improve their competitiveness and sales margins.

7.2 Manufacturing

The manufacturing sector has been benefiting from higher demand for exports since mid-2003. Shipments to Asia (especially China) and to central and eastern Europe have seen particularly marked rises. Orders from the US, too, have increased. By contrast, demand from the EU – and especially Germany – has remained slack. Chemicals producers, and recently also manufacturers in the electronics and semiconductor industries, have derived particular benefit from the upturn. Most companies in the pharmaceutical and medical technology sectors have reported a continuing rise in turnover. Order intake in the metal and machinery industry and among manufacturers of intermediate products has been mixed: some companies have reported higher sales while others have continued to be dogged by falling demand. The consumer-related industries saw only a trickle of good news. As customer inventories were generally considered to be low, production is likely to be stepped up in the coming months.

7.3 Services

The retail companies surveyed reported a slight upturn in business. This was attributable in large part to price reductions, some of which were very substantial. Compared with the summer months, however, consumer sentiment was also rated more positively. While the luxury segment continued to suffer from a downturn in high-spending guests from abroad, the situation here does seem to be improving. In the hotel and catering sector, consumers were still on the cautious side and were decidedly price-conscious.

Business in the company-related services segment showed signs of recovery. With exports rising, the emerging upturn was particularly apparent in the transport sector. A number of consultancy firms also reported higher orders. In the financial sector, asset management benefited from the recovery on the financial markets. On the other hand, companies surveyed in the loans sector continued to report weak demand. Sales of advertising space in magazines were still sluggish, and demand for IT services also remained weak.

Many regions saw tourist demand bottom out in the past summer. While the number of German and American guests continued to decline, the trend in arrivals from Asia experienced a turnaround. Demand from within Switzerland also helped to stabilise the sector. As tourist spending was price-sensitive, however, hotels in the medium price bracket were the main beneficiaries. Hoteliers are expecting a slight revival in turnover during the coming winter. Owing to favourable exchange rates, they anticipate a particularly marked rise in demand from within Europe. In congress-related tourism, the current level of bookings gives grounds for optimism.

7.4 Construction

The construction sector has been benefiting from rising demand for residential property, though the situation in the commercial sector was still gloomy. The market for office space and other commercial property deteriorated sharply in many areas, and demand in this segment is not expected to recover in the near term. Developments in civil engineering continued to hinge on a number of major road- and rail-related projects, and thus varied greatly from one region to another. Construction firms remain prone to low prices and declining margins.

7.5 Labour market

There was still no sign of any improvement in the labour market. Further staff cuts were implemented in order to lower operating costs. Companies in a number of sectors (construction, tourism, watchmaking) were expecting to reduce headcounts further. Overall, however, the job-cutting should slow down. On the other hand, with most companies still reporting excessive staffing levels, there is no immediate prospect of any increases in headcounts.

7.6 Prices and margins

Weak demand and surplus capacity have intensified competition in a number of areas, thus putting downward pressure on prices. In tourism, construction, computer trading and retailing in particular, companies have had to make substantial price concessions. Their earnings situation has suffered as a result. As the euro/Swiss franc exchange rate is currently seen as favourable, many exporters and hoteliers reported improved margins whereas companies that issue invoices in dollars have seen their profits dwindle.

Development of direct investment in 2002

This report sets out the results of the 2002 direct investment survey. The first part covers Swiss direct investment abroad, notably capital outflows (acquisitions, loans to subsidiaries, reinvested earnings), capital stock (Swiss participations in companies abroad), investment income and the number of staff employed by subsidiaries abroad. The second part of the report describes foreign direct investment in Switzerland. In particular, it focuses on capital inflows, capital stock (foreign participations in companies in Switzerland) and investment income. Two special sections deal with Swiss direct investment in countries joining the EU in 2004 and direct investment as a measure of economic globalisation.

1 Swiss direct investment abroad

Capital outflows

Capital outflows for direct investment abroad amounted to CHF 12 billion in 2002, down from CHF 31 billion a year earlier. This was the lowest level since 1993. The decline was even more pronounced compared with 2000, when capital outflows had amounted to CHF 75 billion, reflecting the global boom in mergers and acquisitions. The sharp fall in capital outflows for direct investment in 2002 is largely due to the negative result of CHF 9 billion in the "reinvested earnings" position. In the previous year, reinvested earnings had still made a contribution of CHF 4 billion to investment. The negative result in 2002 was caused by losses incurred on participations in the banking and insurance industries. The decline in capital outflows was further accentuated by the loan repayments to parent companies in the amount of CHF 4 billion. As regards acquisitions, however, Swiss companies increased their capital exports from CHF 22 billion a year earlier to CHF 25 billion. Apart from the extreme figure of 2000, this is the highest level on record so far. In other words, companies continued to pursue their acquisition strategies abroad, which they had adopted in the 1990s.

Companies in the category "other manufacturing", which contains the food, construction and electricity industries accounted for CHF 9 billion of direct investment in 2002. The chemical industry as well as the finance and holding companies followed with CH 3 billion each. The transportation and insurance industries as well as the category "other services" disinvested abroad in 2002. In the second half of the 1990s, these industries had exported large amounts of direct investment capital, which they partly liquidated now.

Direct investment in the EU receded from CHF 12 billion to CHF 7 billion. A total of CHF 3 billion of this amount was invested in Sweden, and CHF 2 billion each in the Netherlands and Belgium. Swiss investors (mainly finance and holding companies) withdrew CHF 3 billion from Luxembourg. The US attracted significantly less direct investment, a mere CHF 3 billion as against CHF 10 billion a year previously; this was the result of losses incurred by banks and insurance companies, as well as loan repayments. Capital outflows to most other regions were also on the decline. Larger amounts were invested in the booming emerging economies in Asia, in the EFTA countries as well as in Central and Eastern Europe. Among Central and Eastern Europe countries, those acceding to the EU in 2004 were favoured (cf. page 47).

Capital stock

Switzerland's stock of direct investment abroad decreased by CHF 15 billion to CHF 410 billion, contracting for the first time since records started being kept in 1985. The decline in stock was primarily brought about by the lower valuation of capital stock, which was not set off by new investment. The valuation losses can be attributed to the weaker US dollar and losses of subsidiaries. The capital stock of insurance companies thus dropped particularly steeply, from CHF 105 billion to CHF 80 billion. The transportation and communications industry, other services as well as banks also reported lower capital stock. By contrast, finance and holding companies

Swiss direct investment abroad in billions of Swiss francs	2001[r]	2002[p]	Change against previous year in percent
Capital outflows	30.8	11.8	−61.6
Capital stock	425.3	409.7	−3.7
Investment income	31.1	17.5	−43.8

r = revised
p = provisional

expanded their capital stock abroad from CHF 105 billion to CHF 114 billion. The manufacturing sector raised its capital stock abroad by CHF 7 billion, thus slightly increasing its share in the stock of direct investment for the first time since 1995.

The stock of direct investment in the US plunged by CHF 19 billion to CHF 81 billion. Approximately half of the decline was exchange rate-induced. The capital stock in the EU, by contrast, remained virtually steady, while growing in the Central and Eastern European transition economies and in the non-European industrial countries. While a marked decline in capital stock was observed in the emerging economies in South America, those in Asia slightly built up their capital stock. The capital stock in the offshore financial centres of Central and South America continued expanding. These countries, which mainly serve as intermediate location for investments in third countries, account for CHF 50 billion or as much as 12% of the total stock of Swiss direct investment abroad.

Investment income

In 2002, income from direct investment abroad fell from CHF 31 billion to CHF 17 billion as a result of the deteriorated profit situation of subsidiaries abroad. Various industries posted negative results. Finance and holding companies again achieved the largest share in investment income from abroad, i.e. CHF 11 billion.

Number of staff

The number of staff employed by Swiss subsidiaries abroad climbed by 7% to approximately 1,800,000 persons in 2002, largely due to acquisitions. The chemical industry, "other manufacturing", trade as well as finance and holding companies reported an above-average increase in staff numbers. The metals and electronics industries, by contrast, reduced their payroll considerably. A vigorous rise in staff numbers was observed in Central and Eastern European countries, with Russia being particularly prominent, tripling its staff number to around 38,000 persons. The number of staff employed in China grew by one-third to approximately 54,000 persons. EU staff numbers were up by 4% to around 800,000 persons owing to the staff increase in France and Germany.

Capital outflows   Graph 1

2001: revised; 2002: provisional
■ Manufacturing   ■ Services
CHF bn

Capital inflows   Graph 2

2001: revised; 2002: provisional
■ Manufacturing   ■ Services
CHF bn
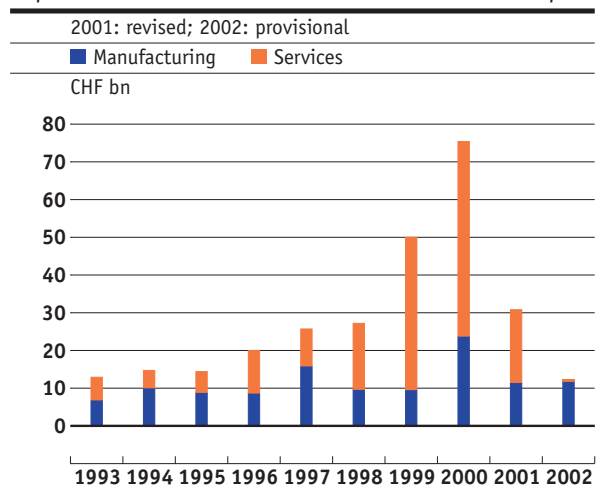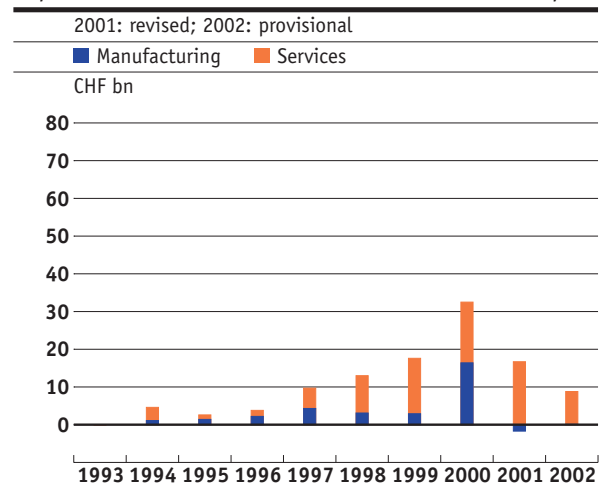
Swiss direct investment in the EU accession countries 2004

On 1 May 2004, the European Union will be enlarged by ten additional countries (Estonia, Latvia, Lithuania, Malta, Poland, Slovenia, Slovakia, Czech Republic, Hungary and Cyprus). Since 1999, these countries have witnessed increasing direct investment activity of Swiss companies. The period from 1999 to 2002 accounted for approximately three-quarters of total capital outflows since 1991. The growth seen during this period was above-average, even compared with other regions. This is remarkable because direct investment flows at the time were at a high level worldwide owing to the boom in mergers and acquisitions.

In 2002, the capital stock in the EU accession countries amounted to CHF 8 billion, and around 64,000 persons were employed by Swiss direct investment companies. This corresponds to a share of 2% in the total capital stock abroad and 3% in the total number of staff abroad. In 1991, the capital stock had amounted to less than half a billion Swiss francs, and staff had numbered approximately 11,000 persons.

The accession countries can be categorised as follows. The first group includes Poland, the Czech Republic and Hungary. In these countries, both the manufacturing and the service sectors have attracted significant investment in recent years. The second group consists of Malta and Cyprus, where mainly banks have been active as investors. In the other accession countries, with the exception of Slovenia, direct investment by Swiss companies is still at a low level.

Capital outflows to EU accession countries 2004   Graph 3
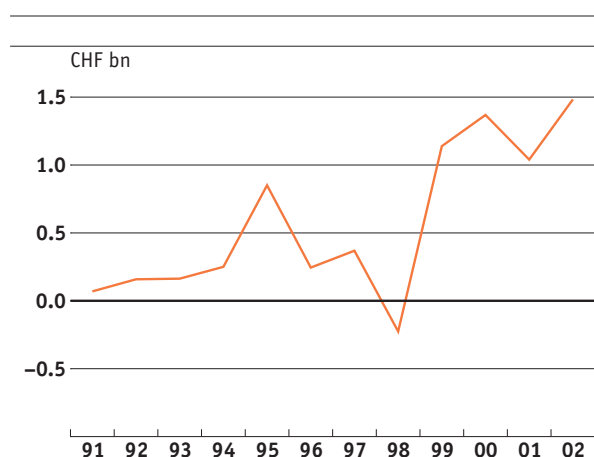
Capital stock in EU accession countries 2004   Graph 4
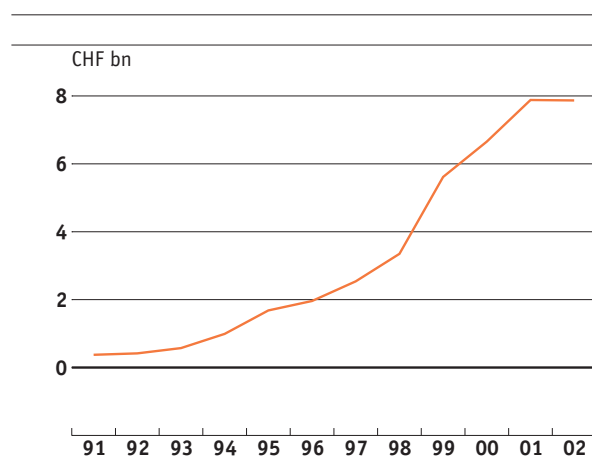
2 Foreign direct investment in Switzerland

Capital inflows

Capital inflows for foreign direct investment in Switzerland totalled CHF 9 billion in 2002, the lowest figure since 1996. A year earlier, they had still amounted to CHF 15 billion, and two years earlier, to a record CHF 33 billion. The decline is attributable to a sharp fall in acquisitions by foreign direct investors in Switzerland.

Foreign capital flowed mainly into holding companies. Foreign-controlled finance and holding companies reported the highest inflows by far, namely CHF 8 billion. By contrast, an amount of one billion Swiss francs was withdrawn from the insurance industry. The chemical industry also had to contend with outflows, whereas the other industries in the manufacturing sector recorded modest inflows.

From the EU, approximately CHF 7 billion flowed into Switzerland, which is CHF 5 billion less year-on-year. Several EU countries that had still invested in Switzerland a year earlier now withdrew funds. The fall in investment from the Netherlands, which had made large acquisitions the previous year, was particularly pronounced. This drop was partly set off by France and the United Kingdom investing more in Switzerland than a year earlier. Capital inflows from the US, though, held more or less steady at CHF 3 billion.

Capital stock

The stock of foreign direct investment in Switzerland rose markedly by CHF 25 billion to CHF 173 billion in 2002. The rise was almost exclusively accounted for by foreign-controlled finance and holding companies, which saw their capital stock grow from CHF 69 billion to CHF 93 billion. For the most part, these companies are subsidiaries of foreign groups establishing headquarters in Switzerland. At CHF 14 billion, the capital stock of US investors accounted for the largest increase; accordingly, the US share in foreign direct investment capital in Switzerland grew to 38%. The capital stock of EU countries expanded by around CHF 10 billion, mainly accounted for by companies from the United Kingdom, Luxembourg and France.

Investment income

Income from foreign direct investment in Switzerland fell by CHF 4 billion to CHF 9 billion in 2002. Of this, CHF 7 billion was transferred abroad and CHF 2 billion was reinvested in Switzerland. Investment income of the service sector almost halved to CHF 8 billion. The manufacturing sector generated one billion Swiss francs in investment income.

Foreign direct investment in Switzerland in billions of Swiss francs	2001[r]	2002[p]	Change against previous year in percent
Capital inflows	14.9	8.8	−41.1
Capital stock	148.9	173.5	16.5
Investment income	12.8	8.9	−30.5

r = revised
p = provisional

Direct investment as a measure of economic globalisation

In an economic sense, globalisation denotes the worldwide increase in economic interaction between different countries and regions. Direct investment is considered to be an important indicator of globalisation. Direct investment generally mirrors direct, stable and long-term interrelationships between different economies, and comparable data are available worldwide.

Direct investment in percent of nominal gross domestic product (GDP), which can be derived from direct investment statistics, is deemed to be the most commonly used measure for the globalisation of an economy. This indicator is established for flows, stocks and investment income respectively. For long-term analyses, the capital stock in percent of GDP is particularly useful. In 1990, the stock of Swiss direct investment abroad amounted to 29% of Switzerland's GDP, as against 103% in 2001. The stock of foreign direct investment in Switzerland expanded from 15% to 36% of Switzerland's GDP between 1990 and 2001. According to this indicator, the Swiss economy became much more globalised during the period from 1990 to 2001. A comparison with other industrial countries shows that Switzerland (in 2001) was one of the top-ranking countries with respect to direct investment abroad in percent of GDP; regarding foreign direct investment in the reporting economy in percent of GDP, Switzerland was in the upper middle range.

Capital stock in percent of Switzerland's GDP   Graph 5

— Swiss direct investment abroad   — Foreign direct investment in Switzerland

in %
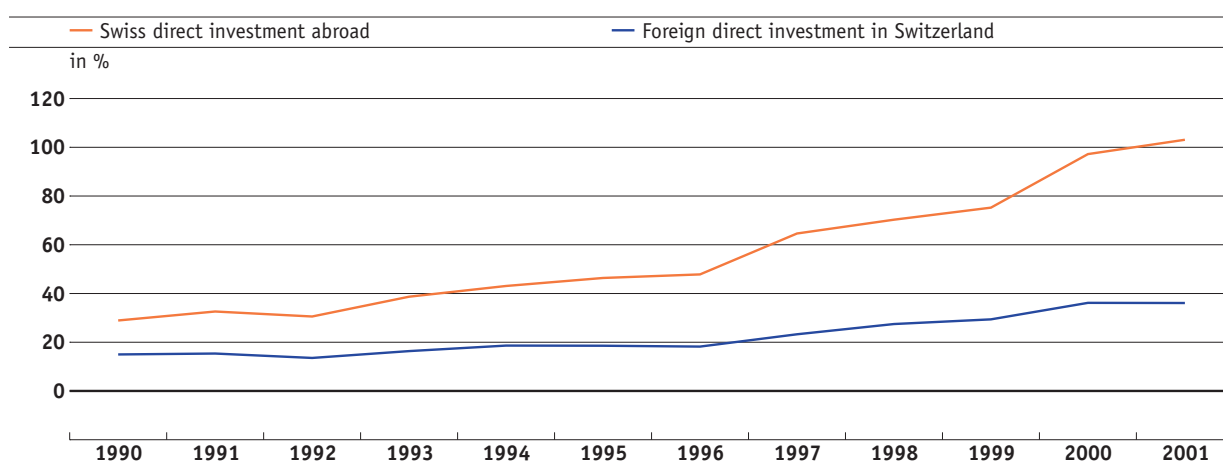
Notes

Definition

Direct investment serves to acquire a lasting interest in a company abroad, giving the investor an effective voice in the management of a company. As a rule, direct investment is deemed to exist if an investor owns at least 10% of the voting stock of a company abroad or sets up a subsidiary or branch abroad.

Data collection

The Swiss National Bank collects data on international investments, i.e. Swiss direct investment abroad and foreign direct investment in Switzerland, on an annual and quarterly basis. The data are collected at the end of each year or quarter.

Statutory basis

The statutory basis for collecting data on direct investment is provided in Article 2 of the Swiss Federal Statistics Act of 9 October 1992. The Ordinance on the conduct of federal statistical surveys of 30 June 1993 stipulates that the National Bank shall be responsible for data collection. Participation in the survey is mandatory for all companies with direct investment capital of at least CHF 10 million.

Data coverage

The annual survey covers capital stock (equity capital and intra-group lending), financial movements on equity capital (establishment, acquisition, sale, capital increases, etc.) and on intra-group lending, and reinvested earnings. Reinvested earnings are deemed to be the part of a company's profit that is not distributed. Through reinvested earnings, the direct investment position can be increased without an actual outflow of capital taking place. Furthermore, the companies are queried as to the number of staff employed in Switzerland and in the subsidiaries or branches abroad.

The data on transferred earnings are drawn from the quarterly survey of direct investment and comprise transferred earnings on direct investment capital abroad (dividends) and net interest on intra-group lending. From this, reorganisation contributions paid by the direct investor and non-reclaimable withholding tax are deducted.

Valuation of stock

Book values rather than market values are indicated for stock. Book values are generally lower than market values.

Correlation between changes in capital stock and capital movements

Although capital movements influence the capital stock, a change in the capital stock does not give any direct indication about capital flows, and vice versa. Changes in the capital stock can be due to various factors that do not result in capital movements. For instance, changes in capital stock may also be triggered by exchange rate movements, new valuation principles (e.g. adjustment to international accounting standards), etc. In case of new investments, goodwill (the difference between the purchasing price and the book value of a company) almost always leads to capital movements that may be larger than the actual increase in stock. Conversely, acquisitions that are financed abroad are not accompanied by a corresponding outflow of capital from Switzerland.

Breakdown by country

As regards Swiss direct investment abroad, the country of the ultimate beneficial owner is indicated wherever possible. In practice, however, this principle cannot always be applied. With respect to foreign direct investment in Switzerland, it is always the country of the immediate investor that is stated.

Breakdown by economic activity

Classification by economic activity is determined by the main field of activity of the company in Switzerland.

Other SNB publications on direct investment

The SNB issues three other publications containing data on direct investment. They are available as pdf files on the SNB website (www.snb.ch) under *Publications*.

Quarterly estimates of the balance of payments

Published around three months after the end of each quarter and containing direct investment flows broken down by economic activity.

Swiss balance of payments

Published in September and containing yearly figures on direct investment flows of the previous year, broken down by economic activity and country.

Statistical Monthly Bulletin (Internet version), tables Q3, R and S

The Statistical Monthly Bulletin (Internet version) contains the latest data on direct investment including a breakdown by country and economic activity. In addition, long time series are available.

Definition of countries and regions (according to Eurostat)

	Definition of countries
Denmark	Until 1999, incl. Faroe Islands and Greenland.
France	Incl. Mayotte, Saint-Pierre and Miquelon. As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.
Portugal	Incl. Azores and Madeira.
Spain	Incl. Ceuta, Melilla, Balearic Islands and Canary Islands.
United Kingdom	Comprises England, Scotland, Wales and Northern Ireland. Until 1999, also incl. Channel Islands and the Isle of Man.
Yugoslavia	Comprises Serbia and Montenegro.
United States	Incl. Puerto Rico and Navassa.
New Zealand	Incl. Chatham Islands, the Kermadec Group and the Three Kings, Auckland, Campbell, Antipodes, Bounty and Snares Islands. Excl. Ross Dependency (Antarctica).
Malaysia	Peninsular Malaysia and Eastern Malaysia (Sarawak, Sabah and Labuan).
Taiwan	Separate customs territory of Taiwan, Penghu, Kinmen and Matsu.
India	Incl. Laccadive Island, Minicoy Island, Amindivi Island, Andaman and Nicobar Islands.
Indonesia	Incl. East Timor.
United Arab Emirates	Abu Dhabi, Dubai, Sharjah, Ajman, Umm al Qaiwain, Ral al Khaimah and Fujairah.
Morocco	Incl. Occidental Sahara.

	Definition of regions
EFTA	Comprises Norway (incl. Svålbard and Jan Mayen) and Iceland. Excl. Liechtenstein, which is listed with Switzerland for statistical purposes.
Central and Eastern Europe	Comprises, in addition to the published countries: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Baltic Republics, Yugoslavia, Macedonia, Moldova, Romania, Slovenia and Ukraine.
Other European countries	Comprises, in addition to the published countries: Andorra, Gibraltar, Malta, San Marino, Holy See and Cyprus. Until 1999, incl. Monaco. As from 2000, incl. Channel Islands, the Isle of Man and the Faroe Islands.
North America	United States of America, Canada and, as from 2000, Greenland.
Developing countries Asia	Comprises, in addition to the published countries: Afghanistan, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Brunei, Occupied Palestinian Territory, Georgia, Iraq, Iran, Israel, Yemen, Jordan, Cambodia, Kazakhstan, Qatar, Kyrgyzstan, Korea (Democratic People's Republic of/North), Kuwait, Laos, Macao, Maldives, Mongolia, Myanmar, Nepal, Oman, Oceania (excl. Australia and New Zealand), Sri Lanka, Syria, Tajikistan, Turkmenistan and Uzbekistan.
Developing countries Central and South America	Comprises, in addition to the published countries: Bolivia, Cuba, Dominican Republic, Falkland Islands, Guyana, Honduras, Haiti, Nicaragua, Paraguay, Suriname, El Salvador, Trinidad and Tobago. Until 1999, incl. Guadeloupe, Martinique and French Guiana.
Offshore financial centres	Anguilla, Bahamas, Barbados, Bermuda, Virgin Islands (British), Jamaica, Cayman Islands, Montserrat, Netherlands Antilles, Panama, St Kitts and Nevis; as from 2000, incl. Virgin Islands (US), Antigua and Barbuda, Belize, Dominica, Grenada, St Lucia, St Vincent and the Grenadines, Turks and Caicos Islands.
Developing countries Africa	Comprises, in addition to the published countries: Algeria, Angola, Equatorial Guinea, Ethiopia, Benin, Botswana, British Indian Ocean Territory, Burkina Faso, Burundi, Djibouti, Eritrea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Cameroon, Cape Verde, Kenya, Comoros, Congo, Congo (Democratic Republic of), Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Rwanda, Zambia, São Tomé and Principe, Senegal, Seychelles, Sierra Leone, Zimbabwe, Somalia, Saint Helena, Sudan, Swaziland, Tanzania, Togo, Chad, Tunisia, Uganda, Central African Republic. Until 1999, incl. Réunion.

List of tables

Capital outflows[1, 2] in millions of Swiss francs: **breakdown by country**

	1998	1999	2000	2001[r]	2002[p]
1. Europe and non-European industrial countries	**16 090**	**38 128**	**63 693**	**23 631**	**12 618**
EU	**10 154**	**21 359**	**23 537**	**11 632**	**7 271**
Belgium	349	1 179	4 429	−545	2 030
Denmark	−31	280	−167	−29	56
Germany	889	5 799	−1 113	5 696	240
Finland	224	126	263	99	−7
France[3]	333	827	−933	−1 582	1 076
Greece	205	179	355	167	241
Ireland	−54	5 446	1 303	−4 713	147
Italy	−197	192	−222	1 958	773
Luxembourg	1 651	−47	3 440	7 825	−2 956
Netherlands	1 003	1 716	3 227	167	1 505
Austria	344	515	100	399	431
Portugal	−69	561	1 594	270	−28
Sweden	844	−656	328	−165	2 995
Spain	377	−545	97	1 382	480
United Kingdom[4]	4 287	5 788	10 836	703	288
EFTA	**−93**	**362**	**−1 208**	**247**	**791**
Central and Eastern Europe, of which	**1 175**	**1 174**	**1 095**	**1 589**	**1 710**
Croatia	70	−44	16	21	7
Poland	208	473	586	209	−152
Russian Federation	335	599	−7	696	151
Czech Republic	356	−64	183	274	55
Slovakia	21	38	13	9	53
Hungary	−76	100	77	172	28
Other European countries[5], of which	**−449**	**744**	**5 954**	**−61**	**63**
Turkey	296	−95	−242	−158	246
North America	**4 458**	**13 640**	**34 232**	**9 728**	**3 238**
Canada	1 232	83	553	108	284
United States	3 226	13 557	33 678	9 620	2 954
Other non-European industrial countries	**845**	**850**	**83**	**496**	**−455**
Australia	572	322	−267	−66	439
Japan	124	628	336	487	−640
New Zealand	11	−215	−3	22	−15
South Africa	138	116	18	54	−238

	1998	1999	2000	2001[r]	2002[p]
2. Emerging economies	**6 932**	**6 244**	**2 014**	**730**	**−266**
Asia	**5 689**	**4 949**	**838**	**227**	**716**
Hong Kong	447	665	−63	258	−202
Korea (South)	283	179	184	86	−11
Malaysia	102	227	−25	67	−34
Philippines	1 169	57	313	98	−272
Singapore	3 173	3 811	222	−523	1 037
Taiwan	121	92	160	34	31
Thailand	395	−82	46	206	167
Central and South America	**1 243**	**1 295**	**1 177**	**503**	**−982**
Argentina	321	−103	48	533	−542
Brazil	446	844	246	−808	−616
Chile	−178	17	−27	−163	−8
Mexico	654	537	910	941	184
3. Developing countries	**4 187**	**5 614**	**9 739**	**6 421**	**−541**
Asia, of which	**441**	**−21**	**251**	**631**	**−35**
China (People's Republic)	123	−143	212	181	−64
India	29	−59	−43	139	76
Indonesia	90	10	−22	156	36
Lebanon	−2	−13	−143	12	17
Pakistan	−17	7	59	42	18
Saudi Arabia	−2	60	−83	−6	7
United Arab Emirates	11	19	85	55	−51
Viet-Nam	−2	−18	−33	−19	−40
Central and South America, of which	**3 645**	**5 343**	**9 233**	**5 702**	**−254**
Costa Rica	−26	0	−17	13	17
Ecuador	10	20	23	55	42
Guatemala	−4	22	−97	−8	−8
Colombia	387	115	−109	−70	−189
Peru	−25	47	57	36	−42
Uruguay	284	291	299	90	152
Venezuela	61	11	127	176	−239
Offshore financial centres[6]	2 991	4 703	8 794	5 546	−512
Africa, of which	**102**	**293**	**255**	**89**	**−253**
Egypt	57	93	11	82	48
Côte d'Ivoire	51	−26	−47	−6	−93
Morocco	12	2	−30	37	25
Nigeria	5	−7	4	8	3
All countries	**27 209**	**49 986**	**75 446**	**30 782**	**11 811**

1 The definition of countries is based on the Eurostat geonomenclature.
2 The minus sign (−) indicates a return flow of capital into Switzerland (disinvestment).
3 As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.

4 Until 1999, incl. Guernsey, Jersey and the Isle of Man.
5 As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.
6 Anguilla, Bahamas, Barbados, Bermuda, Virgin Islands (British), Jamaica, Cayman Islands, Montserrat, Netherlands Antilles,

Panama, St Kitts and Nevis; as from 2000, incl. Virgin Islands (US), Antigua and Barbuda, Belize, Dominica, Grenada, St Lucia, St Vincent and the Grenadines, Turks and Caicos Islands.

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Swiss direct investment abroad
Capital stock[1] (at year-end) in millions of Swiss francs: **breakdown by country**

Table 1.2

	1998	1999	2000	2001[r]	2002[p]	Share in percent
1. Europe and non-European industrial countries	**197 861**	**241 873**	**304 160**	**329 305**	**311 629**	**76.1**
EU	**119 025**	**149 983**	**166 285**	**180 530**	**179 839**	**43.9**
Belgium	3 396	4 924	11 364	10 823	11 949	2.9
Denmark	632	1 187	990	1 226	1 298	0.3
Germany	18 901	26 784	22 854	27 630	27 673	6.8
Finland	1 387	1 794	1 885	2 197	2 015	0.5
France[2]	13 640	16 594	18 795	17 495	20 110	4.9
Greece	398	2 317	1 882	1 821	1 748	0.4
Ireland	5 478	10 282	12 329	10 255	7 836	1.9
Italy	7 607	9 766	7 911	8 828	10 039	2.5
Luxembourg	6 005	7 849	16 646	24 501	18 746	4.6
Netherlands	16 826	18 869	20 165	17 845	19 951	4.9
Austria	3 123	4 434	4 669	4 782	4 636	1.1
Portugal	995	1 747	1 930	1 821	1 849	0.5
Sweden	3 420	2 005	1 835	5 090	4 855	1.2
Spain	4 651	5 574	4 818	6 408	7 771	1.9
United Kingdom[3]	32 567	35 858	38 213	39 808	39 363	9.6
EFTA	**1 485**	**3 129**	**3 274**	**3 679**	**3 180**	**0.8**
Central and Eastern Europe, of which	**4 462**	**6 156**	**6 549**	**8 361**	**8 965**	**2.2**
Croatia	117	159	217	241	157	0.0
Poland	1 062	1 667	2 167	2 469	2 296	0.6
Russian Federation	748	1 197	733	1 597	1 362	0.3
Czech Republic	1 648	1 625	1 779	1 952	2 011	0.5
Slovakia	103	157	147	166	180	0.0
Hungary	328	868	999	1 228	660	0.2
Other European countries[4], of which	**1 082**	**2 727**	**22 809**	**22 331**	**21 087**	**5.1**
Turkey	725	1 019	1 050	1 010	1 042	0.3
North America	**63 934**	**68 986**	**95 975**	**104 742**	**83 982**	**20.5**
Canada	6 276	3 511	5 284	4 077	2 811	0.7
United States	57 658	65 475	90 691	100 665	81 171	19.8
Other non-European industrial countries	**7 874**	**10 892**	**9 268**	**9 662**	**14 576**	**3.6**
Australia	3 147	3 923	3 154	3 484	5 187	1.3
Japan	3 730	5 187	4 702	4 673	7 917	1.9
New Zealand	125	451	93	259	220	0.1
South Africa	872	1 331	1 318	1 246	1 252	0.3

	1998	1999	2000	2001[r]	2002[p]	Share in percent
2. Emerging economies	**25 711**	**31 929**	**33 480**	**35 534**	**32 301**	**7.9**
Asia	**16 804**	**20 805**	**20 825**	**22 333**	**23 296**	**5.7**
Hong Kong	2 064	2 316	2 683	2 825	2 936	0.7
Korea (South)	692	997	1 050	831	1 122	0.3
Malaysia	901	937	1 432	1 399	1 163	0.3
Philippines	1 281	1 433	1 677	1 999	2 044	0.5
Singapore	10 755	13 779	12 298	13 056	14 345	3.5
Taiwan	480	631	852	901	732	0.2
Thailand	631	712	832	1 322	955	0.2
Central and South America	**8 908**	**11 124**	**12 655**	**13 201**	**9 005**	**2.2**
Argentina	1 085	1 317	1 782	1 701	654	0.2
Brazil	4 375	5 072	5 707	5 636	3 717	0.9
Chile	686	828	790	831	436	0.1
Mexico	2 762	3 907	4 377	5 033	4 198	1.0
3. Developing countries	**30 024**	**37 457**	**44 271**	**60 441**	**65 725**	**16.0**
Asia, of which	**3 441**	**4 116**	**4 808**	**5 583**	**5 439**	**1.3**
China (People's Republic)	1 362	1 403	1 583	2 061	1 911	0.5
India	448	529	408	567	620	0.2
Indonesia	297	391	511	627	908	0.2
Lebanon	120	120	104	127	0	0.0
Pakistan	118	192	211	236	260	0.1
Saudi Arabia	253	323	326	224	184	0.0
United Arab Emirates	114	143	213	327	416	0.1
Viet-Nam	128	128	112	159	47	0.0
Central and South America, of which	**24 964**	**30 721**	**36 221**	**51 702**	**58 042**	**14.2**
Costa Rica	138	180	130	158	217	0.1
Ecuador	299	376	441	439	453	0.1
Guatemala	118	145	88	80	133	0.0
Colombia	974	1 166	1 092	1 151	1 208	0.3
Peru	192	261	310	291	262	0.1
Uruguay	307	447	421	414	586	0.1
Venezuela	621	696	1 116	1 163	664	0.2
Offshore financial centres[5]	22 098	26 993	31 778	46 447	49 808	12.2
Africa, of which	**1 619**	**2 621**	**3 242**	**3 157**	**2 244**	**0.5**
Egypt	354	472	605	602	413	0.1
Côte d'Ivoire	101	114	113	117	61	0.0
Morocco	330	318	294	288	210	0.1
Nigeria	26	35	15	31	34	0.0
All countries	**253 596**	**311 258**	**381 910**	**425 280**	**409 655**	**100.0**

1   The definition of countries is based on the Eurostat geonomenclature.
2   As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.
3   Until 1999, incl. Guernsey, Jersey and the Isle of Man.
4   As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.

5   Anguilla, Bahamas, Barbados, Bermuda, Virgin Islands (British), Jamaica, Cayman Islands, Montserrat, Netherlands Antilles, Panama, St Kitts and Nevis; as from 2000, incl. Virgin Islands (US), Antigua and Barbuda, Belize, Dominica, Grenada, St Lucia, St Vincent and the Grenadines, Turks and Caicos Islands.

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Swiss direct investment abroad
Number of staff abroad[1] (at year-end): breakdown by country

Table 1.3

	1998	1999	2000	2001[r]	2002[p]	Share in percent
1. Europe and non-European industrial countries	1 219 740	1 241 472	1 339 586	1 298 961	1 376 827	75.4
EU	**778 499**	**780 845**	**811 080**	**767 683**	**800 693**	**43.8**
Belgium	25 125	25 899	30 431	23 107	24 534	1.3
Denmark	11 356	11 223	10 439	14 766	13 204	0.7
Germany	268 107	249 165	254 010	215 655	225 573	12.3
Finland	13 793	13 607	14 844	15 668	15 891	0.9
France[2]	121 377	132 421	134 392	136 930	149 003	8.2
Greece	8 397	8 392	9 108	8 844	9 211	0.5
Ireland	4 347	5 332	4 807	6 075	5 359	0.3
Italy	56 795	58 581	62 650	64 568	63 886	3.5
Luxembourg	1 852	2 487	2 529	2 379	2 499	0.1
Netherlands	32 380	31 441	30 594	27 860	34 318	1.9
Austria	27 775	33 001	35 668	34 870	30 906	1.7
Portugal	9 291	10 172	9 959	10 235	13 629	0.7
Sweden	37 057	32 572	29 596	28 292	27 086	1.5
Spain	45 568	44 383	56 676	58 830	59 500	3.3
United Kingdom[3]	115 281	122 172	125 379	119 606	126 093	6.9
EFTA	**12 631**	**12 621**	**12 526**	**13 238**	**12 732**	**0.7**
Central and Eastern Europe, of which	**77 213**	**73 059**	**84 648**	**87 574**	**124 284**	**6.8**
Croatia	2 540	2 170	2 870	3 237	3 035	0.2
Poland	23 193	19 893	22 875	19 944	21 215	1.2
Russian Federation	8 836	9 692	10 889	12 311	37 616	2.1
Czech Republic	18 768	15 982	18 023	19 148	20 390	1.1
Slovakia	3 185	3 905	3 653	3 393	4 183	0.2
Hungary	9 692	9 581	11 483	11 735	12 882	0.7
Other European countries[4], of which	**9 750**	**10 858**	**11 569**	**10 713**	**11 528**	**0.6**
Turkey	9 129	10 228	9 824	9 266	9 774	0.5
North America	**268 176**	**291 243**	**341 894**	**339 827**	**335 772**	**18.4**
Canada	26 744	28 011	34 823	28 859	29 656	1.6
United States	241 432	263 232	307 071	310 968	306 117	16.8
Other non-European industrial countries	**73 471**	**72 847**	**77 871**	**79 925**	**91 819**	**5.0**
Australia	27 338	24 651	26 709	24 986	26 325	1.4
Japan	21 749	24 060	28 112	29 344	35 734	2.0
New Zealand	4 006	3 223	3 355	4 285	3 851	0.2
South Africa	20 378	20 913	19 695	21 311	25 909	1.4

	1998	1999	2000	2001[r]	2002[p]	Share in percent
2. Emerging economies	**223 014**	**224 915**	**240 231**	**236 466**	**241 399**	**13.2**
Asia	**107 689**	**102 073**	**116 809**	**118 222**	**122 719**	**6.7**
Hong Kong	14 319	14 016	15 276	14 901	16 553	0.9
Korea (South)	4 007	4 716	5 394	5 327	6 227	0.3
Malaysia	15 982	13 035	18 974	18 587	21 011	1.2
Philippines	13 293	13 050	12 579	13 027	13 297	0.7
Singapore	18 945	19 137	20 348	18 898	19 298	1.1
Taiwan	10 424	9 887	9 968	10 520	10 197	0.6
Thailand	30 720	28 232	34 270	36 962	36 137	2.0
Central and South America	**115 325**	**122 842**	**123 422**	**118 244**	**118 680**	**6.5**
Argentina	11 961	12 995	13 358	12 406	12 883	0.7
Brazil	67 552	72 322	72 939	70 019	70 698	3.9
Chile	10 622	9 819	9 588	9 366	8 800	0.5
Mexico	25 190	27 706	27 538	26 453	26 300	1.4
3. Developing countries	**169 191**	**174 569**	**183 205**	**189 350**	**208 513**	**11.4**
Asia, of which	**89 994**	**94 790**	**100 797**	**103 394**	**121 797**	**6.7**
China (People's Republic)	32 795	37 457	40 291	40 496	54 514	3.0
India	21 604	19 443	20 146	20 274	20 979	1.1
Indonesia	10 031	10 021	11 375	10 834	13 444	0.7
Lebanon	872	909	716	619	743	0.0
Pakistan	3 521	4 298	4 853	5 159	5 271	0.3
Saudi Arabia	3 255	2 866	2 658	3 490	3 669	0.2
United Arab Emirates	1 427	1 190	1 123	1 301	1 829	0.1
Viet-Nam	4 567	5 086	5 189	5 678	6 159	0.3
Central and South America, of which	**36 376**	**41 346**	**38 770**	**43 532**	**41 426**	**2.3**
Costa Rica	3 032	2 856	2 313	2 361	2 200	0.1
Ecuador	2 911	3 418	3 316	3 842	4 118	0.2
Guatemala	1 481	1 539	1 627	1 438	1 613	0.1
Colombia	7 292	8 479	8 440	9 129	6 793	0.4
Peru	3 736	3 895	3 676	4 118	4 680	0.3
Uruguay	869	858	934	924	872	0.0
Venezuela	8 092	8 493	7 782	8 869	8 111	0.4
Offshore financial centres[5]	5 743	6 122	5 674	7 566	6 529	0.4
Africa, of which	**42 821**	**38 433**	**43 638**	**42 425**	**45 290**	**2.5**
Egypt	9 793	8 428	8 450	8 290	8 027	0.4
Côte d'Ivoire	2 517	2 217	2 906	2 424	2 263	0.1
Morocco	3 652	3 489	3 467	3 201	3 310	0.2
Nigeria	6 047	5 505	6 763	3 938	3 422	0.2
All countries	**1 611 945**	**1 640 957**	**1 763 022**	**1 724 777**	**1 826 738**	**100.0**

1   The definition of countries is based on the Eurostat geonomenclature.
2   As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.
3   Until 1999, incl. Guernsey, Jersey and the Isle of Man.
4   As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.

5   Anguilla, Bahamas, Barbados, Bermuda, Virgin Islands (British), Jamaica, Cayman Islands, Montserrat, Netherlands Antilles, Panama, St Kitts and Nevis; as from 2000, incl. Virgin Islands (US), Antigua and Barbuda, Belize, Dominica, Grenada, St Lucia, St Vincent and the Grenadines, Turks and Caicos Islands.

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Swiss direct investment abroad

Table 1.4

Capital outflows[1] in millions of Swiss francs: **breakdown by economic activity**

	1998	1999	2000	2001ʳ	2002ᵖ
Manufacturing	**9 640**	**9 477**	**23 726**	**11 393**	**12 182**
Textiles and clothing	623	395	−90	−279	157
Chemicals and plastics	5 156	6 430	17 695	1 499	2 762
Metals and machinery	1 421	659	173	4 797	−488
Electronics, energy, optical and watchmaking industries	−890	1 007	2 395	1 788	681
Other manufacturing and construction	3 329	986	3 555	3 588	9 069
Services	**17 569**	**40 509**	**51 720**	**19 389**	**−371**
Trade	2 376	2 805	−656	1 080	314
Finance and holding companies	6 559	14 067	4 813	8 694	2 504
of which foreign-controlled[2]	3 870	11 480	2 519	7 770	1 312
Banks	−321	6 082	31 059	−928	−1
Insurance	8 034	9 910	14 042	7 493	−573
Transportation and communications	859	3 524	196	1 521	−1 383
Other services	62	4 121	2 266	1 528	−1 232
Total	**27 209**	**49 986**	**75 446**	**30 782**	**11 811**

Swiss direct investment abroad

Table 1.5

Capital stock (at year-end) in millions of Swiss francs: **breakdown by economic activity**

	1998	1999	2000	2001ʳ	2002ᵖ	Share in percent
Manufacturing	**106 858**	**106 978**	**125 393**	**129 068**	**135 914**	**33.2**
Textiles and clothing	1 771	2 164	2 093	1 451	1 367	0.3
Chemicals and plastics	44 712	42 358	56 178	59 630	62 272	15.2
Metals and machinery	17 071	17 423	17 894	20 872	20 702	5.1
Electronics, energy, optical and watchmaking industries	19 131	16 015	15 942	14 050	15 454	3.8
Other manufacturing and construction	24 174	29 019	33 286	33 065	36 119	8.8
Services	**146 738**	**204 280**	**256 518**	**296 212**	**273 741**	**66.8**
Trade	8 846	12 750	11 790	12 358	12 274	3.0
Finance and holding companies	55 426	80 924	90 432	104 805	113 903	27.8
of which foreign-controlled[2]	47 336	64 528	69 898	86 442	92 611	22.6
Banks	18 651	25 198	54 231	55 668	54 159	13.2
Insurance	55 667	67 252	85 914	104 511	80 218	19.6
Transportation and communications	3 253	7 009	3 571	8 118	4 168	1.0
Other services	4 895	11 148	10 580	10 753	9 020	2.2
Total	**253 596**	**311 258**	**381 910**	**425 280**	**409 655**	**100.0**

1 The minus sign (−) indicates a return flow of capital into Switzerland (disinvestment).

2 An enterprise is considered to be foreign-controlled if a majority share of its capital is in foreign hands.

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Swiss direct investment abroad
Number of staff abroad (at year-end): **breakdown by economic activity**

	1998	1999	2000	2001[r]	2002[p]	Share in percent
Manufacturing	**954 353**	**942 126**	**993 244**	**1 001 153**	**1 039 836**	**56.9**
Textiles and clothing	55 379	53 397	53 592	49 033	50 745	2.8
Chemicals and plastics	204 570	205 947	236 454	217 904	250 750	13.7
Metals and machinery	166 505	165 450	178 548	194 307	183 979	10.1
Electronics, energy, optical and watchmaking industries	241 700	230 439	238 455	239 692	225 663	12.4
Other manufacturing and construction	286 199	286 893	286 196	300 217	328 700	18.0
Services	**657 591**	**698 831**	**769 778**	**723 624**	**786 902**	**43.1**
Trade	64 534	70 238	66 415	80 140	109 533	6.0
Finance and holding companies	330 122	335 783	366 942	286 633	324 147	17.7
of which foreign-controlled[1]	308 104	297 765	314 159	250 710	283 496	15.5
Banks	33 784	35 127	75 583	77 227	76 628	4.2
Insurance	95 853	105 445	109 158	114 233	113 724	6.2
Transportation and communications	43 761	45 191	40 894	55 532	54 218	3.0
Other services	89 539	107 047	110 786	109 859	108 652	5.9
Total	**1 611 945**	**1 640 957**	**1 763 022**	**1 724 777**	**1 826 738**	**100.0**

1 An enterprise is considered to be foreign-controlled if a majority share of its capital is in foreign hands.

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Table 1.7

Swiss direct investment abroad − Capital outflows[1] in millions of Swiss francs:
breakdown by type of capital and geographical/economic zone

	1998	1999	2000	2001[r]	2002[p]
Equity capital					
Europe and non-European industrial countries	**6 988**	**20 118**	**48 834**	**15 839**	**21 519**
EU[2]	4 454	13 657	17 828	5 544	5 686
EFTA	−123	104	−1 186	81	−109
Central and Eastern Europe	766	570	547	598	1 328
Other European countries[3]	385	298	5 732	−957	368
North America	1 188	4 812	25 383	10 598	14 283
Other non-European industrial countries[4]	317	676	530	−26	−36
Emerging economies	**5 327**	**2 400**	**933**	**−547**	**712**
Asia[5]	3 861	1 619	458	−299	516
Central and South America[6]	1 465	781	475	−248	196
Developing countries	**4 634**	**1 317**	**6 245**	**6 704**	**2 412**
Asia	465	288	377	387	14
Central and South America	4 146	999	5 851	6 168	2 341
Africa	24	30	17	149	57
All countries	**16 949**	**23 835**	**56 012**	**21 995**	**24 643**

	1998	1999	2000	2001[r]	2002[p]
Reinvested earnings					
Europe and non-European industrial countries	**6 145**	**11 318**	**11 472**	**2 946**	**−4 330**
EU[2]	4 182	4 850	5 437	5 217	4 243
EFTA	19	250	−20	7	860
Central and Eastern Europe	−244	361	348	862	281
Other European countries[3]	−956	374	1 580	−133	−710
North America	2 833	5 380	4 448	−3 262	−8 741
Other non-European industrial countries[4]	311	101	−322	256	−262
Emerging economies	**1 357**	**4 256**	**1 728**	**789**	**−591**
Asia[5]	1 794	3 940	1 084	300	391
Central and South America[6]	−437	316	643	489	−981
Developing countries	**−300**	**2 706**	**3 638**	**263**	**−3 765**
Asia	−202	−350	−118	238	−74
Central and South America	−146	2 760	3 515	94	−3 585
Africa	49	296	242	−69	−107
All countries	**7 203**	**18 280**	**16 837**	**3 998**	**−8 686**

	1998	1999	2000	2001[r]	2002[p]
Other capital					
Europe and non-European industrial countries	**2 957**	**6 693**	**3 387**	**4 846**	**−4 572**
EU[2]	1 518	2 851	272	871	−2 657
EFTA	11	7	−2	160	39
Central and Eastern Europe	653	242	200	129	102
Other European countries[3]	122	71	−1 358	1 029	405
North America	437	3 448	4 401	2 392	−2 305
Other non-European industrial countries[4]	217	73	−125	266	−156
Emerging economies	**248**	**−412**	**−647**	**488**	**−387**
Asia[5]	33	−610	−705	226	−191
Central and South America[6]	215	198	59	262	−197
Developing countries	**−147**	**1 591**	**−145**	**−546**	**813**
Asia	178	41	−9	6	26
Central and South America	−355	1 583	−133	−560	990
Africa	30	−33	−3	9	−203
All countries	**3 058**	**7 872**	**2 596**	**4 789**	**−4 146**

	1998	1999	2000	2001[r]	2002[p]
Total					
Europe and non-European industrial countries	**16 090**	**38 128**	**63 693**	**23 631**	**12 618**
EU[2]	10 154	21 359	23 537	11 632	7 271
EFTA	−93	362	−1 208	247	791
Central and Eastern Europe	1 175	1 174	1 095	1 589	1 710
Other European countries[3]	−449	744	5 954	−61	63
North America	4 458	13 640	34 232	9 728	3 238
Other non-European industrial countries[4]	845	850	83	496	−455
Emerging economies	**6 932**	**6 244**	**2 014**	**730**	**−266**
Asia[5]	5 689	4 949	838	227	716
Central and South America[6]	1 243	1 295	1 177	503	−982
Developing countries	**4 187**	**5 614**	**9 739**	**6 421**	**−541**
Asia	441	−21	251	631	−35
Central and South America	3 645	5 343	9 233	5 702	−254
Africa	102	293	255	89	−253
All countries	**27 209**	**49 986**	**75 446**	**30 782**	**11 811**

1 The minus sign (−) indicates a return flow of capital into Switzerland (disinvestment).
2 As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique; excl. Guernsey, Jersey and the Isle of Man.

3 As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.
4 Australia, Japan, New Zealand, South Africa.
5 Hong Kong, Korea (South), Malaysia, Philippines, Singapore, Taiwan, Thailand.

6 Argentina, Brazil, Chile, Mexico.

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Investment Income[1,2] in millions of Swiss francs: breakdown by economic activity

	1998	1999	2000	2001[r]	2002[p]
Manufacturing	**13 006**	**14 926**	**21 511**	**15 728**	**10 062**
Textiles and clothing	88	4	−77	−15	114
Chemicals and plastics	6 462	7 308	12 298	4 630	3 012
Metals and machinery	1 758	877	1 305	1 515	−861
Electronics, energy, optical and watchmaking industries	990	1 943	2 475	3 275	3 777
Other manufacturing and construction	3 708	4 795	5 510	6 324	4 020
Services	**13 128**	**20 005**	**22 592**	**15 417**	**7 429**
Trade	875	1 150	484	1 169	2 198
Finance and holding companies	11 551	12 647	7 022	10 838	11 413
of which foreign-controlled[3]	8 846	8 532	6 774	11 304	10 394
Banks	−2 325	−1 328	5 593	−381	−5 553
Insurance	2 585	7 001	9 129	3 722	678
Transportation and communications	39	277	−711	153	−1 008
Other services	403	259	1 076	−83	−298
Total	**26 134**	**34 931**	**44 103**	**31 145**	**17 491**

1 The income on direct investment consists of dividends (less reorganisation contributions and non-reclaimable withholding tax), net interest from intra-group lending, and reinvested earnings.

2 The minus sign (−) indicates a loss.
3 An enterprise is considered to be foreign-controlled if a majority share of its capital is in foreign hands.

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Foreign direct investment in Switzerland
Table 2.1
Capital inflows[1,2] in millions of Swiss francs: **breakdown by investing country**

	1998	1999	2000	2001[r]	2002[p]
1. Europe and non-European industrial countries	**11 763**	**17 459**	**31 355**	**14 602**	**8 919**
EU, of which	**5 625**	**9 224**	**12 939**	**11 385**	**6 622**
Belgium	−50	177	226	169	−264
Denmark	27	−52	873	1 840	−108
Germany	2 715	2 907	4 022	−1 425	−371
France[3]	−393	615	587	944	2 278
Italy	1 584	476	1 954	299	420
Luxembourg	505	431	2 852	791	−108
Netherlands	1 612	−1 183	538	7 505	−194
Austria	38	114	266	23	104
Sweden	75	−1	62	−48	189
Spain	−113	475	102	50	32
United Kingdom[4]	−378	5 238	1 330	1 211	4 726
EFTA	**0**	**3**	**30**	**−26**	**133**
Other European countries[5], of which	**12**	**27**	**24**	**60**	**−963**
Turkey	22	23	26	1	20
North America	**6 509**	**9 669**	**18 443**	**2 869**	**3 334**
Canada	−55	−189	7 832	−454	193
United States	6 564	9 858	10 611	3 323	3 141
Other non-European industrial countries, of which	**−383**	**−1 464**	**−80**	**313**	**−207**
Japan	−457	−1 509	−37	278	−253
2. Emerging economies	**−10**	**−11**	**814**	**181**	**12**
3. Developing countries	**1 211**	**155**	**351**	**162**	**−127**
Asia, of which	**−47**	**44**	**20**	**22**	**−221**
Israel	36	36	−8	14	−310
Central and South America	**1 255**	**109**	**322**	**136**	**90**
Africa	**3**	**3**	**9**	**5**	**5**
All countries	**12 963**	**17 603**	**32 519**	**14 945**	**8 804**

1   The definition of countries is based on the Eurostat geonomenclature.
2   The minus sign (−) indicates an outflow of capital from Switzerland (disinvestment).
3   As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.

4   Until 1999, incl. Guernsey, Jersey and the Isle of Man.
5   As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.

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Foreign direct investment in Switzerland
Table 2.2
Capital stock[1] (at year-end) in millions of Swiss francs: **breakdown by investing country**

	1998	1999	2000	2001[r]	2002[p]	Share in percent
1. Europe and non-European industrial countries	**97 028**	**119 674**	**139 338**	**145 746**	**169 143**	**97.5**
EU, of which	**65 650**	**75 294**	**84 274**	**89 704**	**99 559**	**57.4**
Belgium	569	778	1 469	1 052	662	0.4
Denmark	329	825	1 941	5 355	5 285	3.0
Germany	15 944	17 461	20 212	15 976	15 908	9.2
France[2]	11 891	15 362	13 524	11 364	13 737	7.9
Italy	5 762	5 530	7 014	5 875	6 649	3.8
Luxembourg	4 906	4 857	4 914	7 048	9 709	5.6
Netherlands	19 696	21 061	28 445	35 766	36 928	21.3
Austria	345	550	682	780	764	0.4
Sweden	4 089	426	531	416	1 204	0.7
Spain	162	491	257	524	586	0.3
United Kingdom[3]	1 751	7 596	4 825	5 161	7 821	4.5
EFTA	**17**	**16**	**53**	**40**	**175**	**0.1**
Other European countries[4], of which	**333**	**298**	**382**	**1 120**	**687**	**0.4**
Turkey	128	155	19	22	42	0.0
North America	**28 031**	**41 213**	**52 171**	**53 193**	**67 510**	**38.9**
Canada	197	250	2 265	1 788	1 813	1.0
United States	27 834	40 963	49 906	51 405	65 697	37.9
Other non-European industrial countries, of which	**2 997**	**2 853**	**2 457**	**1 689**	**1 213**	**0.7**
Japan	1 973	1 455	1 424	1 637	1 111	0.6
2. Emerging economies	**53**	**46**	**533**	**715**	**1 231**	**0.7**
3. Developing countries	**2 020**	**1 842**	**2 184**	**2 426**	**3 081**	**1.8**
Asia, of which	**574**	**996**	**984**	**1 058**	**1 089**	**0.6**
Israel	354	741	711	764	469	0.3
Central and South America	**1 376**	**776**	**1 126**	**1 287**	**1 906**	**1.1**
Africa	**70**	**70**	**75**	**82**	**86**	**0.0**
All countries	**99 101**	**121 561**	**142 055**	**148 887**	**173 456**	**100.0**

1   The definition of countries is based on the Eurostat geonomen-clature.
2   As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique.

3   Until 1999, incl. Guernsey, Jersey and the Isle of Man.
4   As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.

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Foreign direct investment in Switzerland
Capital inflows[1] in millions of Swiss francs: breakdown by economic activity

Table 2.3

	1998	1999	2000	2001[r]	2002[p]
Manufacturing	**3 069**	**2 944**	**16 380**	**−1 725**	**69**
Chemicals and plastics	3 029	361	3 119	278	−321
Metals and machinery	28	−710	7 992	−39	160
Electronics, energy, optical and watchmaking industries	−55	2 312	3 239	−2 435	264
Other manufacturing and construction	69	983	2 030	472	−35
Services	**9 894**	**14 659**	**16 139**	**16 670**	**8 735**
Trade	971	1 750	2 231	572	1 644
Finance and holding companies	5 165	5 520	5 156	5 513	7 811
Banks	2 253	65	2 626	2 545	99
Insurance	1 220	4 707	1 917	1 721	−1 414
Transportation and communications	66	1 853	3 552	6 177	−57
Other services	218	764	656	142	652
Total	**12 963**	**17 603**	**32 519**	**14 945**	**8 804**

Foreign direct investment in Switzerland
Capital stock (at year-end) in millions of Swiss francs: breakdown by economic activity

Table 2.4

	1998	1999	2000	2001[r]	2002[p]	Share in percent
Manufacturing	**18 906**	**17 613**	**25 117**	**25 350**	**24 898**	**14.4**
Chemicals and plastics	7 816	7 389	7 447	10 307	8 832	5.1
Metals and machinery	2 524	851	3 446	3 427	3 722	2.1
Electronics, energy, optical and watchmaking industries	6 583	5 528	9 301	7 061	8 135	4.7
Other manufacturing and construction	1 982	3 845	4 923	4 556	4 210	2.4
Services	**80 196**	**103 948**	**116 938**	**123 537**	**148 558**	**85.6**
Trade	12 612	15 060	19 939	19 125	19 358	11.2
Finance and holding companies	43 674	56 153	63 536	68 743	93 107	53.7
Banks	16 922	17 798	21 337	23 039	24 064	13.9
Insurance	4 139	8 947	5 528	4 375	3 829	2.2
Transportation and communications	545	2 664	3 732	5 516	4 526	2.6
Other services	2 303	3 327	2 866	2 740	3 674	2.1
Total	**99 101**	**121 561**	**142 055**	**148 887**	**173 456**	**100.0**

1 The minus sign (−) indicates an outflow of capital from Switzerland (disinvestment).

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Foreign direct investment in Switzerland – Capital inflows[1] in millions of Swiss francs: Table 2.5
breakdown by type of capital and geographical/economic zone

	1998	1999	2000	2001[r]	2002[p]
Equity capital					
Europe and non-European industrial countries	**4 026**	**7 529**	**18 834**	**15 612**	**3 799**
EU[2] and EFTA	1 172	5 716	7 460	11 956	4 515
Other European countries[3]	11	13	−18	71	10
North America	3 296	3 407	11 544	3 672	−512
Other non-European industrial countries[4]	−454	−1 608	−152	−87	−215
Emerging economies	**−4**	**0**	**806**	**71**	**0**
Developing countries	**1 071**	**48**	**243**	**117**	**−302**
All countries	**5 093**	**7 577**	**19 883**	**15 799**	**3 497**

	1998	1999	2000	2001[r]	2002[p]
Reinvested earnings					
Europe and non-European industrial countries	**6 358**	**9 611**	**10 831**	**930**	**1 458**
EU[2] and EFTA	2 997	3 324	4 986	−570	−1 230
Other European countries[3]	1	14	41	−11	−1 019
North America	3 289	6 222	5 843	1 537	3 719
Other non-European industrial countries[4]	71	51	−39	−27	−13
Emerging economies	**2**	**0**	**8**	**−14**	**8**
Developing countries	**142**	**97**	**145**	**50**	**187**
All countries	**6 502**	**9 708**	**10 985**	**966**	**1 653**

	1998	1999	2000	2001[r]	2002[p]
Other capital					
Europe and non-European industrial countries	**1 379**	**319**	**1 689**	**−1 940**	**3 663**
EU[2] and EFTA	1 456	186	523	−27	3 470
Other European countries[3]	0	1	0	0	46
North America	−76	40	1 056	−2 340	127
Other non-European industrial countries[4]	0	93	110	427	21
Emerging economies	**−8**	**−11**	**0**	**125**	**4**
Developing countries	**−3**	**11**	**−37**	**−4**	**−11**
All countries	**1 368**	**319**	**1 651**	**−1 820**	**3 655**

	1998	1999	2000	2001[r]	2002[p]
Total					
Europe and non-European industrial countries	**11 763**	**17 459**	**31 355**	**14 602**	**8 919**
EU[2] and EFTA	5 625	9 224	12 939	11 385	6 622
Other European countries[3]	−10	7	1	−19	134
North America	6 531	9 692	18 495	2 922	2 370
Other non-European industrial countries[4]	−383	−1 464	−80	313	−207
Emerging economies	**−10**	**−11**	**814**	**181**	**12**
Developing countries	**1 211**	**155**	**351**	**162**	**−127**
All countries	**12 963**	**17 603**	**32 519**	**14 945**	**8 804**

1   The minus sign (−) indicates an outflow of capital from Switzerland (disinvestment).
2   As from 2000, incl. Monaco, Réunion, French Guiana, Guadeloupe and Martinique; excl. Guernsey, Jersey and the Isle of Man.

3   As from 2000, incl. Guernsey, Jersey and the Isle of Man, excl. Monaco.
4   Australia, Japan, New Zealand, South Africa.

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Foreign direct investment in Switzerland

Investment income[1,2] in millions of Swiss francs: breakdown by economic activity

Table 2.6

	1998	1999	2000	2001[r]	2002[p]
Manufacturing	**1 618**	**2 037**	**4 821**	**−861**	**1 152**
Chemicals and plastics	583	980	1 103	783	−37
Metals and machinery	81	−66	300	355	288
Electronics, energy, optical and watchmaking industries	740	537	2 784	−2 223	634
Other manufacturing and construction	215	687	633	225	267
Services	**10 056**	**13 636**	**12 940**	**13 692**	**7 760**
Trade	2 362	2 618	3 039	878	482
Finance and holding companies	6 111	8 640	7 212	11 146	6 885
Banks	1 598	1 949	2 592	1 623	1 539
Insurance	128	247	181	233	−1 068
Transportation and communications	−207	−79	−1 164	−506	−348
Other services	64	260	1 080	318	270
Total	**11 674**	**15 674**	**17 761**	**12 831**	**8 913**

1   The income on direct investment consists of dividends (less reorganisation contributions and non-reclaimable withholding tax), net interest from intra-group lending, and reinvested earnings.

2   The minus sign (−) indicates a loss.

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Switzerland's international investment position in 2002

Switzerland's net international investment position declined by CHF 13 billion to CHF 584 billion in 2002. Both foreign assets and foreign liabilities were again below their year-earlier figure owing to the sustained stock market slump and the lower valuation of the US dollar. Since foreign assets are higher than foreign liabilities, they were harder hit by this decline in absolute terms. The net investment position consequently diminished. Its share of GDP dropped from 144% to 140%. By international standards, Switzerland's net investment position is still high.

Switzerland's international investment position   Table 1

Position at year-end	1985	1990	1995	2000	2001[r]	2002[p]	Change against previous year in percent
Foreign assets in CHF billions	527.8	733.0	989.8	2231.9	2214.0	2099.2	−5.2
Foreign liabilities in CHF billions	298.1	450.7	640.2	1710.4	1617.5	1515.5	−6.3
Net investment position in CHF billions	229.7	282.3	349.6	521.5	596.5	583.7	−2.1
Assets in % of GDP	222.5	231.0	272.4	550.0	535.0	503.1	−6.0
Liabilities in % of GDP	125.7	142.0	176.2	421.5	390.8	363.1	−7.1
Net in % of GDP	96.8	89.0	96.2	128.5	144.1	139.9	−2.9

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Composition and valuation of the international investment position

The international investment position indicates the level of Switzerland's financial assets and liabilities abroad. The net position thus denotes the balance of these assets and liabilities. The international investment position comprises portfolio investment, direct investment, the National Bank's international reserves as well as other financial assets and liabilities. Direct investment includes equity capital and loans to subsidiaries abroad. Portfolio investment includes shares, investment fund certificates, bonds and money market paper. Bank lending makes up the bulk of the other financial assets and liabilities of residents vis-à-vis other countries. The positions at the end of the year are generally stated at market prices. Direct investment positions are an exception. They are shown at book value. Since 2000, the National Bank's gold holdings have also been stated at market value. Previously, the official parity value of CHF 4,596 per kilogram of gold was applied. Switzerland's international investment position is compiled in accordance with IMF guidelines.

International investment position and balance of payments

The international investment position is closely interrelated with the balance of payments. It reflects the level of foreign assets and liabilities at a given point in time. In the balance of payments, capital flows (investments) are shown during a specified period of time. Capital outflows (Swiss investment abroad) lead to an increase in foreign assets while capital inflows (foreign investment in Switzerland) bring about an increase in foreign liabilities. If Switzerland makes more investments abroad than vice versa, i.e. if its transactions result in a net capital outflow, the net international investment position increases. In this case, the corresponding balance in the current account shows a surplus. However, the development of the international investment position is not only determined by investment but by other factors as well. In particular, the positions reflect fluctuations in exchange rates and precious metal prices as well as changes in stock prices.

1 Effects of the financial account and of valuation changes on the net international investment position

Capital inflows and outflows as well as changes in the valuation of stocks determine the size of the international investment position (cf. page 74 international investment position and balance of payments).

In 2002, Swiss capital outflows led to a rise of CHF 131 billion in foreign assets. At the same time, though, heavy valuation losses in the amount of CHF 245 billion meant that foreign assets effectively dropped by CHF 115 billion. The valuation losses were due to falling prices of foreign shares as well as the weaker US dollar.

Capital imports contributed CHF 82 billion to the rise in foreign liabilities in 2002. Valuation losses of CHF 184 billion resulted in foreign liabilities effectively declining by CHF 102 billion, however. A fall in the prices of foreign-held Swiss shares were a key factor here.

Net capital outflows boosted the net international investment position by CHF 48 billion. Valuation losses on foreign assets and liabilities, though, caused the net investment position to decline by CHF 61 billion on balance. The net international investment position thus effectively receded by CHF 13 billion.

Changes in the international investment position in 2002 in CHF billions   Table 2

	Total 2001[r]	Investment[1] 2002[p] Increase: +	Valuation change[2] 2002[p] Increase: +	Total 2002[p]
Foreign assets	2214.0	130.5	−245.3	2099.2
Foreign liabilities	1617.5	82.4	−184.4	1515.5
Net investment position	596.5	48.1	−60.9	583.7

1   Investment in accordance with the financial account in the balance of payments; capital outflows result in an increase in foreign assets and capital inflows in an increase in foreign liabilities.

2   Exchange rate-induced and market price-induced valuation changes.

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2 Development and structure of foreign assets

Total direct investment abroad diminished by CHF 15 billion to CHF 410 billion in 2002. This is the first decline since international investment statistics started to be compiled in 1985. In the past few years, this figure had risen at an above-average rate, doubling its share in total foreign assets from 10% to 20% since 1985. On the one hand, the drop in direct investment capital abroad was exchange rate-induced. In particular, positions in US dollars suffered a steep decline. On the other hand, the poor business results of subsidiaries abroad contributed to a lower valuation of the capital stock.

Portfolio positions declined by CHF 98 billion to CHF 722 billion in 2002. This significant fall can be attributed to the lower stock market valuation of foreign shares and the softer US dollar. Equity securities thus dropped by CHF 112 billion to CHF 303 billion. Debt securities, by contrast, grew by CHF 14 billion to CHF 420 billion.

The volume of other foreign assets was roughly the same as in the previous year. Commercial bank lending was up by CHF 17 billion to CHF 646 billion, while corporate lending expanded by CHF 11 billion to CHF 128 billion. Higher lending by banks and companies was offset mainly by lower fiduciary investments abroad.

International reserves dipped by CHF 2 billion to CHF 85 billion in 2002. The National Bank sold gold no longer required for monetary purposes in the amount of CHF 4 billion. However, the foreign exchange position topped the year-earlier level by CHF 2 billion.

Composition of foreign assets in CHF billions[1] Table 3

Total at year-end	1985	1990	1995	2000	2001[r]	2002[p]	Change against previous year in percent	Percentage share of total
Direct investment[2]	**52.1**	**85.6**	**163.9**	**381.9**	**425.3**	**409.7**	**−3.7**	**19.5**
Equity capital	42.7	73.0	141.5	339.5	381.2	370.6	−2.8	17.7
Loans	9.4	12.6	22.4	42.4	44.1	39.0	−11.4	1.9
Portfolio investment	**200.5**	**248.1**	**399.3**	**820.9**	**820.3**	**722.2**	**−12.0**	**34.4**
Debt securities	152.2	194.2	260.6	385.7	405.3	419.6	3.5	20.0
Bonds	*150.2*	*191.7*	*257.6*	*376.7*	*381.8*	*392.8*	*2.9*	*18.7*
Money market paper[3]	*2.0*	*2.6*	*2.9*	*9.0*	*23.6*	*26.8*	*13.6*	*1.3*
Equity securities	48.3	53.9	138.7	435.1	415.0	302.7	−27.1	14.4
Shares	*na*	*na*	*na*	*306.7*	*279.8*	*184.4*	*−34.1*	*8.8*
Investment funds	*na*	*na*	*na*	*128.4*	*135.2*	*118.2*	*−12.6*	*5.6*
Other foreign assets	**225.2**	**350.0**	**370.6**	**941.3**	**881.4**	**882.0**	**0.1**	**42.0**
of which								
commercial bank lending[4]	*155.4*	*172.3*	*210.6*	*676.4*	*629.4*	*646.1*	*2.7*	*30.8*
corporate lending[5]	*24.6*	*40.3*	*64.3*	*109.7*	*117.0*	*127.9*	*9.4*	*6.1*
government lending	*1.4*	*1.5*	*1.1*	*0.8*	*0.5*	*0.5*	*−4.1*	*−0.0*
fiduciary investments	*43. 8*	*92.5*	*64.5*	*103.2*	*97.5*	*76.5*	*−21.5*	*3.6*
International reserves	**50.0**	**49.2**	**56.0**	**87.9**	**87.1**	**85.4**	**−1.9**	**4.1**
Gold[6]	11.9	11.9	11.9	34.7	33.0	29.3	−11.0	1.4
Foreign exchange	36.8	37.2	41.8	50.5	50.6	52.9	4.7	2.5
Other currency reserves	1.4	0.1	2.3	2.7	3.5	3.1	−11.5	0.1
Total	**527.8**	**733.0**	**989.8**	**2231.9**	**2214.0**	**2099.2**	**−5.2**	**100.0**

1 Differences in totals are due to rounding of figures.
2 Swiss equity holdings of 10% or more in companies abroad, claims and liabilities (net) vis-à-vis subsidiaries abroad as well as net assets of branches abroad.

3 Until 1997, only money market paper held by banks.
4 Domestic bank offices.
5 Excluding loans to subsidiaries, which are included in direct investment.
6 Since 2000, gold holdings have been stated at market value.

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3 Development and structure of foreign liabilities

The stock of foreign direct investment in Switzerland grew by CHF 25 billion to CHF 173 billion in 2002. This increase was almost exclusively due to foreign groups moving their headquarters to Switzerland or heavily expanding their Swiss base.

Swiss securities held by non-residents dropped by CHF 100 billion to CHF 486 billion. The lower stock market valuation of domestic shares resulted in equity securities declining by CHF 102 billion to CHF 437 billion. Debt securities, by contrast, grew by CHF 2 billion to CHF 49 billion.

Other foreign liabilities – primarily liabilities of banks – declined by CHF 26 billion to CHF 856 billion. This drop was mainly caused by the weaker US dollar, which accounts for almost half of the other foreign liabilities.

4 Composition by currency

The proportion of foreign assets denominated in Swiss francs advanced by two percentage points to 16% in 2002. All components of foreign assets recorded a rise in their Swiss franc share. At the beginning of the 1990s, this share was in the region of 30%. It then fell steadily to a low of 13% in 2000. The euro's share expanded from 28% to 30%, while the significance of the US dollar relative to total foreign assets remained virtually unchanged at 33%. The dollar's reduced share of direct and portfolio investment was offset by its larger share of other investment and international reserves. The other currencies lost some ground.

The Swiss franc's share of foreign liabilities diminished from 52% to 50% in 2002. This was due mainly to the lower valuation of Swiss franc-denominated securities investments and to the banks' switching their liabilities into US dollars and euros. The US dollar's share of foreign liabilities thus climbed from 25% to 27%, while the euro's share rose from 12% to 14%.

Composition of foreign liabilities in CHF billions[1]　　　　　　　　　　　　　　　　　　　　Table 4

Total at year-end	1985	1990	1995	2000	2001[r]	2002[p]	Change against previous year in percent	Percentage share of total
Direct investment[2]	**21.0**	**44.4**	**65.6**	**142.1**	**148.9**	**173.5**	**16.5**	**11.4**
Equity capital	*20.6*	*44.9*	*64.9*	*139.6*	*148.7*	*169.4*	*13.9*	*11.2*
Loans	*0.4*	*-0.5*	*0.7*	*2.5*	*0.2*	*4.0*	*2314*	*0.3*
Portfolio investment	**99.5**	**121.5**	**240.0**	**673.3**	**586.6**	**486.2**	**−17.1**	**32.1**
Debt securities	11.4	19.2	33.7	48.1	47.1	49.1	4.4	3.2
Bonds	*11.4*	*19.2*	*33.7*	*47.2*	*46.5*	*47.8*	*2.9*	*3.2*
Money market paper	*na*	*na*	*na*	*0.9*	*0.6*	*1.3*	*124.3*	*0.1*
Equity securities	88.1	102.3	206.3	625.2	539.6	437.0	−19.0	28.8
Shares	*72.4*	*80.2*	*171.2*	*547.5*	*463.4*	*374.9*	*−19.1*	*24.7*
Investment fund certificates	*15.7*	*22.1*	*35.1*	*77.7*	*76.1*	*62.2*	*−18.3*	*4.1*
Other foreign liabilities	**177.7**	**284.8**	**334.6**	**895.0**	**882.0**	**855.9**	**−3.0**	**56.5**
of which								
loans to commercial banks[3]	*123.5*	*172.2*	*207.5*	*690.9*	*667.0*	*647.9*	*−2.9*	*42.8*
loans to companies[4]	*18.5*	*27.9*	*52.5*	*89.8*	*100.6*	*95.6*	*−5.0*	*6.3*
loans to government	*na*	*0.1*	*0.7*	*0.7*	*0.6*	*0.9*	*34.2*	*0.1*
loans to the National Bank	*0.1*	*0.1*	*0.0*	*0.6*	*2.1*	*0.7*	*−66.5*	*0.0*
Total	**298.1**	**450.7**	**640.2**	**1710.4**	**1617.5**	**1515.5**	**−6.3**	**100.0**

1 Differences in totals are due to rounding of figures.
2 Foreign equity holdings of 10% or more in companies in Switzerland, claims and liabilities (net) vis-à-vis subsidiaries in Switzerland as well as net assets of branches in Switzerland.

3 Domestic bank offices.
4 Excluding loans to subsidiaries, which are included in direct investment.

r revised
p provisional
na not available

Composition of foreign assets by currency in CHF billions[1]   Table 5

Total at year-end	1999	2000	2001[r]	2002[p]	Change against previous year in percent	Percentage share of total
Direct investment						
CHF	10.0	4.7	9.4	9.3	-0.9	2.3
USD	71.4	94.3	101.1	84.1	−16.8	20.5
EUR	99.8	117.6	122.5	124.6	1.7	30.4
Other currencies	130.1	165.2	192.3	197.7	−0.1	46.8
Total	311.3	381.9	425.3	409.7	−3.6	100.0
Portfolio investment						
CHF	180.4	178.8	188.0	184.3	-2.0	25.5
USD	235.4	244.6	249.4	200.5	−19.6	27.8
EUR	236.3	269.2	283.4	270.3	−4.6	37.4
Other currencies	155.3	128.2	99.6	67.1	−32.6	9.3
Total	807.4	820.9	820.3	722.2	−12.0	100.0
Other foreign assets						
CHF	101.1	114.0	123.1	133.5	8.5	15.1
USD	342.0	386.3	354.0	390.8	10.4	44.3
EUR	157.0	187.9	183.8	192.5	4.7	21.8
Other currencies	186.3	249.2	215.4	159.2	−26.1	18.0
Precious metals	7.1	3.7	5.1	6.0	18.2	0.7
Total	793.5	941.3	881.4	882.0	0.1	100.0
International reserves						
CHF	–	–	–	–	–	–
USD	29.2	20.5	20.8	20.8	0.0	24.3
EUR	20.1	22.3	23.2	26.0	12.0	30.4
Other currencies	9.1	10.4	10.1	9.3	−8.0	10.9
Precious metals[2]	11.9	34.7	33.0	29.3	−11.0	34.4
Total	70.3	87.9	87.1	85.4	−1.9	100.0
Total foreign assets						
CHF	291.5	297.5	320.4	327.1	2.1	15.6
USD	678.0	745.7	725.2	696.1	−4.0	33.2
EUR	513.1	597.0	612.9	613.4	0.1	29.2
Other currencies	480.7	553.0	517.4	427.3	−17.4	20.4
Precious metals	19.0	38.5	38.1	35.4	−7.1	1.7
Total	1 982.5	2 231.9	2 214.0	2 099.2	−5.2	100.0

1   Differences in totals are due   p   provisional
to rounding of figures.   r   revised
2   Since 2000, gold holdings
have been stated at market value.

Composition of foreign liabilities by currency in CHF billions[1] Table 6

Total at year-end	1999	2000	2001[r]	2002[p]	Change against previous year in percent	Percentage share of total
Direct investment						
CHF	120.8	143.8	150.0	171.6	14.4	98.9
USD	0.8	−0.2	0.6	1.6	174.3	0.9
EUR	−0.1	−1.2	−1.5	−0.3	−81.4	−0.2
Other currencies	0.0	−0.3	−0.2	0.5	.	0.3
Total	121.6	142.1	148.9	173.5	16.5	100.0
Portfolio investment						
CHF	460.7	592.8	508.2	415.3	−18.3	85.4
USD	28.3	27.2	30.9	27.7	−10.2	5.7
EUR	35.7	37.1	35.7	33.9	−4.9	7.0
Other currencies	18.3	16.3	11.9	9.2	−22.5	1.9
Total	543.0	673.3	586.6	486.2	−17.1	100.0
Other foreign liabilities						
CHF	170.8	174.6	185.6	172.4	−7.1	20.1
USD	308.3	352.2	374.3	379.1	1.3	44.3
EUR	121.5	136.7	163.7	182.8	11.6	21.4
Other currencies	133.9	222.0	147.7	112.1	−24.2	13.1
Precious metals	10.9	9.5	10.7	9.5	−10.9	1.1
Total	745.4	895.0	882.0	855.9	−3.0	100.0
Total foreign liabilities						
CHF	752.3	911.2	843.8	759.3	−10.0	50.1
USD	337.5	379.2	405.7	408.5	0.7	27.0
EUR	157.0	172.6	197.9	216.4	9.4	14.3
Other currencies	152.3	238.0	159.4	121.8	−23.7	8.0
Precious metals	10.9	9.5	10.7	9.5	−10.9	0.6
Total	1 410.0	1 710.4	1 617.5	1 515.5	−6.3	100.0

1 Differences in totals are due to rounding of figures.
r revised
p provisional

Does it Make Sense to Combine Forecasts from VAR Models?
An Empirical Analysis with Inflation Forecasts for Switzerland

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1 Introduction[2]

At the beginning of the year 2000, the Swiss National Bank (SNB) adopted a new monetary policy framework. The new concept is based on an explicit definition of price stability and uses an inflation forecast as the main indicator for guiding monetary policy decisions.[3] Although the forward-looking approach of the SNB has some similarities with both the two-pillar concept of the European Central Bank and with strict inflation targeting – as practised, for example, by the Bank of England – it is in itself an original framework for monetary policy.[4]

What these new monetary policy strategies have in common is the forward-looking orientation of the policy decisions necessitated by the long lag between a monetary impulse and its effect on output and prices. In Switzerland, for instance, the main impact on prices is believed to occur between one and three years after the monetary impulse. Consequently, inflation forecasts over a horizon of one to three years are of special importance for central banks as a basis for decision-making. For this reason, providing long-run inflation forecasts with various methods and analysing their properties and accuracy has recently become an area of intense research. This paper is an empirical contribution to the literature on this topic.

Producing accurate inflation forecasts over a horizon of one to three years is a very difficult task. Uncertainties about the true structure of the economy and the monetary transmission mechanism force central banks to use a variety of approaches for forecasting inflation rather than to rely on a single model.[5] One approach uses large, structural macroeconomic models.[6] These models have the advantage of producing forecasts for many variables and of delivering clear economic intuition behind the dynamics of the forecasts. The problems of large structural models are the restrictive assumptions that have to be made in order to identify the structure of the economy.[7] Vector autoregression models (VAR) constitute a second approach.[8] VARs exploit the information in macroeconomic time series without imposing strong restrictions relating to the structure of the

economy. Thus, VARs may suffer less from the problem of data contamination by imposing incorrect restrictions regarding both the economy and the transmission mechanism. A further advantage of VARs comes from the fact that they do not need any assumptions about the course of exogenous variables for the period of the forecasting horizon. All variables in VAR models are endogenous, and the dynamic forecasts are straightforward to compute. When VARs are estimated, however, the problem of a small number of degrees of freedom often arises. The number of parameters to be estimated soon becomes overwhelming when more and more variables are included in a VAR. For instance, given the limited length of the quarterly time series in Switzerland, VARs can often be estimated with only three to five variables. Thus, VARs may fail to use part of the relevant information contained in the macroeconomic data because their size has to be restricted to a small number of variables. One possible way of overcoming this problem is to use a series of small VARs and then to combine their forecasts.[9] The aim of this study is to analyse whether combining forecasts from different small VAR models can improve the accuracy of single forecasts by taking information from more variables into account. The study concentrates on inflation forecasts for Switzerland.[10]

The paper is organised as follows: Section 2 discusses the role of unconditional forecasts in the process of monetary policy decisions. In Section 3, the methods for combining forecasts are explained. Section 4 analyses the time series properties of the variables and the various VAR models used to produce forecasts. Section 5 addresses the question of whether combined forecasts are better than individual forecasts by looking at out-of-sample results. Section 6 contains a summing-up.

2 Types of Forecasts in Monetary Policy: Conditional and Unconditional

Two types of inflation forecasts are used in monetary policy: On the one hand, conditional forecasts assume a specific path of the future course of monetary policy. Thus, they allow the central bank to evaluate the consequences of alternative policy decisions. On the other hand, unconditional forecasts provide inflation predictions where the future stance of monetary policy over the forecasting horizon is explicitly or implicitly predicted as well.

Unconditional inflation forecasts are produced for three main reasons. First, they provide a benchmark forecast given the observed reaction of the central bank to the macroeconomic situation in the past. Such inflation forecasts are especially important and informative since the assumptions about the course of the policy instrument underlying the conditional forecasts, e.g. a constant interest rate through to the end of the forecasting horizon, are usually unrealistic. Unconditional forecasts are thus important indicators for the general inflation outlook. Second, since conditional inflation forecasts cannot be tested for their accuracy because of their counterfactual nature, the different models have to be evaluated according to their performance in unconditional forecasting. Thus, the central bank needs to produce unconditional forecasts for all its models, including forecasts based on structural models. Third, unconditional inflation forecasts also allow comparisons with forecasts from outside the central bank. This enables the policymaker to judge whether there are differences between the market perception of the inflation outlook and his own analysis.

Simple VARs represent reduced forms, i.e., the parameters of simple VARs have no structural interpretation. Producing *conditional* forecasts from simple VARs is problematic, because a given interest rate is not equivalent to a given monetary policy course. Furthermore, the estimated coefficients are not policy-invariant.[11] However, VARs are an ideal method of producing *unconditional* benchmark forecasts because they rely on only a minimum amount of structural information, i.e. on the choice of the variables and on the lag length. Furthermore, unlike in the case of structural models, exogenous variables do not have to be forecast. In this paper, we look only at unconditional inflation forecasts computed

with VAR models and examine whether these forecasts can be improved by combining them.

3 Combining Forecasts

The traditional VAR forecasting procedure is very simple. The forecaster decides on the variables and the number of lags included in the VAR as well as on the assumptions about integration, cointegration, trend, and seasonality of the data. Forecasts are then produced by using the chosen model. The limited length of the time series typically available in macroeconomics highlights three basic problems of the traditional approach. First, only small VARs, i.e., with only a few variables, can be used for forecasting. Thus, potentially useful information may be left out by concentrating on a single model. Second, the small degrees of freedom may lead to estimated parameters with large standard errors, which is likely to influence adversely the out-of-sample performance of the forecasts. The traditional approach also has the disadvantage that the choice of the model does not primarily depend on past out-of-sample forecast performance but on the goodness of the fit.

In order to overcome these shortcomings, we have developed an alternative procedure. It consists of two steps: First, we compute a large number of forecasts using a series of small VARs. The small size of the VARs allows us to preserve a minimal number of degrees of freedom. Second, the forecasts of different models are weighted to produce combined forecasts.[12] We call the forecasts obtained by this procedure "combined VAR forecasts" (CVARFs). While many methods are used for combining forecasts, the present study only covers those most commonly adopted.[13]

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11 The production of conditional forecasts with *structural* VAR models is dealt with in Kugler and Jordan (2000) and in Jordan, Kugler, Lenz and Savioz (2002).

12 See Winkler (1989, p. 606), for the basic motivation underlying the proposed procedure: "In most interesting forecasting situations in our uncertain and rapidly changing world, I doubt that such 'true' models are attainable and I think that it is counterproductive to think in terms of 'true' models. The motivation for

the combination of forecasts, then, is at its most basic level the simple idea of aggregation of information to achieve a reduction in uncertainty, or an increase in accuracy."

13 For descriptions of methods used to determine the weights, see, for example, Clemen and Winkler (1986), Clemen (1989), and Holden and Peel (1986).

There are three main reasons why combining forecasts can be expected to improve their accuracy: First, it leads to a diversification of the forecast errors and thus diminishes the problem of imprecise estimates of individual models.[14] Second, combined forecasts should be more robust, because they do not depend closely on the specifications applied to an individual model. The damage done by a specification error in a single model may thus be greatly reduced. Third, by taking more variables into account, combined forecasts may be based on a broader information set. This is especially relevant for VAR forecasts which are traditionally based on models with only a few variables. The gains from combining forecasts should arise in particular when the weights depend on the past performance of the individual forecasts.

Further advantages of combining VAR forecasts may exist. First, the weighting of the various forecasts, if determined by their past forecast performance, may provide some information on the relative importance of the different models and variables. Second, a change in the dispersion of the individual forecasts can give an early indication of a deterioration in the forecast accuracy. However, we do not examine these further issues in the present paper. Instead we focus on the question of whether CVARFs are more accurate than VAR forecasts.

The different methods of weighting the forecasts, which are used in the subsequent analysis, are explained with the help of an example where forecasts for inflation in time t from three VAR models are available: $\hat{\pi}_{VAR1,t}$, $\hat{\pi}_{VAR2,t}$ and $\hat{\pi}_{VAR3,t}$.[15] The combined inflation forecast $\hat{\pi}_{CVAR,t}$ is a weighted average of these three individual forecasts

(1) $\hat{\pi}_{CVAR,t} = w_0 + w_1 \hat{\pi}_{VAR1,t} + w_2 \hat{\pi}_{VAR2,t} + w_3 \hat{\pi}_{VAR3,t}$,

where the $w_i\ i = 0,\ldots 3$ are the weights.

The first very common method of combining forecasts is to take the *simple average* (SA) of the individual forecasts. Accordingly, the weights are equal for all individual forecasts and sum up to one:

(2) $w_0 = 0\quad w_1 = \tfrac{1}{3}\quad w_2 = \tfrac{1}{3}\quad w_3 = \tfrac{1}{3}$.

In the SA method, the weights do not depend on the observed past accuracy of the individual forecasts.

In contrast to the SA method, the other combination methods set weights according to the past performance of the individual forecasts. This is accomplished with the help of a linear regression with the actual inflation rate as the dependent variable and the individual out-of-sample forecasts as explanatory variables. The coefficients may be estimated with restrictions so that they satisfy some or all of the properties of weights ($0 \leq w_i \leq 1$, $\sum_i w_i = 1$). In our example with three forecasts the regression is:[16]

(3) $\pi_t = \beta_0 + \beta_1 \hat{\pi}_{VAR1,t} + \beta_2 \hat{\pi}_{VAR2,t} + \beta_3 \hat{\pi}_{VAR3,t} + \varepsilon_t$.

The second combination method we will use is the ordinary least square method (LS). In the LS-combined forecast (1), the estimated coefficients of equation (3) are used as weights to calculate the combined forecast:

(4) $w_0 = \hat{\beta}_0\quad w_1 = \hat{\beta}_1\quad w_2 = \hat{\beta}_2\quad w_3 = \hat{\beta}_3$.

No restrictions are imposed on the estimation of the coefficients in Eq. (3). Note that the coefficient $\hat{\beta}_0$ is equal to zero for unbiased forecasts.

The third combination method is the *constant restricted least square* method (CRLS). The CRLS-combined forecast is assumed to be unbiased and the constant term of the estimated regression is restricted in order to be equal to zero:

(5) $w_0 = \hat{\beta}_0 = 0$.

The fourth combination method is the *equality restricted least square* method (ERLS). In the ERLS-combined forecast a further restriction is that the weights of the forecasts sum up to one. Thus, the regression (3) is estimated with the following restrictions:

(6) $\hat{\beta}_0 = 0$ and $\hat{\beta}_1 + \hat{\beta}_2 + \hat{\beta}_3 = 1$.

The fifth and last combination method we will use is the *non-negativity inequality restricted least square* method (NRLS). In NRLS-combined forecasts the weights are non-negative. The regression (3) is estimated with the following (non-linear) restrictions:

(7) $\hat{\beta}_0 = 0, \hat{\beta}_1 \geq 0, \hat{\beta}_2 \geq 0,$ and $\hat{\beta}_3 \geq 0$.

In the following section, we will make use of these five methods for combined forecasts. Our analysis will seek to establish whether CVAR forecasts achieve a better performance than individual VAR forecasts.

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14 See, for example, Granger (1989), Granger and Newbold (1973, 1986). See Jungmittag (1993) for an introductory exposition of the diversification argument.

15 See Aksu and Gunter (1992).

16 The CVARF approach not only provides a forecast but delivers additional information that may be useful for the forecasters and for the conduct of monetary policy. First, CVARFs give a useful indication of the source of forecast performance. This can be read from equation (3). Forecasts that yield no significant coefficient in this regression contain no information

not already included in the other forecasts (see Diebold (1989) for a discussion of forecast combination and "forecast encompassing" as well as West (2001) for an appropriate test for "forecast encompassing"). Thus, it is possible to infer which sets of variables are good predictors for inflation at a given forecasting horizon. A non-zero intercept in the regression is an indication that the

forecasts are biased (see Holden and Peel, 1989). Second, structural breaks in the inflation process may be identified at an early stage through the analysis of the changes in the estimated weights (see Diebold and Pauly, 1986). The likely source of the structural break may also be inferred from the change in the weights.

4 Data, Time Series Properties, and VAR Models

In order to keep the analysis tractable we restrict ourselves to five variables: The consumer price index P, the money aggregate $M3$, total domestic bank credit C, real GDP Q, and the long-term Swiss franc interest rate R. Money, credit, economic activity, and the long-term interest rate are important determinants of the inflation process according to the main theories of the transmission mechanism of monetary policy.[17]

The sample period covers the first quarter of 1974 to the third quarter of 2000.[18] Table 1 presents the Augmented Dickey-Fuller Unit Root test for the five variables. The logs of all five variables will be assumed to be I(1) in the rest of the paper.[19] We only consider VAR models with stationary variables. Thus, all variables enter the models as first differences. For the purpose of this paper, we do not take cointegration and vector error correction specifications into account.

The VAR models considered include a constant and four lags. No trend or seasonal dummies are allowed for.[20] All VARs have to include at least the inflation rate π_t. Thus, the smallest VAR just includes π_t. The largest VAR includes all 5 variables. Within this setup it is possible to specify 16 different VAR models: 1 model with 1 variable, 4 models with 2 variables, 6 models with 3 variables, 4 models with 4 variables and 1 model with 5 variables.

Combined forecasts are only constructed from forecasts of VAR models with the same number of variables. Given this restriction, 79 different combined forecasts can be specified: 11 combinations of forecasts from models with 2 variables, 57 of forecasts from models with 3 variables and 11 from models with 4 variables (see Table 4).

5 Out-of-Sample Forecasts

In this section, we examine the possibility of achieving better forecasts by combining forecasts. We compare the performance of CVARFs with the individual VAR forecasts (VARFs). Both the average performance of VARFs and CVARFs as well as the performance of the best VARFs and CVARFs will be compared. We concentrate on forecasts of the annual inflation rate

$$(8) \quad \pi_t = 100 \cdot \log(P_t/P_{t-4})$$

and consider the forecasting horizons of one, two, and three years. These are the most relevant horizons for monetary policy.

To assess the accuracy of the forecasts, we use the root mean square error statistics (RMSE)

$$(9) \quad RMSE = \sqrt{1/T \sum_{t=1}^{T} (\pi_t - \hat{\pi}_t)^2},$$

where π_t is the actual inflation and $\hat{\pi}_t$ is the predicted inflation for time t. The difference $\pi_t - \hat{\pi}_t$ is the forecast error and T is the number of forecasts. The mean squared forecast error ($MSE = 1/T \sum_{t=1}^{T} (\pi_t - \hat{\pi}_t)^2$) is a measure of the size of the average forecast errors. Due to squaring of the forecast errors, large forecast errors are given a proportionally higher weighting than small ones. The dimension of the root mean squared error (RMSE) corresponds to that of the inflation rate π_t. If the forecasts are perfect, the RMSE is equal to zero.

The analysis considers only out-of-sample forecasts. As put forward by Bernanke (1990) and Thoma and Gray (1994), among others, the ultimate decision about the usefulness of a forecasting model must come from its ability to forecast out of sample. Superior in-sample forecasting ability does not automatically mean superior out-of-sample forecasting ability.

The forecasts are computed with rolling regression methods: A rolling estimation of the VAR models yields a series of out-of-sample individual VAR forecasts for different forecasting horizons $k = 4, 8, 12$. The forecasts for the horizon of k quarters are computed as follows: First the VAR is estimated with observations running from time s to time $s - 29$, where s is the period after which the first forecast starts.[21] The estimated coefficients are then used to compute the forecast for time $s + k$. For the forecast for time $s + k$ only information available in time s is used. Then, the sample is enlarged by one period and the equation is re-estimated with data running from

17 The study by Jordan (1999a) has shown that credit aggregates are good predictors of inflation. For the importance of monetary aggregates for inflation, see Baltensperger, Jordan and Savioz (2001) as well as Kirchgässner und Savioz (2001).
18 Note that the variability of inflation has recently been very

small around a low level of inflation. Therefore the latest data are not very appropriate for testing the performance of models to forecast (high) inflation.
19 See Miller, Clemen, and Winkler (1992).
20 The variables are seasonally adjusted.

21 Thus no VAR is estimated with less than thirty observations.

$s + 1$ to $s - 29$. The re-estimated coefficients are now used to compute the forecast for time $s + 1 + k$. This procedure is continued until the end of the available data, but the estimation sample is held constant when it reaches 50 observations. With this technique, 73 one-year-ahead individual forecasts from 1982:3 to 2000:3, 69 two-year-ahead individual forecasts from 1983:3 to 2000:3 and 65 three-year-ahead individual forecasts from 1984:3 to 2000:3 can be computed.

Combined forecasts are obtained by using weights computed by the five methods discussed above. For the calculation of these weights, rolling regression techniques are applied. The regression of Eq. (3) is run with the first 30 individual forecasts to produce the first combined forecast for time $s + 2k + 29$, where $s + k$ is the quarter for which the first individual forecast with horizon k is available. Then the regression is run with the first 31 individual forecasts to produce the combined forecast for quarter $s + 2k + 30$. This procedure is continued until the end of the available data, but the number of individual forecasts used in the regression is again held constant after reaching 50. This procedure allows us to produce 39 one-year-ahead combined forecasts from 1991:3 to 2000:3, 31 two-year-ahead combined forecasts from 1993:3 to 2000:3 and 23 three-year-ahead combined forecasts from 1995:3 to 2000:3.[22]

During the period from 1991:1 to 2000:3 actual inflation averaged 1.9%, with a maximum of 6.1% and a root mean square $(RMS = 1/T \sum_{t=1}^{T} \sqrt{\pi_t^2 / T})$ of 2,62%. For the period 1993:1 to 2000:3 inflation averaged 1.2%, with a maximum of 3.4% and an RMS of 1.54%. During the period from 1995:1 to 2000:3 inflation averaged only 0.9% and was consistently below 2%. The RMS was 1.09%. Since it is preferable to evaluate the forecasting performance over a period when inflation shows some variation, we do not present the results of the different forecasting horizons for a common sample.

The change in both the volatility and the level of inflation makes it more difficult to assess the forecast performance of the models between different forecasting periods and horizons. One possibility to compare the forecast accuracy between different periods is to look at Theil's U[23]

$$(10) \quad U = \frac{RMSE}{RMS} = \frac{\sqrt{1/T \sum_{t=1}^{T} (\pi_t - \hat{\pi}_t)^2}}{1/T \sum_{t=1}^{T} \sqrt{\pi_t^2 / T}} \,.$$

The U statistic relates the RMSE of the inflation forecasts to the RMS of the actual inflation. This scales the forecast errors relative to the level of inflation because absolute forecast errors tend to be smaller in periods of low inflation than in periods of high inflation. Furthermore, Theil's U allows the performance of a model to be judged relative to a simple forecast of no change in the price level (i.e. zero inflation). The inequality coefficient U is equal to one if the model has the same predictive power as the simple forecast. If U is smaller (bigger) than one, the model yields more (less) precise forecasts than the simple forecast of no change. One should, however, be aware that a simple forecast of no change in the price level may in some circumstances be a very good forecast. A U statistic higher than one would then not indicate a poor forecast performance per se. This is especially valid for the period from 1995:1 to 2000:3, when a forecast of a constant price level would have been quite acceptable. Over this period of almost six years, the increase in the price level was only 4.3%, or 0.75% a year. Consequently, for forecasts within the period from 1995:1 to 2000:3 with a horizon of three years, a U statistic that is bigger than one may not necessarily reflect a bad performance.

In Table 2, we show the results of the out-of-sample performance of individual VAR forecasts.[24] We report average results for different groups of VAR models. In general, as the RMSE and the U statistics show, the performance deteriorates as the length of the forecasting horizon increases. The row with one variable ($n = 1$) corresponds to an AR(4) model of the change in the price level. This model serves as a benchmark. On average, the other VARFs outperform this benchmark. The forecasts with VARs with four variables ($n = 4$) perform best on average for the one-year forecasting horizon. For the two-year-forecasting horizon VARs with three variables ($n = 3$) perform best on average, but the difference to the VARs with four variables ($n = 4$) is only very small. For the three-year-ahead forecasts, VARs with three variables ($n = 3$) achieve on average the best results, followed by bivariate VARs ($n = 2$) and the VARs with four variables ($n = 4$). The performance of the single VAR with five variables ($n = 5$) is not particularly good. This may be attributable to a small number of degrees of freedom in the estimation of this VAR. The results show clearly, at least for one-year-ahead and two-year-ahead forecasts, that including additional variables improves the performance.

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22 When the forecast horizon increases by one year, the sample for the evaluation of the combined forecasts decreases by two years (see Table 2 and following). The first year is lost because fewer forecasts can be computed with a given data set when the forecast horizon becomes larger. Similarly,

the second year is lost because fewer combined forecasts can be computed with a given set of forecasts when the forecast horizon becomes larger.
23 The Theil U statistic is defined here as in Greene (2000, p. 310).

24 See Jordan (1999b) for another piece of evidence.

5.1 Comparison with the average performance of the VARFs

How do CVARFs perform compared to VARFs? In the following we will compare the performance of the CVARFs to the *average performance* of the VARFs as reported in the first row of table 2. Table 3 reports the average RMSE and U of the 79 CVARFs for the different combination methods. The table also indicates the improvement from combining forecasts relative to the average of all individual VAR forecasts. The simple average method (SA) performs quite well for each forecasting horizon. For the one-year forecasting horizon, SA is even the best method for weighting the individual forecasts. An advantage of this method is that the weights do not have to be estimated. The least square method (LS) performs very poorly at any forecasting horizon. Restricting the constant to zero (CRLS) improves the performance substantially for the two-year and the three-year forecasting horizon.[25] For the three-year forecasting horizon, CRLS is the best method. Imposing the equality restriction, which requires the weights to sum up to one (ERLS), improves the performance only for the one-year forecasting horizon.[26] The method of restricting the weights of the forecasts to be non-negative (NRLS) achieves good results for the two- and three-year-ahead forecasts. It is even the best method for the two-year forecast horizon.

Imposing constant weights (SA) works well especially for short forecasting horizons. However, for longer forecasting horizons, it seems important to let the weights change over time by re-estimating them in each period. But, as the poor performance of LS shows, restrictions should be imposed in the estimation of the weights. Whereas ERLS seem not to impose the right restriction to estimate the weights, CRLS and NRLS perform well. If the individual VAR forecasts are very similar but not identical, CRLS is still numerically feasible, whereas the NRLS may not be.[27]

For the subsequent analysis we concentrate on the best methods for each forecasting horizon. For the one-year horizon, we use SA. For the two-year horizon, we may choose between CRLS and NRLS. The results are very similar. In order to avoid possible numerical problems, we opt for CRLS rather than NRLS. CRLS is also the best method for the three-year horizon.

Table 5 reports the results for different subgroups of the CVARFs. As a benchmark, the results of the average of the VARFs and the CVARFs are reported in Table 5 as well. We form two different subgroups of 79 combined forecasts. First, we form subgroups for all combined forecasts that are computed from the same number of VARFs. For instance, the group $m = 2$ consists of all 27 combined forecasts that are formed with two individual forecasts. These individual forecasts may stem from VARs with 2, 3, or 4 variables. Second, we form subgroups of combined forecasts that are computed from VARFs with the same number of variables. For instance, the subgroup ($n = 2$) consists of all 11 combined forecasts that are computed from forecasts of individual VARs with 2 variables. The combined forecasts may include 2, 3, or 4 individual forecasts. The subgroups are illustrated in Table 4.

The results show very clearly that the more forecasts are combined, the better the forecast performance becomes. The improvement is monotone with an increasing number of combined forecasts. If 6 forecasts ($m = 6$) are combined, the RMSE decreases by more than 20% compared to the average of the VARFs. This improvement may be due to either the diversification effect (more forecasts) or the information effect (more variables). The findings also show that combinations of forecasts of VARs with 3 or 4 variables ($n = 3$, $n = 4$) achieve on average a bigger improvement of the RMSE than combinations of forecasts from bivariate VARs ($n = 2$). Somewhat odd are the results for the two-year horizon, where the combinations of forecasts from VARs with 4 variables ($n = 4$) do not perform very well.

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25 On the CRLS-method see also Granger and Ramanathan (1984).
26 On the ERLS-method see also Clemen (1986).
27 The weights of the previous regression are used if the new regression yields no numerical results.

5.2 Comparison with the best VARFs

The results of the analysis so far show that combining forecasts from different models can, in general, improve the precision of the forecasts, provided that an adequate combination method is chosen. This finding was based on a comparison of the average performance of CVARFs with the average performance of VARFs. Two questions arise: First, do any individual VARFs substantially outperform the averages of the combined forecasts? Second, is it possible to identify which combinations perform better and whether it might be advantageous to concentrate on some specific combinations? We will therefore look more closely at the performance of the *best performing* VARFs and CVARFs.

Table 6 presents the results for the three best VARFs for each forecasting horizon. A comparison with Table 3 shows that for the one-year forecasting horizon the best VARFs outperform the average CVARFs (all weighting methods). For the two-year-ahead forecasts only the two best VARFs outperform the average CVARF computed with the CRLS method. The best VARF, however, is not better than the average CVARF computed with the NRLS method. For the three-year forecasting horizon, the best VARF performs worse than the average CVARF computed either by the CRLS or the NRLS method. Note also that the best VARs do not include all variables, especially at long forecasting horizons. The results set out in Table 6 indicate that combining forecasts is especially important for long-term forecasts.

Table 7 compares the result of the best VARF with the three best CVARFs for each forecasting horizon. Using the simple average (SA) method, the best CVARF outperforms the best VAR forecasts by 9% for the one-year forecasting horizon. However, for longer forecasting horizons, the best CVARF (CRLS) improves the RMSE by more than 30%. This is a substantial improvement in the forecast accuracy. For the two (three)-year forecasting horizon 59 (49) out of the 79 possible CVARFs achieve lower RMSE and U than the best VARF.

Can the best combination be identified? It is interesting to note that the three best models for any forecasting horizon include, without exception, all five variables considered in this analysis. Note also the following interesting result: For the one-year forecast horizon, only three out of fifteen possible combinations (number of two forecasts of trivariate VARs) use information from all variables. The best CVARF is among these three combinations. This may point not only to a "diversification advantage" but also to an "information advantage" of combined forecasts over individual forecasts. One piece of practical advice may be to combine VARFs in such a way that a large number of variables is taken into account in the CVARF.

6   Conclusions

Unconditional inflation forecasts are important for the conduct of monetary policy, and VAR models are well-suited to producing such unconditional forecasts. Given the limited amount of data typically available in macroeconomic studies, however, VARs have the disadvantage of being restricted to a small number of variables. We have developed a modelling approach to compute unconditional forecasts that overcomes the problem of a limited number of variables. The procedure exploits the properties of combined forecasts and proceeds in two steps: First, a large number of VAR forecasts, stemming from models specified in various ways and including different variables, are computed. Second, the weights for combining the forecasts are determined according to the past performance of the forecasts. Then the unconditional combined forecasts are computed using these weights. With this approach, "real-time" information on the forecast accuracy and possible structural breaks may be extracted from the change of weights. Furthermore, the weights may show which group of variables incorporate information about future inflation for a specific forecasting horizon.

The results of this paper show that, on average, the combined inflation forecasts computed with the developed approach outperform the best VAR forecast. This is especially true for long-run forecasts. The superiority of combining forecasts can be attributed to three features: First, forecast errors are diversified. Second, combined forecasts do not rely heavily on the specification of a single VAR model and may thus be less sensitive to specification errors. And third, combined VAR forecasts are usually based on more information than single VAR forecasts.

The present study contains some shortcomings. To minimise the computational and programming workload, we restricted ourselves in two respects. First, we only used five variables. The literature on the monetary transmission mechanism underlines the importance of further variables like exchange rates, import prices, different interest rates, etc. Second, we did not examine whether the results hold if different time series properties of the data are assumed. This would drastically increase the number of VARFs and CVARFs to be taken into account because VARs in levels and Error Correction Models would have to be included. Because an inefficient (and unbiased) forecast can always be improved by combining it with another forecast, we would expect some improvement in forecast accuracy if these two restrictions were relaxed. The interesting question, however, is whether this improvement would be as large as the one shown in this study. Finally, a fundamental limitation of the method presented here must be mentioned: Combined VAR forecasts are only suitable when unconditional forecasts are needed. For structural simulations (impulse respons, variance decomposition, conditional forecast) the single VAR approach has to be used.

To sum up, this paper demonstrates that, in order to produce unconditional inflation forecasts, it may be more sensible to work with many "small" VARs than to use a single VAR model. The empirical results reveal that this may be especially true for long-run forecasts of inflation. Reverting to the introductory quote by Shakespeare, we may draw the following conclusion: If you cannot say which grain will grow, it is wise not to choose a single seed but to plant them all. This paper and the wealth of literature on combined forecasts show that if the purpose is to forecast rather than to analyse the economy, it is more appropriate to use more than just a single model. The SNB's inflation forecasts are in fact based on several models, and the results of this paper help to underpin this pluralist approach.

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Appendix:

Variable	k	r	t
ΔP	5	0.699	−2.699(*)
ΔQ	10	0.058	−3.17*
ΔM	4	0.570	−2.845(*)
ΔC	0	0.833	−2.905*
ΔR	0	0.412	−6.736**

* indicates that the null hypothesis of a unit root is rejected at the 5% significance level. ** and (*) indicate a rejection at the 1% and 10% significance level. k is the number of lagged (endogenous) variables entering the Augmented Dickey-Fuller test equation. k is the lag between 0 and 10 with the smallest value of the AIC-criterion. r is the estimated unit root and t is the test statistic. The critical values of MacKinnon are used.

Individual Out-of-sample VAR Forecasts
Average results of the 16 VAR forecasts   Table 2

Number of variables included in the VAR:	One-year-ahead forecasts 1991:1 − 2000:3 39 forecasts		Two-year-ahead forecasts 1993:1 − 2000:3 31 forecasts		Three-year-ahead forecasts 1995:1 − 2000:3 23 forecasts	
	RMSE	Theil's U	RMSE	Theil's U	RMSE	Theil's U
All VARS (16)[1]	*0.892*	*0.340*	*1.259*	*0.817*	*1.418*	*1.302*
$n = 1$ (1)	1.198	0.457	1.365	0.886	1.464	1.345
$n = 2$ (4)	0.966	0.369	1.252	0.812	1.417	1.301
$n = 3$ (6)	0.860	0.328	**1.242**	**0.806**	**1.402**	**1.287**
$n = 4$ (4)	**0.801**	**0.306**	1.245	0.808	1.425	1.309
$n = 5$ (1)	0.842	0.321	1.340	0.869	1.445	1.328

Note:
For each forecasting horizon, the best statistic is reported in bold font. n is the number of variables entering a VAR. All VARs are of order 4. For example, for n = 1 the forecasts are computed with an AR(4) model. For n = 2 (n = 3) the forecasts are computed with a bivariate (trivariate) VAR(4), and so on. Starting with 30 observations the sample used for the estimation of the VARs is augmented until the sample size of 50 is reached.

1   The number of VARs with n variables is given in brackets. For example, "n = 3 (6)" means that six forecasts were computed with six trivariate VAR(4). The result reported in the table is the average of the six forecasts.

Combined Out-of-sample VAR Forecasts
Average result for the 79 combined forecasts
Table 3

Method	One-year forecast horizon 1991:1 – 2000:3 39 forecasts			Two-year forecast horizon 1993:1 – 2000:3 31 forecasts			Three-year forecast horizon 1995:1 – 2000:3 23 forecasts		
	RMSE	U	%	RMSE	U	%	RMSE	U	%
VARF	*0.892*	*0.340*	*100%*	*1.259*	*0.817*	*100%*	*1.418*	*1.302*	*100%*
SA	**0.749**	**0.286**	−15.9%	1.167	0.757	−7.3%	1.374	1.262	−3.1%
LS	1.069	0.408	20%	1.714	1.112	36.1%	2.528	2.322	78.3%
CRLS	0.942	0.360	5.9%	1.142	0.741	−9.3%	**1.261**	**1.158**	−11.1%
ERLS	0.868	0.331	−2.6%	1.302	0.844	3.3%	1.552	1.426	9.5%
NRLS	0.904	0.345	1.5%	**1.088**	**0.706**	−13.6%	1.268	1.165	−10.5%

Note:
VAR(4) and combinations are
estimated with 50 observations.

Subgroups of Combined VAR-Forecasts
Table 4

Number of variables in the VAR (n):	Number of combined forecasts (m):				
	m = 2	m = 3	m = 4	m = 5	m = 6
n = 2	6	4	1	–	–
n = 3	15	20	15	6	1
n = 4	6	4	1	–	–

Note:
n is the number of variables en-
tering the VARs. m is the number
of forecasts combined.

Combined Out-of-sample VAR Forecasts (Subgroups)
Average result for different subgroups of the 79 combined forecasts

Table 5

	One-year-ahead forecasts 1991:1 – 2000:3 (39 forecasts) SA			Two-year-ahead forecasts 1993:1 – 2000:3 (31 forecasts) CRLS			Three-year-ahead forecasts 1995:1 – 2000:3 (23 forecasts) CRLS		
	RMSE	U	GAIN	RMSE	U	GAIN	RMSE	U	GAIN
VARF	0.892	0.340	100%	1.259	0.817	100%	1.418	1.302	100%
CVARF	0.749	0.286	−15.9%	1.142	0.741	−9.3%	1.261	1.158	−11.1%
Subgroups formed by the number of VAR-forecasts combined									
$m = 2$ (27)	0.782	0.298	−12.4%	1.208	0.784	−4.0%	1.327	1.219	−6.4%
$m = 3$ (28)	0.745	0.284	−16.5%	1.179	0.765	−6.4%	1.264	1.161	−10.8%
$m = 4$ (17)	0.721	0.275	−19.1%	1.080	0.701	−14.2%	1.201	1.104	−15.2%
$m = 5$ (6)	0.705	0.269	−20.9%	0.914	0.593	−27.4%	1.147	1.054	−19.0%
$m = 6$ (1)	**0.698**	**0.266**	−21.8%	**0.783**	**0.508**	−37.9%	**1.100**	**1.011**	−22.4%
Subgroups formed by the number of variables entering the VARs									
$n = 2$ (11)	0.869	0.332	−2.4%	1.389	0.901	−10.3%	1.285	1.181	−9.3%
$n = 3$ (57)	0.734	0.280	−17.6%	**1.073**	**0.696**	−14.9%	1.258	1.156	−11.2%
$n = 4$ (11)	**0.706**	**0.270**	−20.6%	1.256	0.815	−0.2%	**1.251**	**1.149**	−11.8%

Note:
m is the number of forecasts combined.

Note:
n is the number of variables entering the VARs.

The Best Individual VAR Forecasts

Table 6

Rank	VAR	RMSE	Theil's U
	One-year-ahead forecasts: 1991:1 − 2000:3 (39 forecasts)		
1	*P, M, C, R*	0.716	0.273
2	*P, M, C, Q*	0.732	0.280
3	*P, C, R*	0.742	0.283
	Two-year-ahead forecasts: 1993:1 − 2000:3 (31 forecasts)		
1	*P, M, C, Q*	1.088	0.706
2	*P, M, C*	1.128	0.732
3	*P, M, Q*	1.152	0.748
	Three-year-ahead forecasts: 1995:1 − 2000:3 (23 forecasts)		
1	*P, C, R*	1.318	1.210
2	*P, C, Q, R*	1.351	1.241
3	*P, C*	1.358	1.247

Note:
VAR(4) and combinations are
estimated with 50 observations.

The Best Combined VAR Forecasts

Table 7

Rank	CVARF	RMSE	Theil's U	Gain
	One-year-ahead forecasts (SA)			
	Best VARF	*0.716*	*0.273*	*100%*
1	*P,M,C + P,Q,R*	0.650	0.248	−9.2%
2	*P,M,C + P,C,R + P,Q,R*	0.658	0.251	−8.1%
3	*P,M,C,Q + P,M,C,R + P,M,Q,R*	0.662	0.252	−7.7%
	Two-year-ahead forecasts (CRLS)			
	Best VARF	*1.088*	*0.817*	*100%*
1	*P,M,C + P,M,Q + P,M,R + P,C,Q + P,C,R + P,Q,R*	0.783	0.508	−38.8%
2	*P,M,C + P,M,R + P,C,Q + P,C,R + P,Q,R*	0.787	0.511	−37.5%
3	*P,M,C + P,M,R +P,C,R + P,Q,R*	0.817	0.530	−35.1%
	Three-year-ahead forecasts (CRLS)			
	Best VARF	*1.318*	*1.210*	*100%*
1	*P,M,C + P,C,R + P,Q,R*	0.921	0.846	−30.1%
2	*P,M,C + P,C,R + P,Q,R + P,M,R*	0.951	0.874	−27.8%
3	*P,M,C + P,C,R + P,Q,R + P,M,Q*	0.952	0.874	−27.8%

Note:
VAR(4) and combinations are
estimated with 50 observations.

Chronicle of monetary events

News conference of 12 December

The National Bank decided to leave the target range for the three-month Libor rate at 0.0%–0.75% and to keep the three-month Libor rate at 0.25% for the time being.

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