

# Finnish Forest Sector Economic Outlook 2000–2001

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## Summary

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*The distinctive feature of the global operating environment for the Finnish forest industry in 2000 has been strong economic growth. This is projected to continue to the end of the year and throughout 2001. Both this year and in 2001, real GDP growth in the world economy, weighted according to the distribution of Finnish forest industry exports, is forecast to be about four per cent. This level of growth was last reached in the late 1980s. Production in the Finnish forest sector has continued to rise accordingly, and the price trend has been upwards, especially in the pulp and paper industry. Forest industry production, commercial fellings and roundwood imports will be at record levels this year and in 2001. In real terms, sawlog stumpage prices will show an increase this year, while a decrease will be recorded for pulpwood prices. In 2001, the stumpage price trend is expected to be reversed, and pulpwood prices will rise by more than those for sawlogs.*

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### **Economic Operating Environment**

The economies of all the main export markets for the Finnish forest industry have been growing this year at least as fast as in 1999, and most are growing significantly faster. Finnish forest industry exports are up, especially to the United States, Germany, France and Spain. Growth in exports to the United Kingdom, however, is confined mainly to sawnwood. With the exception of the United States, the GDP growth rate for 2001 in the main export

markets is predicted to be almost as high as in 2000. The greatest risks to further growth in the world economy are generally considered to be a continuation in the high price of oil, and an economic downturn in the United States that turns out not to be the anticipated 'soft landing' but a 'hard landing' instead. Economic growth in Finland for this year as a whole will be strong, and should continue so in 2001. This will also be reflected in the continued activity of the construction sector, for example.

### **Exports, Production and Prices in the Forest Industry**

Growth in the construction sector will raise the consumption of sawn softwood and plywood in Western Europe this year to a record level. Thanks to the increased demand in Europe and Asia, and Finland's competitive edge, production and exports of Finnish sawnwood will be up by about seven per cent in 2000, and export prices (in FIM) will be up by nine per cent. Production and exports of plywood will be up by 14 per cent, and the average export price by two per cent.

Production, exports and the export price (in FIM) of sawnwood are forecast to rise in 2001 by three per cent. The price rise will be limited by the increased supply of sawnwood in Europe and the increased use of competing materials, and, for exports outside the euro area, the expected strengthening of the euro. Production and exports of plywood are forecast to be up by about 13 per cent, and the average price by just under two per cent.

Production and export volumes in the pulp and paper industry will also achieve new records this year and in 2001. Production of paper and paperboard will be up this year by about six per cent. The average prices of pulp (in FIM) are forecast to rise this year by as much as 60 per cent on 1999. The higher price of pulp has not been transferred in full to the prices of paper products, which are expected to rise this year by only 12 per cent. As a consequence of the tight capacity situation for pulp and paper and the strong demand on world markets, prices will continue to rise in 2001, by about six per cent for pulp and about 12 per cent for paper. Production in the pulp and paper industry will continue to increase in 2001, rising by over four per cent on this year's figure.

Capacity is becoming a limiting factor on production in the Finnish pulp and paper industry: more products could be sold than can be produced.

### **Forest Industry Costs, Capacity Utilisation Rates and Profitability**

The nominal costs of raw materials, energy and labour in the Finnish forest industry are rising this year, but in real terms some of these costs are actually falling. The strong demand for forest industry products will ensure that the capacity utilisation rate this year is high. In the pulp industry, the capacity utilisation rate will be 97 per cent, in the paper industry 95 per cent, in the paperboard industry 99 per cent and in the sawmilling industry 96 per cent. The rise in export prices, the competitive edge created by the weak euro, and the growing production volumes will all serve to ensure a record profit for the Finnish forest industry this year. With the majority of production inputs being either of domestic origin or invoiced in euros, the profit for 2000 recorded by Finland's three largest forest companies is expected to rise to about FIM 25 billion.

Costs are set to increase slightly more in 2001 than this year. Nevertheless, with the continuing rise in the forest industry's export prices, production and capacity utilisation rates, or the likelihood that they will at least remain at this year's level, the forest industry will once again turn in a record profit in 2001.

### **Roundwood Markets**

The record level of production in the Finnish forest industry is also evident in fellings – the total volume of commercial fellings will rise this year to about 58 million cubic metres. The rise in stumpage prices has been greatest for spruce sawlogs, whose price will be up 10 per cent for the year. Prices of pine and birch pulpwood will not rise this year, but the nominal price of spruce pulpwood will be up four per cent. With the domestic roundwood markets operating efficiently, imports of timber will show an increase this year of only two per cent. In 2001, a new record is likely to be achieved again in commercial fellings: approximately 60 million cubic metres. Imports are also forecast to rise again to a new record level, 14.4 million cubic metres. Next year, sawlog prices will rise by 1–4 per cent and pulpwood by 2–5 per cent, depending on the type of roundwood.

### **Timber Production and Profitability in Non-Industrial Private Forestry**

In Finland's non-industrial private forestry, investment in timber production will rise in 2001 to almost FIM 1.05 billion. This is partly because of forest regeneration obligations mainly associated with clearcutting of spruce stands, which will increase the level of investment in planting. Thanks to the growing amount of forest extension and planning, state funds will be more effectively used this year and in 2001. This will also lead to more investment in timber production by the private forest owners themselves. This year, gross stumpage earn-

ings will rise to over FIM 10 billion for the first time, which will boost the level of funds for future investment purposes.

For the sixth year running, net earnings for non-industrial private forestry are above the long-term average. However, increases in income cannot be achieved in the future under the present formula, by increasing fellings of spruce sawlog stands. Nevertheless, it appears that the conversion of growing stock into cash has been very popular this year and will continue so in 2001. Even a rise in costs will not prevent new records being set for net earnings.

### Labour Force

Employment in the Finnish *forest industry* in 2000 and 2001 will remain at last year's level of 72 000 man-years. The distribution of employment has changed, however, in favour of the wood products industry. The real earnings of workers in both the wood products industry and the pulp and paper industry will fall this year. In 2001, real earnings are expected to rise in both branches of the forest industry in line with the rise in average industrial earnings.

Employment in *forestry* will improve this year by about 1000 man-years, to 24 000 man-years, and is expected to remain at this level in 2001. The real earnings of workers in timber harvesting will rise this year, but in silvicultural work real earnings will fall. Real earnings are projected to rise in both sectors in 2001.

### Uncertainties in the Forecasts

The uncertainties surrounding the course of the US economy and the price of oil are considered the greatest risk factors in whether or not the forecasts given above and the projected favourable trends in the Finnish forest sector will materialise. Should there be a clear recession in the US economy and/or a further rise in the oil price to over USD 30 a barrel (Brent crude), these events would have direct and indirect negative effects on the Finnish forest sector. For example, forest industry production and exports would probably fall below the current forecasts. This would also mean that growth in forestry would be below the forecast level. However, according to the information available at the start of November 2000, such developments seem unlikely.

#### Exchange rates for the Finnish markka (FIM)

|                   |                   |
|-------------------|-------------------|
| EUR 1 = FIM 5.94  | GBP 1 = FIM 9.92* |
| DEM 1 = FIM 3.04  | SEK 1 = FIM 0.69* |
| USD 1 = FIM 6.86* |                   |

\* On November 6, 2000



# 1 World and Finnish Economic Outlook

## 1.1 World Economy

*The distinctive feature of the global operating environment for the Finnish forest industry in 2000 has been strong economic growth. This is projected to continue to the end of the year and throughout 2001. Both this year and in 2001, real GDP growth in the world economy, weighted according to the distribution of Finnish forest industry exports, is forecast to be about four per cent. This level of growth was last reached in the late 1980s. The International Monetary Fund (IMF) estimates that the growth in the world economy this year will be almost five per cent, and next year over four per cent.*

*Amongst the Finnish forest industry's most important export markets, Germany, France, the Netherlands and Spain, in particular, have experienced strong economic growth, which is expected to continue in 2001. Signs of recovery are also finally becoming evident in Japan after a recession lasting a decade. It is generally considered that the greatest risks to continued economic growth are a possible oil crisis and an economic downturn in the United States that is not the anticipated 'soft landing' but a 'hard landing' instead.*

### Demand Grows within Euro Area

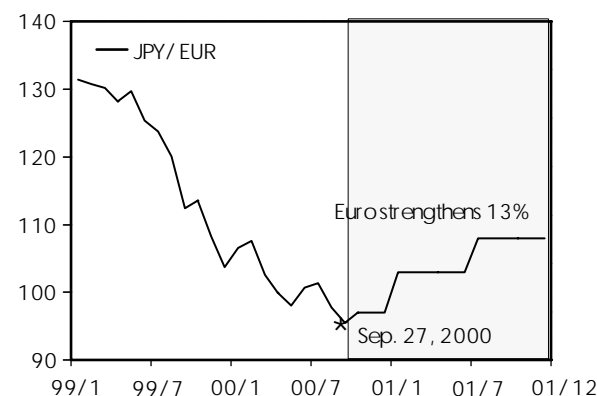
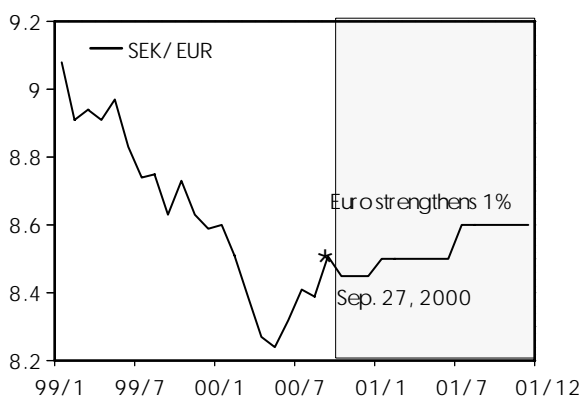
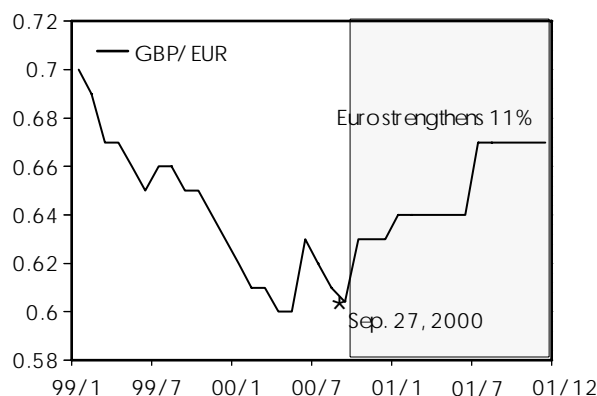
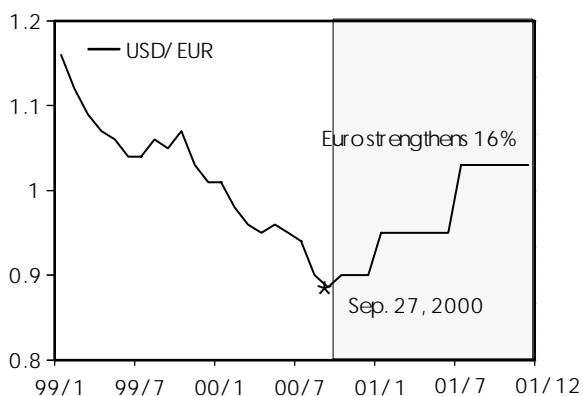
The upsurge in activity within the *euro area*\* economy has been based particularly on export growth, which is expected to be gradually reflected in rising demand within the euro area. Exports have been

driven by the weakening exchange rate of the euro and the strong growth in the world economy. Demand within the euro area has also been boosted by the fall in unemployment. Although the average rate of unemployment in the euro area remains high, it has fallen from 10 per cent in 1999 to about nine per cent this year, and is forecast to fall yet further in 2001, to about eight per cent.

As a consequence of the rise in world market prices of raw materials, in particular, the average inflation rate in the euro area has been rising. In 1999 it was 1.1 per cent and is expected to be over two per cent both this year and in 2001. The dollar-based HWWA aggregate index of raw materials for September 2000 was last at such a high level in 1990. The prices of imported production inputs from outside the euro area have also risen as a result of the weakened euro.

The euro exchange rate in mid-September 2000 was at an all-time low against the US dollar and the Japanese yen. The accompanying graphs present forecasts for the euro exchange rate published by Deutsche Bank on September 18, 2000, showing the anticipated levels for the end of 2000 and for 2001. The forecasts show that the euro is expected to appreciate in value against all four currencies. The percentages given in the graphs indicating the expected strengthening of the euro were calculated by comparing the forecasts for the end of 2001 with the level prevailing on September 27, 2000. These forecasts are in line with most of the economic forecasts

\* The euro area comprises those countries which belong to the European Economic and Monetary Union (EMU). In 2000, these countries are Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.



\* The exchange rates for January 1999 - August 2000 are the average monthly rates of the Bank of Finland. The September value is the rate on September 27, 2000. Forecasts for October 1, 2000 - December 31, 2000 are those published by Deutsche Bank (*Economic and Financial Outlook*) on September 18, 2000.

*Euro exchange rates, 1999–2001f (average monthly rates), f = forecast*

made in the autumn, although there are some differences in the actual percentages. The euro is expected to achieve parity with the dollar only at the end of 2001 (1 euro = 1 dollar).

Despite the recent increases in interest rates by the European Central Bank (ECB), real interest rates are still below the long-term average. Many forecasting institutions expect the ECB to raise its central rate (three-month reference rate for market interest) at the end of 2000 and during 2001, to about 5.5 per cent from the present 4.75 per cent. The in-

terest rate differentials between the United States and the euro area are expected to narrow during 2001.

Economic growth within the euro area in 2001 is expected to be at about the same level, on average, as this year. GDP growth will continue at about 3.5 per cent and inflation will remain low. Business and consumer surveys undertaken by the European Commission indicate that confidence in the economy is higher this year than in 1999. Indeed, growth in household consumption expenditure is expected



to be even higher in 2001 than this year. The tax cuts agreed for 2001 in almost all the euro countries will also serve to further the growth in consumption expenditure.

The greatest risk factors for the euro area economy are considered to be risks from outside the area: a rise or no change in the price of oil, and a possible 'hard landing' in the US economy.

### **Germany and France Driving the EU Economy**

Economic growth in *Germany*, the most important export market for the Finnish forest industry, has gathered pace this year. Real GDP growth last year was 1.5 per cent, whereas this year and in 2001 it is forecast to be over three per cent. Economic growth is based particularly on a high level of industrial production and on exports.

Although the German inflation rate has recently risen slightly, in particular because of the rise in the oil price, the inflation trend continues to be moderate. Forecasts from Deutsche Bank predict a rise of two per cent in consumer prices this year and in 2001. This trend is supported by the moderate pay settlements already achieved for 2000–2001. Inflation estimates for 2001 assume that oil prices will fall slightly on their September level. The most significant change in fiscal policy will be the tax reductions to be introduced at the start of 2001. Deutsche Bank expects these tax cuts to consist of a total tax relief of DEM 45 billion for businesses and households, boosting economic growth by 0.5 percentage points in 2001.

Despite the growth in the economy and the reduction in unemployment, the German construction sector is still sluggish. For instance, in September, Deutsche Bank forecast that construction output in 2000 would not show any increase at all on the previous year. The impact of growth in the economy will, however, gradually be felt in the construction sector, and next year construction is forecast to be up by 1.6 per cent.

The *United Kingdom* economy has performed better this year than in 1999 and is expected to continue to do well in 2001. More people are in fact currently employed in the UK than at any time before, and unemployment has fallen to a record low: the ILO unemployment rate in June–August was 5.3 per cent. The level of unemployment is forecast to decline a little further next year.

The UK Treasury produces regular reports on the economic forecasts made by independent forecasting institutions. Its October report shows that the average of the forecasts made by 34 such institutions is a growth of 3.0 per cent in the UK's GDP for 2000, and 2.7 per cent for 2001; GDP growth in 1999 was 2.0 per cent. The driving force behind this growth has been the relatively good export trend, which has continued in spite of the strengthening of the pound against the euro. However, at the start of September the pound fell to its lowest level against the dollar for 14 years. Fiscal policy has been expansive and consumption is growing in the public sector.

The underlying UK inflation rate stood at 1.9 per cent in August, which is below the Bank of England's medium-range target (2.5 per cent). Inflation is also at its lowest level for 30 years. The forecasts assembled by the Treasury show the average of the projections for the underlying inflation rate for 2001 to be 2.4 per cent. The Bank of England's repo interest rate is currently 6.0 per cent, and there will be no pressure to raise interest rates if the economic and inflationary trends in 2001 are in line with forecasts.

Assessments generally indicate that economic growth in the euro area in 2001 will be higher than in the UK. Euro area interest rates are also forecast to rise next year, whereas in the UK they are expected to remain unchanged. If these predictions prove correct, it can also be expected that the pound will weaken against the euro.

In *France*, steady economic growth has continued in the current year. Exports, in particular, are up sharply, and the indirect effect of this is also being felt in household consumption. In contrast to Germany and the UK, evidence of French economic growth is seen in the construction sector, which has

Forecasts of economic growth (real GDP, annual percentage change)

|   | Share of Finnish forest industry's export value, 1999 % | Actual GDP growth % 1999 | IMF* 2000  | IMF* 2001  | Deutsche Bank 2000** | Deutsche Bank 2001** |
|---|---|--------------------------|------------|------------|----------------------|----------------------|
| <b>Weighted by share of Finnish forest industry exports</b> | <b>100</b>  | <b>2.7</b>               | <b>3.8</b> | <b>3.7</b> | <b>4.0</b>           | <b>3.9</b>           |
| EU  | 70  | 2.3                      | 3.4        | 3.3        | 3.5                  | 3.6                  |
| Euro countries  | 47  | 2.4                      | 3.5        | 3.4        | 3.8                  | 3.8                  |
| Eastern Europe  | 4   | 1.4                      | 3.1        | 4.2        | 4.1                  | 3.9                  |
| Asia  | 9   | 6.0                      | 6.7        | 6.6        | 7.2                  | 6.7                  |
| United States   | 5   | 4.2                      | 5.2        | 3.2        | 5.3                  | 3.8                  |
| Africa  | 3   | 2.3                      | 3.4        | 4.4        | 3.1                  | 3.9                  |
| Latin America   | 2   | 0.1                      | 4.3        | 4.5        | 4.2                  | 3.9                  |
| Russia  | 2   | 3.2                      | 7.0        | 4.0        | 5.5                  | 4.0                  |
| Germany   | 19  | 1.5                      | 2.9        | 3.3        | 3.3                  | 3.6                  |
| United Kingdom  | 16  | 2.0                      | 3.1        | 2.8        | 3.0                  | 2.7                  |
| France  | 7   | 2.7                      | 3.5        | 3.5        | 3.6                  | 4.0                  |
| Netherlands   | 5   | 3.5                      | 3.9        | 3.5        | 4.4                  | 4.1                  |
| Belgium   | 4   | 2.3                      | 3.9        | 3.0        | 4.2                  | 3.7                  |
| Spain   | 5   | 3.7                      | 4.1        | 3.5        | 4.3                  | 3.8                  |
| Italy   | 3   | 1.4                      | 3.1        | 3.0        | 3.1                  | 3.5                  |
| Denmark   | 3   | 1.3                      | 2.1        | 2.1        | 2.3                  | 2.4                  |
| Sweden  | 3   | 3.8                      | 4.4        | 3.4        | 4.3                  | 3.4                  |
| Canada  | 0.6   | 4.5                      | 4.7        | 2.8        | 4.7                  | 3.5                  |
| Japan   | 3   | 0.3                      | 1.4        | 1.8        | 2.0                  | 2.5                  |
| China   | 1   | 7.1                      | 7.5        | 7.3        | 7.5                  | 7.8                  |

\* IMF forecast published September 19, 2000

\*\* Deutsche Bank forecast published September 18, 2000

been very busy. This trend can be expected to continue, as the monthly confidence indicators in the construction sector have been higher this year than at any time in the 1990s. Many other indicators of confidence in the economy have also been at record levels. Moreover, unemployment has fallen to its lowest level for eight years, dropping by as much as 1.7 percentage points in the 12 months to June 2000, to 9.6 per cent. The French National Institute of Statistics and Economics (INSEE) and the OECD have raised their forecasts for French GDP growth this year, the former to 3.5 per cent and the latter to 3.7

per cent. In 2001 the economy is predicted to grow at almost the same rate.

Economic growth in the other EU export markets important to the Finnish forest industry has also been encouraging, and is expected to remain good in 2001. In the Netherlands, Belgium, Spain and Italy, for example, which collectively accounted for 17 per cent of the total export value of Finnish forest industry products last year, estimates by Deutsche Bank put GDP growth in the range 3.1–4.4 per cent for 2000, and 3.5–4.1 per cent for 2001 (see table).

## Sweden Doing Well

Although *Sweden* has remained outside the euro area, this does not appear to have had any adverse effects on its economy so far. On the contrary, growth in the Swedish economy in 1999 and this year has been significantly higher than the average growth rate for the euro countries (see table). Growth in 2001 is forecast to be at about the average for the euro area, or about 3.5 per cent. Swedish growth has been driven by the favourable economic situation in the EU, which has boosted Swedish exports. Tax relief, growth in real incomes and a drop in unemployment have also helped to maintain a high level of domestic demand.

Real interest rates in Sweden have been of the same magnitude recently as interest rates in the euro area. In November the repo interest rate was 3.75 per cent, and inflation this year has been running at an annual rate of just over one per cent. The central bank's October inflation report stated that the Swedish krona is expected to appreciate in value in 2001 against the US dollar and pound sterling, but to remain unchanged against the euro. Inflation is expected to remain below two per cent.

Amongst the transition economies of *Central and Eastern Europe*, growth in the Hungarian and Polish economies is continuing at a brisk rate. According to a forecast published by the IMF in September, GDP growth in Poland in 2001 should be 5.5 per cent, and in Hungary 5.0 per cent, while in the Czech Republic and Slovakia it should be in the range 3.2–3.5 per cent. In *Russia*, a turnaround was seen in the economy last year, onto an upward path, and development in 2000 has been better than anticipated. Indeed, the IMF predicts that Russian GDP growth in 2000 will be as much as seven per cent. According to the Russian Central Bank, wholesale trade for the first six months of this year was up by 7.6 per cent, and industrial production by over 10 per cent, on the corresponding period in 1999. Particularly significant from the perspective of the Finnish forest sector, production in the Russian timber and paper industries for the period January–May 2000

was up 18.1 per cent on the corresponding period in 1999. It would indeed appear that the Russian pulp and paper industry has increased its output of products that replace imports. The export trend has also been strong – the rise in oil prices in particular has raised the value of Russian exports.

## United States: Soft or Hard Landing?

In recent years a great deal of time – almost too much – has been devoted to discussing when the long period of economic growth in the *United States* will come to an end, and whether or not it will be followed by a soft or a hard landing. However, these questions are still highly relevant. Indeed, it can be said that the greatest risks in the short-term outlook for the world economy are specifically related to whether the US economy experiences a soft landing or a hard one.

Economic growth in the US continued stronger than expected in the first six months of 2000, but in recent months there have been signs that the growth is slowing up. In a survey published by the Federal Reserve Bank of Philadelphia in August, 32 economic forecasting institutions predict that the economy will grow by 5.2 per cent this year and by 3.2 per cent in 2001. Both figures are somewhat above the corresponding survey results produced in May. Although corporate investment continues to be at a relatively high level, there are already signs of faltering growth in sectors sensitive to interest rates. In particular, growth in household consumption and housing construction appears to have slowed down. In July, investment in new construction fell for the fourth successive month, and employment and industrial purchases have begun to weaken for the first time in 18 months.

Many commentators have, however, viewed this as good news, because it can be interpreted as demonstrating that the soft landing has begun and that the unsustainably high economic growth has finally abated. If the soft landing does materialise, it would provide evidence that the interest rate policy pur-

sued by the Federal Reserve Bank has been successful. The Federal Reserve has instituted a number of small interest rate rises in recent years, and the effect of these is expected to start to show at the end of 2000 and in 2001. If this is the case, pressure for further interest rate rises will be reduced. At its October meeting, the Federal Reserve did in fact leave the federal fund rate unchanged at 6.5 per cent.

Some assessments have produced a more unusual, though understandable, refinement to the risk scenario for US economic development in the short term. Deutsche Bank, for example, has stated that the greatest risks for the US economy are that the economic growth in 2001 could be either too high or too low. The first case would mean overheating in the economy and a further rise in interest rates, and the second would mean a recession that would probably also lead to a collapse in share prices.

The booming US economy has also had a positive effect on the *Canadian* economy. The trends in Canadian exports to the US and corporate investment have been favourable. Exports were up in 1999 by about 10 per cent, and in the current year growth is forecast to be of the same order. Expenditure by households has also increased, and unemployment fallen. The unemployment rate for 2000 is expected to be about 6.5 per cent; in 1998 it was almost two percentage points higher (8.3 per cent). The Bank of Canada expects the current year's GDP growth to be as much as 4.25–4.75 per cent. In 2001, the GDP growth rate is expected to fall slightly.

### **Turn for the Better in Japan**

The ten-year-old recession in *Japan* appears to have come to an end. Although the economy is still not very strong, clear signs of a change have been detected since as early as last year. As a consequence of the expansive fiscal policy, there has been an increase in public sector investment, and more recently in private sector investment. Industrial production and exports have also clearly begun to grow. However, evidence of the improved economic situation is still not that strong in the private sector. Household con-

sumption and housing construction are still at a low level. According to the IMF's forecast published in September, the Japanese GDP should grow in 2000 by 1.4 per cent, and in 2001 by nearly two per cent. The risks concerning the Japanese economy are the same as in recent years. Many of the structural reforms in the economy have still not been implemented, and possible bankruptcy and banking crises may still bring economic growth to a standstill.

The economic crisis in *East Asia* at the end of the 1990s has now passed. Growth was very vigorous in 1999 and continues to be strong in 2000. The growth rate of almost double figures is, in part, a consequence of the low starting point. The IMF has forecast that the current year's economic growth in South Korea, Malaysia, Taiwan and Singapore will be 6.0–8.8 per cent, and next year 5.9–6.5 per cent. Economic growth in *China* has continued at a level of 7–8 per cent for several years already, and is expected to continue at the same rate this year and in 2001. The admission of China as a member of the WTO in 2001 will probably lead to an increase in Chinese imports and exports.

### **What Might be the Impact of an Oil Crisis on the Finnish Forest Sector?**

An unchanged or higher oil price is recognised as one of the greatest risk factors threatening the prospects for good economic growth. The price of crude oil is now more than three times what it was at the end of 1998. Many economic forecasters believe that the oil price may have already reached its peak, and that it is more likely that prices will decline than rise. For example, the Research Institute of the Finnish Economy (ETLA), the International Monetary Fund (IMF) and Deutsche Bank all forecast a drop in oil prices during 2001 from the September figure of about USD 35 a barrel (Brent crude) to the target set by OPEC of about USD 22–28 a barrel.

The other scenario, in which oil prices do not decline in the near future, is also considered possible. Not only are the oil reserves of the industrial countries at a low level, but, owing to the robust state of

the world economy, the demand for oil has increased markedly, which in turn has diminished the amount of spare oil-refining capacity. If the supply of oil is not significantly increased and this is combined with an unusually cold winter in the northern hemisphere, fuel prices may continue to rise.

What would be the effects of this 'crisis scenario' on the Finnish forest sector? The answer to this question essentially depends on how long the price of crude oil remains high and how this, in turn, affects pay negotiations, taxation policy, monetary policies and any interruptions in transportation.

The effects of an 'oil crisis' on the forest sector would be both direct and indirect. The increasing cost of oil has already led to unrest in the road transportation sector in Europe and to demands for a reduction in fuel taxes. Further interruptions could be expected as the consequence of any oil crisis, which, in the worst case, could bring the supply of raw materials to the forest industry and the despatch of end products to customers to a standstill. In practice, this situation could mean mills and factories laying idle for the duration of the transportation problem. Production in the Finnish forest industry would thus decrease, and its turnover and profit would probably fall short of the current forecasts. If the transportation problems were to continue for a longer period, this would lead to reductions in forest fellings, income from roundwood sales, and transportation, in relation to the current forecasts.

The indirect and longer term effects of high oil prices could be many and varied. First, a rise in the price of crude oil would eventually increase the forest industry's raw material and transportation costs. This would also increase pressure to raise the prices of forest industry products. On the other hand, a higher oil price would accelerate inflation and dampen growth in the economy. Based on calculations published by the IMF in September, a 10 per cent rise in the price of oil would weaken GDP growth in both the United States and the euro area by 0.1 per cent and would raise consumer prices by 0.2 per cent. Higher inflation would also add to the pressure to raise interest rates. A general slow down in

the economy and a rise in interest rates would, in turn, reduce the demand for forest industry products.

However, the anticipated strengthening of the euro would dampen the negative effects, because the cost implications of a rise in the dollar-denominated oil price would not be transmitted in full to the euro area.

## 1.2 Finnish Economy

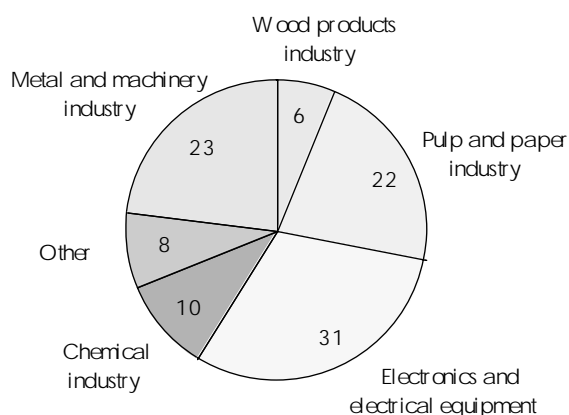
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*Dynamic export growth will support the strong growth of the Finnish economy in 2000 and 2001. Although inflation and the rise in interest rates have reduced purchasing power, private consumption will grow by 3–4 per cent. Inflation will fall in 2001 as oil prices drop and the euro strengthens. The rise in housing costs will also remain moderate. Moreover, a reduction in income tax will serve to increase household purchasing power. The pay negotiations held at the end of the year will be of critical importance for price stability, employment and competitiveness.*

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### Economy Reaches a Peak in 2000

Growth in the Finnish economy this year has exceeded the level forecast in 1999, due to the excellent trend in exports. GDP growth for 2000 will surpass last year's figure, reaching 5–6 per cent, according to forecasting institutions. The growth in exports has been substantially above the forecasts, as a result of the improved price competitiveness due to the weak euro. The recovery in emerging economies around the world has also boosted Finnish exports. Electronics industry exports, in particular, have continued to grow vigorously. At the start of 2000, exports from the electronics and electrical industry in fact exceeded those of the forest industry. This was exac-



Source: National Board of Customs

*Total Finnish export value by industrial sector, January–June 2000 (%)*

erbed by the April strike in the forest industry, which affected exports slightly.

In 2001, export growth will be restrained by the pressure on production capacity in the electronics industry and the difficulty in recruiting sufficient numbers of qualified personnel for that sector. The forest industry will also experience a shortage of production capacity, thereby restraining the growth in exports. Total Finnish exports are nevertheless expected to grow by about eight per cent in 2001. The capacity limitations on export growth will also hold back the growth in GDP, which is forecast to be in the range 4.2–4.6 per cent in 2001.

Estimates of the growth in private consumption in 2000 and 2001 vary. The Research Institute of the Finnish Economy (ETLA), for instance, expects a higher growth rate than in 1999, whereas the Ministry of Finance predicts a lower one. The confidence shown by households in their own economic situation remains good. The improvement in employment and the rise in earnings have served to increase purchasing power, whereas the rise in inflation and interest rates have had the opposite effect. Consumption in 2001 will be boosted by a FIM 6.4 billion reduction in income taxes and a lower inflation rate.

The unemployment rate will continue to fall and will be about 8.5 per cent in 2001. In industrial and commercial sectors, the unemployment rate will fall to below five per cent in 2000, but in construction it will fall to just 10 per cent. Unemployment is increasingly structural in nature, as many sectors are beginning to feel a shortage of appropriately skilled personnel.

### Rising Inflation Short-Lived

Fighting inflation is one of the key challenges for economic policy in the short term. In August the annual inflation rate stood at 3.8 per cent, as measured by the national consumer price index. The inflation rate for 2000 is forecast to be about three per cent, on average. Inflation has been higher in Finland than in the main euro countries and Sweden. Common inflationary factors in the euro area have been the increase in oil prices and the rising price of imports caused by the weak euro. The direct effect of the rise in fuel prices on the Finnish inflation rate in August was almost one percentage point, while house prices and rents accounted for a further 0.5 percentage points, and interest rates for about the same amount. The prices of services have also risen significantly compared to the average rise in prices. This is due not only to the demand-inflationary pressures but also to the effect of the oil price rise on the price of transportation services. The indirect effect of the increase in oil prices on general price levels in Finland has so far been fairly minor, however. If the oil price remains high, the rise in costs will increasingly start to find its way into consumer prices.

In 2001, inflation is expected to slow down to 1.8–2.7 per cent. The inflation rate of less than two per cent forecast by the Research Institute of the Finnish Economy (ETLA) assumes a drop in the oil price to about USD 25 a barrel, a strengthening of the euro by about 6–7 per cent on this year's level, and a moderate pay settlement that would raise the level of earnings by 3.4 per cent. The autumn collective bargaining pay negotiations are of crucial im-

*Economic forecasts for Finland, f = forecast*

|                                   | Actual | Ministry of Finance |       | ETLA  |       |
|-----------------------------------|--------|---------------------|-------|-------|-------|
|                                   | 1999   | 2000f               | 2001f | 2000f | 2001f |
| *GDP, %                           | 4.0    | 5.2                 | 4.2   | 6.0   | 4.6   |
| *Exports, %                       | 6.3    | 10.8                | 8.3   | 10.7  | 7.4   |
| *Private consumption, %           | 3.6    | 3.0                 | 2.9   | 3.9   | 3.9   |
| *Investment, %                    | 4.6    | 6.5                 | 4.9   | 10.0  | 6.9   |
| – private                         | 6.2    | 8.1                 | 5.8   | 10.6  | 7.5   |
| – public                          | –3.8   | –2.8                | –0.8  | 6.0   | 3.1   |
| *Construction, %                  | 5.0    | 5.5                 | 3.5   | 7.0   | 4.5   |
| Change in consumer price index, % | 1.2    | 3.0                 | 1.8   | 3.0   | 1.8   |
| Unemployment rate, %              | 10.2   | 9.6                 | 8.6   | 9.7   | 8.9   |
| Euribor, 3-month, %               | 3.0    | 4.3                 | 5.0   | 4.4   | 5.3   |

\* Change in volume

Ministry of Finance forecast published September 4, 2000; Research Institute of the Finnish Economy (ETLA) forecast published September 14, 2000.

portance because wages and salaries are the most important inflationary factor that can actually be influenced in Finland. The worst scenario is an upward wages and prices spiral, which would harm employment prospects and also Finland's competitiveness.

### **Migration Fuels the Growth in Construction**

Although the majority of Finland's forest industry production is destined for export, the domestic construction sector has a significant influence on the overall demand for sawnwood. Indeed, 34 per cent of Finnish sawnwood production enters the domestic market and is mostly used in construction. According to the September forecast of the Confederation of Finnish Construction Industries (RTK), total construction output will be up by seven per cent in 2000, and by four per cent in 2001. New construction is clearly growing the most, and building renovation the least. In the future, renovation will, on average, increase at a faster rate than new construction. As renovations today constitute a considerable proportion of all construction activity, and growth in

this area is fairly steady, it has an important balancing effect on the cyclical fluctuations in the construction industry.

Activity in the construction sector is concentrated on the growth centres in the country, where new housing and office space are needed. According to contractors, the number of owner-occupied housing starts has been affected most by the insufficiency of demand, the paucity of construction sites in the Helsinki metropolitan area, and the fact that the price level does not necessarily make it worthwhile at current costs. The demand for housing has been affected by the rise in interest rates and house prices. State-subsidised housing starts in 2000 and scheduled for 2001 are slightly below the figure for 1999. In the Helsinki metropolitan area, construction of state-subsidised housing has been limited by the rise in construction costs to a level exceeding the limits set by the government. Despite these restraining factors, housing starts in 2001 will be almost six per cent above this year's level, measured in cubic metres. The growth in housing starts is, however, slowing down. Housing prices are expected to rise moderately in 2001.

Commercial and office construction and industrial construction have been doing well as a result of

the migration of people and businesses to the growth centres around the country, and due to the vigorous economic growth. In 2001, however, there will be fewer new construction starts than in the current year. All in all, the volume of construction starts in cubic metres will be up by only one per cent.

Sixteen per cent of Finnish paperboard production enters the domestic market, for example as packaging for the food industry. Production in the food industry is expected to grow this year by three per cent and in 2001 by one per cent. This will be aided by the gradual revival in exports to Russia and by the growth in demand in Finland.





## 2 The Finnish Forest Industry

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### 2.1 Exports, Production and Prices in the Sawmilling and Plywood Industries

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*Growth in the construction industry will boost the consumption of sawn softwood and plywood in Western Europe to a record level this year. Due to the growing demand in Europe and Asia, and Finland's competitive edge, production and exports of Finnish sawnwood will be up in 2000 by about seven per cent, and the export price (in FIM) by nine per cent. Similarly, production and exports of plywood will be up by 14 per cent, although the average price of exports will have increased this year by only two per cent, as the additional demand has been weighted towards softwood plywood.*

*The growth rate in the construction sector will be somewhat slower in 2001, both in Finland and the rest of Europe, which will also reduce the growth in demand for sawnwood. The growth in construction will nevertheless raise Finnish consumption of sawnwood to almost five million cubic metres. Production, exports and export prices of sawnwood (in FIM) are forecast to increase in 2001 by three per cent. The price rise will be restricted by the increase in the supply of softwood on the European markets, and, for exports outside the euro area, by the predicted strengthening of the euro. Production and exports of plywood are forecast to grow in 2001 by about 13 per cent. The average price of exports will rise by only 1.5 per cent, because the increase in exports will be especially in the more economical softwood plywood.*

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### Consumption of Wood Products in Europe at Record High in 2000

The higher pace of economic growth since late 1999, combined with low interest rates and the increase in consumer confidence, has helped to revive the European construction sector. According to Euroconstruct, the growth in construction activity in the EU countries in 2000 will amount to three per cent. This will stimulate the demand for wood products, raising their consumption to a record level. The Food and Agricultural Organisation of the United Nations (FAO) forecasts that the European demand for sawnwood will increase by 1.9 per cent to 89 million cubic metres in 2000, and plywood consumption by 1.4 per cent to 6.6 million cubic metres.

The growth in consumption has raised the price of softwood plywood and especially of spruce sawnwood. The unit price of exported Finnish spruce sawnwood (in FIM) for the period January-June 2000 was up by 11 per cent on the same period in 1999, while the corresponding figure for pine sawnwood was seven per cent. The price of softwood plywood rose nine per cent in the same period, and the price of birch plywood fell slightly; the average unit price of exported plywood rose overall by one per cent.

*The Finnish sawmilling and plywood industries, 1999 (1000 m<sup>3</sup>)*

|                  | Sawnwood | % of production | Plywood | % of production |
|------------------|----------|-----------------|---------|-----------------|
| Production*      | 12 768   | 100             | 1 076   | 100             |
| Domestic use**   | 4 385    | 34              | 137     | 13              |
| Exports:         | 8 383    | 66              | 939     | 87              |
| EU               | 5 585    | 44              | 806     | 75              |
| Asia excl. Japan | 513      | 4               | 26      | 2               |
| Japan            | 682      | 5               | 3       | 0               |
| Africa           | 1 359    | 11              | 1       | 0               |
| North America    | 54       | 0               | 34      | 3               |
| Russia           | 3        | 0               | 1       | 0               |
| Other            | 187      | 2               | 68      | 7               |

The sawnwood figures in the table comprise both sawn softwood and sawn hardwood. The plywood figures comprise birch plywood, softwood plywood and laminated veneer lumber (LVL).

\* Due to statistical corrections and revisions, sawnwood production for 1999 was found to be 1.0 million cubic metres above the figure presented previously.

\*\* Estimated use = production – exports

Sources: *Statistics 1999* (Finnish Forest Industries Federation) and Finnish Forest Research Institute (METLA).

### Export Growth Mainly Outside the Euro Area

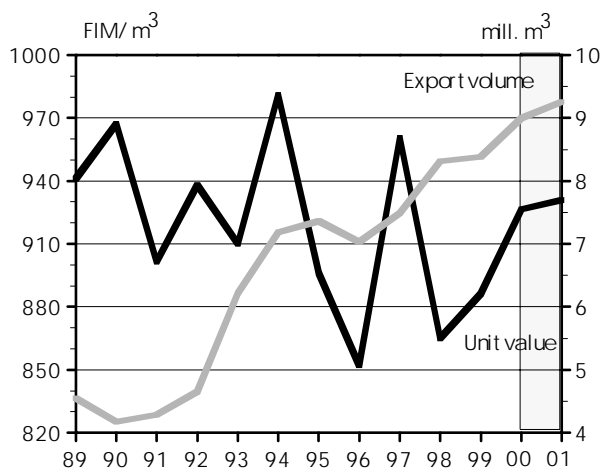
Forty-three per cent of the export volume of Finnish sawnwood is sold within the euro area (the EMU countries). Finnish sawnwood exports to countries outside the euro area have grown considerably in the current year. Exports of sawnwood to the largest of the euro countries, Germany and France, were lower in the first six months of 2000 than in the same period in 1999.

In the first half of this year, sawnwood exports to European countries outside the euro area, including the largest export market, the United Kingdom, were up five per cent on the same period in 1999. The corresponding figure for exports to Asia was 11 per cent. Exports to Africa declined slightly as a result of the reduced exports to Egypt.

### Price Competitiveness Boosted by Weak Euro

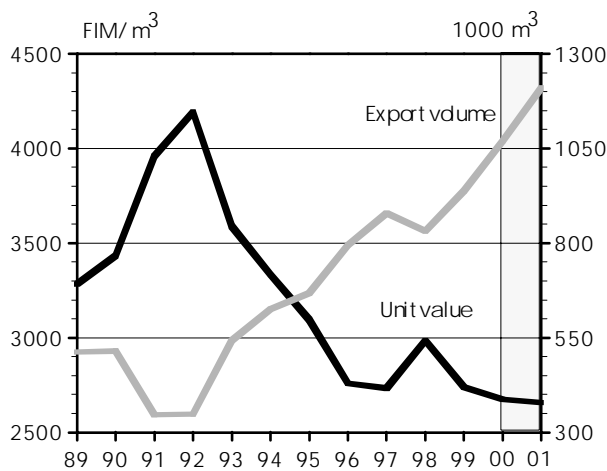
The orientation of exports towards markets outside the euro area has been stimulated by the growing

demand in those markets and the price competitiveness associated with the weak euro. This has been the case especially for exports of spruce sawnwood to Asia, where Japan has been the main customer.



Source: National Board of Customs

*Volume and real unit value of sawnwood exports, 1989–2001f (inflation-adjusted using the producer price index for the wood products industry; estimated change for 2001 is +2.5 per cent)*



Source: National Board of Customs

*Volume and real unit value of plywood exports, 1989–2001f (inflation-adjusted using the producer price index for the wood products industry; estimated change for 2001 is +2.5 per cent)*

The euro has increasingly been used in invoicing for Finnish sawnwood exports, and today it is estimated that at least half of these invoices are in euros. For exports to the United Kingdom, the pound sterling continues to be used in addition to the euro, and in exports outside Europe the main invoicing currency is the US dollar. Between January 1999 and September 2000 (September 27, 2000), the euro exchange rate weakened against the US dollar by 23 per cent, and against the Japanese yen by 27 per cent. Finnish exports have benefited from this trend, also in relation to competitor countries not belonging to the euro area. Over the period referred to above, the euro has weakened by 25 per cent against the Canadian dollar and by six per cent against the Swedish krona.

### **Increase in Supply from Russia and Baltic Countries**

The increase in production of wood products in Russia and the rapid drop in domestic consumption

since the 1998 economic crisis have meant a rise in exports of Russian sawnwood and plywood. In the first half of 2000, Russian sawnwood exports to Europe grew by 42 per cent, and plywood exports by 36 per cent. In 1999, Russian sawnwood exports to Europe amounted to approximately 1.2 million cubic metres, which was well down on the 1990 figure of about five million cubic metres. Export growth from the Baltic countries, however, has almost filled the gap left by Russia.

According to the Food and Agricultural Organisation of the United Nations (FAO), European sawnwood production in 2000 will be up by slightly more than the increase in consumption. In Continental Europe, and especially Germany, production of sawnwood has increased because of the storm damage that occurred at the end of 1999. In the largest producer countries, namely Germany, Finland and Austria, most of the production growth has gone to meet domestic demand. In Sweden, sawnwood production has actually fallen slightly in the last couple of years. Capacity may fall further, with smaller and older sawmills being closed or repairs and improvements not carried out.

In the United States, the rise in interest rates and the uncertain trend in share prices have dented consumer confidence in the economy, and housing construction starts fell in the second quarter of 2000. As construction activity has fallen, the demand for sawnwood and wood-based panels has slackened, and prices in the summer fell to below the level of last year. Easing the oversupply situation by expanding exports outside North America is difficult because of the strong dollar, and many US producers have already reduced their supply by limiting production. Canadian exports to Europe declined considerably during the 1990s due to the boom in the US economy, and they continue to remain at a low level.

Forecasts of production and exports in the sawmilling and plywood industries, 1000 m<sup>3</sup>; percentage changes from previous year are shown below the respective volumes

|           | Production   |                |              | Exports     |              |              |
|-----------|--------------|----------------|--------------|-------------|--------------|--------------|
|           | 1999         | 2000f          | 2001f        | 1999        | 2000f        | 2001f        |
| Sawnwood* | 12 768<br>+4 | 13 800<br>+7.5 | 14 200<br>+3 | 8 383<br>+1 | 9 000<br>+7  | 9 260<br>+3  |
| Plywood   | 1 076<br>+9  | 1 230<br>+14   | 1 390<br>+13 | 939<br>+13  | 1 070<br>+14 | 1 210<br>+13 |

\* Figures comprise both sawn softwood and sawn hardwood. Due to statistical corrections and revisions, sawnwood production for 1999 was found to be 1.0 million cubic metres above the figure presented previously.

### Higher Market Share for European Sawnwood in Japan

The rise in demand for sawnwood in Japan in the 1990s has been very important for maintaining equilibrium and prices in the European sawnwood market, although European exports to Japan (1.8 million cubic metres in 1999) are small in relation to the European consumption of sawnwood. The biggest exporters of sawnwood to Japan, namely the United States and Canada, have lost market share to European producers, whose share of imports to Japan in the first half of 2000 has already risen to 23 per cent. Despite the uncertain trend in the Japanese construction sector, imports from Europe will be up by over 13 per cent in 2000, according to forecasts made in July by the Forestry Agency of Japan.

European suppliers of spruce sawnwood have increased their market share at the expense of North American suppliers, on account of high-quality products and the price competitiveness brought by the weak euro. Finnish exports to Japan have recovered quickly after the dip of 1998, and growth last year amounted to 60 per cent. Growth continued in the first half of 2000, and exports for the year as a whole will probably show an increase of close to one million cubic metres.

Forecasts of export prices for sawnwood and plywood (as percentage changes from previous year\*)

|          | 1999      | 2000f | 2001f |
|----------|-----------|-------|-------|
|          | change, % |       |       |
| Sawnwood | +0.7      | +9    | +3    |
| Plywood  | -9.9      | +2    | +1.5  |

\* Export prices are nominal unit values (in FIM).

Demand for sawnwood and plywood this year on Europe's export markets is high. The rise in sawnwood prices came to a standstill in the summer, however, partly due to the increased supply from Russia and the Baltic countries. The price of birch plywood has been forced down as a result of the increased supply of cheaper plywood from Asia, Russia and the Baltic countries. Finnish exports to countries outside the euro area are helped by the price competitiveness due to the weak euro. With demand increasing in Europe and Asia, the growth in exports of Finnish sawnwood in 2000 is estimated to be seven per cent, and in plywood exports 14 per cent. The unit price of sawnwood exports will rise somewhat towards the end of the year, bringing the increase for 2000 to about nine per cent. The average price of plywood exports will rise by only two per cent, however, as the price rises and export growth are mainly in softwood plywood.

## **European Consumption of Sawnwood Still High in 2001**

In 2001, European GDP growth weighted according to the distribution of Finnish sawnwood exports will be at least as high as this year. In view of this, the construction forecast issued by Euroconstruct in June 2000, which was based on information for the first part of the year, could be a little pessimistic. It was predicted that construction growth in Western Europe would decline from the three per cent prevailing in 2000 to 1.6 per cent in 2001. The justification was the rise in interest rates, which will gradually begin to reduce construction activity, and the fact that housing supply in many countries is already starting to match the demand.

In Germany, construction activity has dwindled over the period 1996–1998, but is expected to grow in 2000 by 0.5 per cent, and in 2001 by 1.0–1.6 per cent. Germany accounts for almost one quarter of the construction output of Western Europe by value, and so it is of key importance to the development of the European construction industry. Renovation of existing buildings, which is a significant element in sawnwood consumption, is increasing in Europe by about two per cent per year, according to Euroconstruct. This will support the growth in demand for sawnwood. In 1999, renovations accounted for over 36 per cent of total construction volume in Europe.

In Japan, too, accelerating economic growth will increase housing construction and sawnwood consumption next year. If the exchange rate remains favourable, Finnish and other European exports to Japan should therefore increase further in 2001. Such a trend would be favourable at a time when supply growth exceeds demand growth on the European markets.

The balance in the European markets in 2001 will, however, still be affected by the expanded production of sawnwood due to the storm damage of 1999. A further threat is the slackening of demand in North America, which may mean an increase in the supply of softwood plywood and sawnwood to

the European market. However, as the dollar is not expected to weaken significantly against the euro, the supply pressure from North America is not likely to increase markedly in 2001. With the growth in the Russian economy continuing next year, it is probable that at least part of the country's increased production volumes will be consumed on its domestic market. The growth in supplies to Europe from Russia and from the Baltic countries will, however, keep sawnwood price rises in check within Europe.

An increase in the supply of MDF and OSB board in 2001 will further intensify the competition between different products in Europe and thus limit the scope for price rises in sawnwood and softwood plywood. Production capacity for MDF board in Europe will already be up this year, to a total of over 10 million cubic metres. Production of OSB board, a substitute for softwood plywood, will also be up this year, by one fifth. OSB board production capacity is set to triple, rising to 3.5 million cubic metres by the end of 2002, according to the Food and Agricultural Organisation of the United Nations (FAO).

## **Moderate Increase in Export Prices in 2001**

As the growth rate in construction declines on Europe's export markets, the growth in demand for sawnwood and plywood will slacken off in 2001. Combined with an increase in supply, this will mean greater competition, especially in exports of sawnwood. The export volume of sawnwood and its export price (in FIM) are forecast to rise in 2001 by three per cent, mainly in pine sawnwood. Exports of plywood are projected to grow by 13 per cent, which will again chiefly concern softwood plywood, and the average rise in the export price of plywood will remain at about 1.5 per cent.

## **Domestic Use of Sawnwood Continues to Grow**

Finnish consumption of sawnwood will be up this year, and will continue to grow in 2001, due to the increase in construction activity. The growth in housing construction has been supported by low interest rates, the higher purchasing power of consumers and their confidence in the future, and the increased migration of people and businesses to the growth centres around the country. The European Central Bank's interest rate rises and the increase in house prices will, however, gradually begin to slow the growth in housing construction at the end of this year and in 2001.

Forecasts published by the Confederation of Finnish Construction Industries (RTK) in September indicate that construction activity (building starts in million cubic metres) will be up this year by almost four per cent, and by 1.3 per cent in 2001. The growth specifically in housing construction will be considerably above these figures: according to the RTK, the volume of housing starts in 2000 will be up by about eight per cent, and next year six per cent. Renovations, which are an important element in sawnwood consumption, account for about 45 per cent of total construction output by value. In 2000, renovations are increasing at a rate of 2–3 per cent, and this will continue in 2001.

If domestic consumption of sawnwood is estimated as sawnwood production minus exports, the figure for 1999 was 4.4 million cubic metres. Estimated in this way, domestic use of sawnwood is forecast to grow in response to the increase in construction activity by about seven per cent in 2000, and by four per cent in 2001. Domestic consumption of Finnish plywood, however, amounts to only one tenth of the total production volume, the rest being exported.

Figures issued by the sawmilling companies show that production capacity of sawnwood in 2000 is estimated at about 14 million cubic metres, which means that the capacity utilisation rate is very high. However, no major investments to

increase capacity have yet been announced, although production could be expanded a little by carrying out improvements to existing facilities and by increasing production shifts. Present plywood capacity is about 1.4 million cubic metres, of which 100,000 cubic metres is for laminated veneer lumber (LVL). In 2001, softwood plywood and LVL capacity will rise by about 20 per cent, to almost 1.7 million cubic metres. The growth in capacity will affect production volumes only at the end of 2001.

With the growth in exports and domestic demand, production of sawnwood is expected to be up this year by 7.5 per cent, and plywood production by 14 per cent. In 2001, the growth in exports and domestic demand will decline, bringing the forecast growth in sawnwood production to three per cent, and plywood production to 13 per cent. Most of the increase in plywood production will again be in softwood plywood.

## **2.2 Exports, Production and Prices in the Pulp and Paper Industry**

*The distinct upturn in the export markets for Finnish paper products that began at the end of 1999 has continued throughout 2000 and may not peak until 2001. Indeed, record volumes will be achieved for production and exports in the pulp and paper industry in both 2000 and 2001. Production of paper and paperboard products will be up this year by about six per cent, and this trend is also reflected in the prices of paper products. The price of pulp has continued to rise sharply since summer 1999: the rise in average prices (in FIM) for the whole of 2000 is expected to be as much as about 60 per cent on last year's prices. The rising price of pulp has not been transferred in full to the prices of paper products, which are forecast to rise this year by only 12 per cent. The tight capacity situation for pulp and paper and the strong demand on the world*

markets will mean a rise in prices again next year, by about six per cent for pulp and about 12 per cent for paper. Total production in the pulp and paper industry in 2001 will also be up, by over four per cent on this year's figure. The increase would be even higher were it not for the capacity bottleneck forming in production.

### **Barely Any New Capacity, and Demand Exceptionally High**

The world market for the Finnish pulp and paper industry began to recover from the effects of the Asian crisis (1997–1998) only at the end of 1999. In the latter half of the year the price of paper and especially of pulp began to rise significantly and the growth in demand was strong. The impact of the Asian crisis on the paper market is not yet over, however, as the tight production capacity situation affecting the pulp and paper markets this year and in 2001 is in part a result of the crisis. This is because the crisis led to the postponement of new investment in Asia and South America, and therefore there will be very little new production capacity in these markets in the current year or in 2001.

At the same time, 1999 was the first year in the last four decades in which production capacity in the US paper and paperboard products industry actually fell (–0.5 per cent), and no significant addition is due this year or in 2001. On the European markets, too, the increase in production capacity has been smaller than usual. The principal reason is that forest industry companies have concentrated their efforts on mergers in recent years, instead of expanding capacity. The current state of the world market is seen very well in the fact that not one new market-pulp mill is due to start up at the end of 2000 or in 2001.

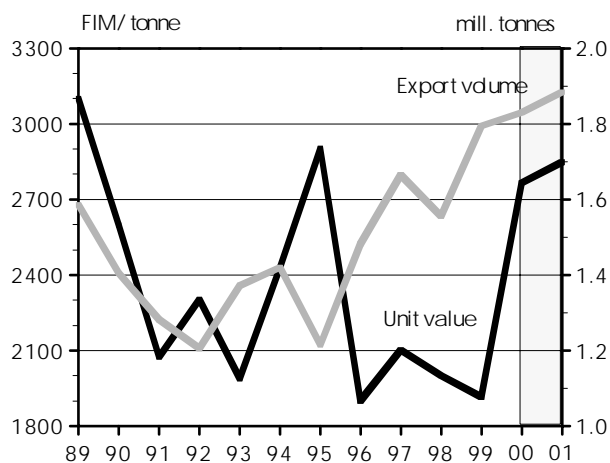
The lack of planned new capacity for pulp and paper production coincides with a time when the demand prospects for pulp and paper products are exceptionally good. The demand for these products is increasing because the growth in the world economy this year and in 2001 is forecast to be at its highest since the late 1980s. Furthermore, the competitiveness of the Finnish forest industry has improved markedly in relation to the main competitor countries and export markets during the last year, due to the weakening of the euro (see graphs on page 8). It is estimated that almost half of the export income of the Finnish pulp and paper industry is invoiced in currencies other than the euro.

*The Finnish pulp and paper industry, 1999 (1000 tonnes)*

|               | Pulp  | % of production | Paper  | % of production | Paperboard | % of production |
|---------------|-------|-----------------|--------|-----------------|------------|-----------------|
| Production    | 6 977 | 100             | 10 324 | 100             | 2 623      | 100             |
| Domestic use* | 5 183 | 74              | 965    | 9               | 409        | 16              |
| Exports:      | 1 794 | 26              | 9 359  | 91              | 2 214      | 84              |
| EU            | 1 482 | 21              | 6 763  | 66              | 1 365      | 52              |
| Asia          | 160   | 2               | 558    | 5               | 368        | 14              |
| Africa        | 12    | 0               | 112    | 1               | 71         | 3               |
| United States | 3     | 0               | 646    | 6               | 88         | 3               |
| Russia        | 17    | 0               | 85     | 1               | 43         | 1               |
| Other         | 109   | 2               | 1 195  | 12              | 280        | 11              |

\*Estimated use = production – exports

Source: *Statistics 1999* (Finnish Forest Industries Federation).



Source: National Board of Customs

*Volume and real unit value (1989 prices) of pulp exports, 1989–2001f (inflation-adjusted using the producer price index for paper products; estimated change for 2001 is +3 per cent)*

Provided there is no oil crisis or some other unexpected factor affecting growth in the world economy, new records will be set in 2000 and 2001 for the value of Finnish pulp and paper industry exports. The limiting factor on exports this year and next will be the tight capacity situation rather than the actual demand for products. The demand and supply situation on the world markets will also be reflected in rising prices. This year, for example, the real export value of pulp and paper products is forecast to rise by 14 per cent on last year, and in 2001 by almost a further 15 per cent. By comparison, the rise in the real value of exports in the pulp and paper industry in 1997, the best year of the 1990s, was more than 17 per cent.

### Pulp Stocks Low

Both the euro- and dollar-denominated prices of pulp have risen to a fairly high level during the past year: the price of softwood pulp in September was quoted at USD 710 per tonne, which is almost 37

per cent above its level one year earlier; and the price of hardwood pulp has risen to EUR 770 per tonne, a 54 per cent increase on its level one year earlier. The markka-denominated prices have risen by a relatively higher amount, due to the weak euro. In summer 2000, the price of pulp (in FIM) reached the record level of 1995, and prices have continued to rise since then. Average prices for 2000 are forecast to be up by about 60 per cent on the 1999 figures.

The factors behind the price rise have been the favourable level of demand and the low level of stocks as a result of the scarcity of supply. In June, the producers' NORSCAN stocks were at their lowest level for five years, amounting to 1.1 million tonnes. Stocks did, however, increase somewhat during the summer, and in September stood at almost 1.4 million tonnes. A level of 1.5 million tonnes has traditionally been regarded as the equilibrium level for the market. However, the increase in demand has meant that this is not necessarily any longer the case. Utipulp stocks are also relatively low, at almost 1.4 million tonnes of pulp in August, equivalent to only 35 days' requirements, whereas in August 1999 these stocks were sufficient for 40 days.

Despite the low level of stocks, a large increase in production is not anticipated. According to advance information from the Montreal-based Pulp and Paper Products Council, for example, the average capacity utilisation rate in the NORSCAN countries (Canada, Finland, Norway, Sweden and the United States) in September was 93 per cent, which is the same as one year earlier. The NORSCAN countries produce almost 60 per cent of the world's pulp.

The market outlook for pulp is good, although some signs of weakening are in evidence, especially in Asia. The reduced consumption of pulp in China has brought Russian pulp onto the European market as well. The scarcity of supply from both North America and Europe does, however, support high prices. The raw material price index of the Association of European Conjecture Institutes

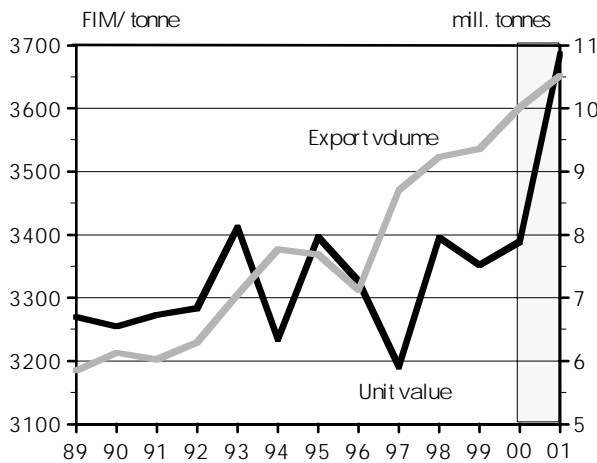


(AIECE) also projects a rise in the price of pulp at the end of the year. Indeed, the price of pulp (in FIM) this year should show an increase of as much as about 60 per cent on last year's figures.

### Pressure to Increase Paper Prices

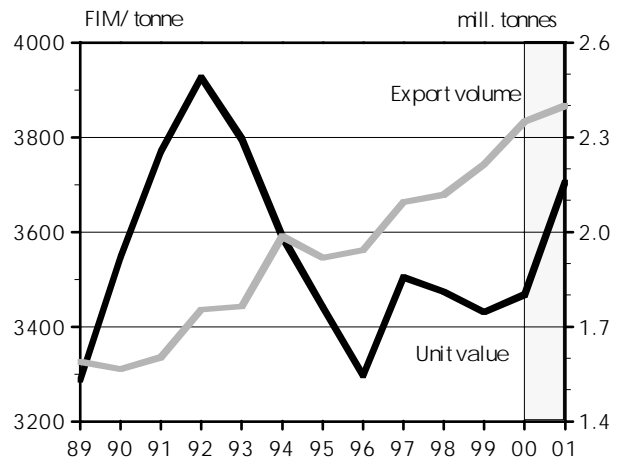
The prices for different grades of paper have risen at slightly different rates. The most rapid growth has been in fine paper, where particularly those producers who use market pulp have raised the price to cover their higher costs. As with pulp, the rise in paper prices (in FIM) has been supported by the relative weakness of the euro against the dollar.

The rise in the price of pulp will continue to create pressure to raise paper prices in the future. In September 1999, the pulp/paper price ratio calculated on the respective euro prices stood at 64 per cent for LWC paper, 65 per cent for coated fine paper and 59 per cent for A4 copier paper; the corresponding figures for September 2000 were 95, 85 and 77 per cent. According to market analysts, a ratio of over 80 per cent is not sustainable in the



Source: National Board of Customs

*Volume and real unit value (1989 prices) of paper exports, 1989–2001f (inflation-adjusted using the producer price index for paper products; estimated change for 2001 is +3 per cent)*



Source: National Board of Customs

*Volume and real unit value (1989 prices) of paperboard exports, 1989–2001f (inflation-adjusted using the producer price index for paper products; estimated change for 2001 is +3 per cent)*

longer term, and eventually either paper prices will rise or pulp prices fall.

Why have paper prices not been raised in line with the pulp price? First, it should be noted that the pulp/paper price ratio has been rising, particularly in the euro countries, whereas in North America the strong dollar has meant that the same degree of imbalance does not exist. The euro area's non-integrated paper producers buy pulp at dollar prices and so, due to the weak euro, their costs have risen by more than the rise in dollar prices. Passing on these costs to paper prices is difficult with the current level of competition for market share on world markets between integrated and non-integrated paper manufacturers. In Western Europe, for example, the market share of non-integrated producers has fallen from around 60 per cent in 1990 to only about 40 per cent in 2000. If integrated producers keep the price of paper low in relation to pulp, this will be very damaging to non-integrated paper producers. The present situation may indeed lead to profitability problems for non-integrated producers,

the consequence of which may be a further drop in their market share.

Despite this, paper prices can be expected to rise significantly above their current level. This will mainly be in response to the following factors: there are still market-related pressures for further increases in the price of pulp; demand in the markets for paper products continues to be strong; and there is a scarcity of paper supply even though capacity utilisation rates are high. Furthermore, the recent rise in the price of oil is leading to a rise in the costs of production inputs and transportation, which will in turn increase the pressure for a rise in paper prices as well. European and North American producers have in fact already announced that they are raising the prices of newsprint, fine paper and paperboard at the end of the autumn. The prices of paper and paperboard are forecast to rise this year by about 12 per cent on their 1999 levels.

### **Record Production and Exports**

Production volumes of pulp and paper have been on the increase in Finland since 1996, and 2000 will be no exception. Due to a strike in the spring, however, production of pulp in the first six months of the year remained at last year's level. The strong demand for pulp and the tight supply situation have served to boost production in the remainder of the year, and total pulp production for 2000 will be up by about six per cent on 1999.

Thanks to high demand, production of paper and paperboard increased in January–June of this year by over five per cent compared with the corresponding period in 1999. The growth would have been even higher had the spring strike not reduced paper production by about 300,000 tonnes. Production of magazine paper, in particular, has risen, and the output for January–June this year was up 13 per cent on the corresponding period in 1999; production of newsprint, on the other hand, fell in the first six months of the year by more than 11 per cent. With the market outlook continuing to be bright,

the production of paper and paperboard for 2000 is predicted to exceed last year's total by 6–7 per cent.

Despite a drop in the export volumes of some products, such as pulp and newsprint, in the first half of the year, high prices meant that the value of exports was up in all product groups. The volume of paper exports as a whole grew substantially in January–June 2000. The biggest increase was in exports of coated magazine papers, at almost 20 per cent. Since the market development has also been good during the latter half of the year, and competitiveness remains high due to the weak euro, export volumes are forecast to grow by even more than consumption. Paper exports for the full year are expected to be up by 7 per cent and paperboard by six per cent. With Finnish paper and paperboard mills in full production, domestic use of pulp is very high and so pulp exports for the year will be up by only two per cent.

### **Will the Cycle Peak in 2001?**

Economic conditions in 2001 should support continued growth in demand for exports from the Finnish pulp and paper industry. In the main market area, namely the European Union, the growth in national economies will remain high, but in the United States the economic growth is expected to turn onto a more normal path after years of exceptional growth. In Asia, economic growth will continue largely at the same high level as this year.

World production capacity of pulp and paper will not increase significantly in 2001. No major change is thus expected next year in the current low level of stocks. The balance in the markets will not therefore change to any degree, but instead the relative scarcity in the supply of pulp and paper products may be further exacerbated. The euro is forecast to appreciate slightly next year against the dollar, the yen, pound sterling and the Swedish krona, but the changes will be small relative to the weakening experienced during the past year (see graphs on page 8). With the relative competitiveness of the

Forecasts of production and exports in the pulp and paper industry, 1000 tonnes; percentage changes from previous year are shown below the respective volumes

|            | Production     |              |              | Exports      |              |              |
|------------|----------------|--------------|--------------|--------------|--------------|--------------|
|            | 1999           | 2000f        | 2001f        | 1999         | 2000f        | 2001f        |
| Pulp       | 6 977<br>+3.9  | 7 400<br>+6  | 7 750<br>+5  | 1 794<br>+15 | 1 830<br>+2  | 1 885<br>+3  |
| Paper      | 10 324<br>+2.0 | 11 047<br>+7 | 11 600<br>+5 | 9 359<br>+1  | 10 014<br>+7 | 10 515<br>+5 |
| Paperboard | 2 623<br>+1.4  | 2 780<br>+6  | 2 830<br>+2  | 2 214<br>+5  | 2 350<br>+6  | 2 400<br>+2  |

Finnish pulp and paper industry remaining good next year and the market situation continuing to be favourable, the current business cycle is expected to be at its peak in 2001. It is already predicted that production capacity for paper products will be expanded considerably in 2002.

Pulp exports are predicted to increase in 2001 by about three per cent. Prices will remain quite high, at least in the first part of the year, and the pulp price is forecast to rise by six per cent for the year as a whole. Paper exports will rise in 2001 by about five per cent. Pressures to reduce the pulp/paper price ratio will be amongst the factors leading to a higher rise in paper prices than in the price of pulp. Markka-denominated unit prices of paper are forecast to rise by about 12 per cent next year.

The market situation for paperboard continues to be better than for paper products. Out of the total paperboard production, 16 per cent is consumed on the domestic market, and the proportion exported to Asia is 14 per cent; the corresponding figures for paper are nine per cent and five per cent. The demand outlook for paperboard is exceptionally good because GDP growth in both Finland and Asia in 2001 is expected to be even higher than in the EU countries or the United States. A limiting factor on the production and export growth in the Finnish paperboard industry will again be the capacity shortage – more products could be sold than can be produced. As a consequence, paperboard production and exports are predicted to grow

Forecasts of export prices for the pulp and paper industry (as percentage changes from previous year\*)

|            | 1999 | 2000f | 2001f |
|------------|------|-------|-------|
| Pulp       | 4    | 60    | 6     |
| Paper      | -2   | 12    | 12    |
| Paperboard | -4   | 12    | 10    |

\*Export prices are nominal unit values (in FIM).

in 2001 by only two per cent. Prices, by contrast, will rise by about 10 per cent.

### Increasing Share of Exports to Spain and the US

Subtle changes seem to have occurred in 2000 in the export distribution of Finnish paper products. In the two most important export markets, Germany and the United Kingdom, the former is increasing its relative share of Finnish exports, whereas the latter's share is falling. Based on the trend in the first half of the year, the value of exports to the UK seems to be declining in absolute terms as well. Of the other important export markets, Spain has expanded its relative share of Finnish exports the most. With the Spanish economy prospering, exports of Finnish paper products to Spain grew in

the first six months of 2000 by about 30 per cent on the same period last year. If the trend continues to the end of the year, Spain's share of Finnish paper product exports may reach about seven per cent for 2000 as a whole; last year the corresponding figure was about six per cent. The weakening of the euro against the dollar has led to a marked rise in exports to the United States. This year the relative share of Finnish paper exports to the US may rise to almost eight per cent (seven per cent in 1999).

## **2.3 Costs and Profitability in the Forest Industry**

*The nominal costs of raw materials, energy and labour in the forest industry are rising this year, but in real terms some of these costs are actually falling. With a moderate cost trend overall, and with rising export prices and a high capacity utilisation rate, profitability in the Finnish forest industry will be up considerably on last year, achieving a record level for 2000. In 2001, the capacity utilisation rate in the pulp and paper industry will rise to 99 per cent, and in sawmilling to 97 per cent. If the cost trend continues to be moderate, the forest industry will again turn in a record profit in 2001.*

### **Rise in Mill Price of Timber in 2000 Remains Small**

Stumpage prices will be up in 2000 by an average of 5–6 per cent, although within this figure there are significant differences between the various types of roundwood. The timber costs of sawmills using exclusively spruce will rise in nominal terms by as much as 10 per cent, whereas the price of pulpwood used by the pulp and paper industry will rise by only two per cent. When adjusted for inflation using the wholesale or producer price indices, the price of pulpwood has actually fallen significantly. For ply-

wood mills, the price of birch sawlogs will remain more or less unchanged this year, but the price of spruce sawlogs has risen.

The nominal costs of timber harvesting and long-distance transportation will be up this year by 6–8 per cent as a result of the higher cost of fuel and lubricants and the rise in interest rates. The influence of these two factors in the forest sector's machinery cost and transportation cost indices is significant, amounting to almost one quarter in the latter index. The nominal cost index for harvesters and forwarders has already risen by six per cent on last year's figure, and the transportation cost index by an even greater percentage. Changes of this magnitude have not occurred for ten years.

Contracting rates have not yet risen to match the rise in costs. From the forest industry's perspective, the cost trend (adjusted for inflation using the wholesale or producer price indices) in stumpage prices, timber harvesting and long-distance transportation for the year as a whole has remained moderate. From the contractors' viewpoint, however, the situation is quite the opposite.

### **Rising Price of Paper Coating Materials and Fillers**

The prices of other raw materials will also increase this year, due to the strong growth in the world economy and the high price of oil. Indeed the prices of kaolin, calcium carbonate and talc, which are important in the manufacture of magazine papers and quality printing papers, have already been raised. If this trend continues to the end of the year, the prices of non-metallic minerals will have increased this year by 3–5 per cent (adjusted for inflation using the producer price index), and the prices of chemicals and chemical products by almost 10 per cent. The nominal prices of both would be at their highest for over ten years.

The increase in the price of paper coating materials and fillers is due to the high demand and the rising costs of oil products, which increases the

costs of extraction, production and distribution. This is of considerable importance to the pulp and paper industry, as kaolin, other non-metallic minerals, starch-based binders, pigments, plastic-based substances and chemicals account for 7–8 per cent of the total costs. For some paper grades, this exceeds the cost of the wood raw material.

The rising price of recovered paper in Central Europe is creating further pressures, although the majority of the recovered paper used in the Finnish production of newsprint, tissue and paperboard is still obtained from domestic sources. In Germany and the United States, the price of recovered paper has been following the trend in market pulp prices for many years, but in Finland and Sweden this connection has been much less pronounced. Due to the rising costs of transportation, recovered paper will become more expensive in Finland, too.

### **Moderate Rise in Energy and Labour Costs**

In real terms, the prices of electricity, gas, heat and water are expected to remain more or less unchanged this year, and the cost of electricity may even fall slightly. Nevertheless, there are clear signs that the increases in oil prices are also pushing up the price of natural gas and peat. However, the Finnish forest industry obtains a considerable proportion of its electricity and heat from its own power plants and production processes (e.g. black liquor, sawdust and bark), which serves to promote stability in the energy costs for the industry.

The estimated impact of the spring pay settlements on the pulp and paper industry's costs in 2000 is about four per cent in nominal terms, and just below four per cent for the wood products industry. Provided there is no upward drift in wages and salaries, the rise in labour costs for the year will be moderate and corresponds with the labour productivity growth in the sector in recent years, or falls just short of it. When adjusted for inflation

using the producer or wholesale price indices, wages and salaries even show a slight decrease.

Following corporate restructuring, the forest industry will be able to make savings in the costs of raw materials, distribution, marketing and administration. These cost savings could, at least in principle, be quite large, as, for example, transportation and sales costs represent almost 10 per cent of turnover in the forest industry. On the other hand, price rises in oil products will mean a significant increase in transportation costs for the forest industry's intermediate and end products.

### **High Oil Price Will Increase Cost Pressures in 2001**

The rise in nominal stumpage prices in 2001 is expected to be three per cent, which is slightly less than in 2000. However, the mill price of roundwood used by the industry will rise by more than this next year, because the increased price of fuel and higher interest rates will be reflected in the charges for timber harvesting and long-distance transportation.

In the future, pressures on timber harvesting costs will increase in any case, as the degree of mechanisation in felling cannot be further raised to any significant extent, and the proportion of thinnings will increase. In 1999, the degree of mechanisation used in felling rose to 94 per cent, with the exception of delivery fellings in non-industrial private forests. Opportunities for raising productivity in long-distance transportation have also diminished, and hopes are now pinned on more efficient use of vehicles.

The price trend in other raw materials in 2001 will depend essentially on the prices of oil products. If oil prices stop rising or begin to fall slightly, as predicted by, for example, the Association of European Conjunction Institutes (AIECE), the pressures to raise raw material prices will be reduced. The prices of oil products are, however, expected to remain at such a high level that, due to the indirect effects, prices of pigments, binders and

chemicals may continue to rise in 2001. The expected strengthening of the euro in 2001 will, however, reduce the cost pressures associated with imported goods denominated in dollars or pound sterling.

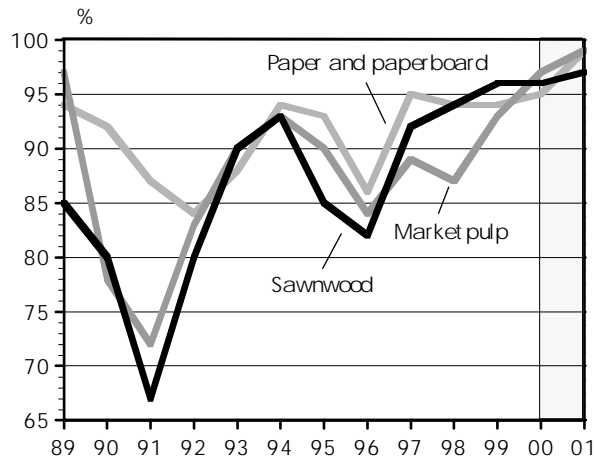
The prices of electricity, gas, heat and water, which are also important to the pulp and paper industry, can be expected to rise in 2001, but at a relatively modest rate. The price trend here, too, does depend on oil production volumes, changes in the level of stocks, and the level of consumption in the coming winter. The impact of labour costs in 2001 will depend on the next pay settlement; the Research Institute of the Finnish Economy (ETLA) and the Ministry of Finance predict that the overall effect of the settlement will be 3.5 per cent.

### Record Capacity Utilisation Rate in Finland

The demand for end products and the rise in export prices will lift the capacity utilisation rate of the Finnish forest industry to a very high level in 2000. In the pulp industry, the capacity utilisation rate will rise to 97 per cent, in the paper industry to 95 per cent and in the paperboard industry to 99 per cent. The figures would be even higher had there not been a strike in the spring.

The demand for pulp and paper is expected to continue growing in 2001. At the same time, exceptionally little new production capacity will come on stream, especially in Europe. In 2000 and 2001, investment in the paper and pulp industry will be mainly in renewing paper machine production lines, improving the efficiency of production and undertaking other improvements. The capacity utilisation rate of the pulp and paper industry will thus be raised to 99 per cent in 2001. This does not take into account any extra capacity gained from improvements in production efficiency.

The capacity utilisation rate in sawmilling will also remain very high this year, because construc-



Sources: Finnish Forest Industries Federation and Finnish Forest Research Institute (Metla)

*Forest industry capacity utilisation rates, 1989–2001f*

tion is continuing at a brisk pace both in Finland and in export markets. Investment in the Finnish sawmilling industry in 2000–2001 will be principally in expanding the product range and increasing the output of products with a high added value. Thanks to high demand, the sawmilling capacity utilisation rate is expected to rise to 101 per cent in 2001.

The capacity utilisation rate in sawmilling is, however, more difficult to define than for the pulp and paper industry, on account of the greater flexibility of production. Assuming that the sawmilling industry can raise its capacity by five per cent a year, mainly through small improvements, the capacity utilisation rate would be 96 per cent in 2000 and 97 per cent in 2001.

The Finnish plywood industry has invested heavily during the last ten years. Considerable investment has been made in softwood plywood and in increasing the degree of processing. The same trend will continue in 2000–2001, when plywood production capacity will increase by about 20 per cent, and laminated veneer lumber (LVL) capacity will almost double. Despite the huge expansion, the capacity utilisation rate in the ply-

wood industry will only increase to about 93 per cent. This is lower than for other product groups but is somewhat misleading because it is due to the addition of new production capacity in the middle of the year and seasonal reasons.

### **Record Profit for Forest Industry This Year**

Last year, the profits of Finland's three largest forest companies, Stora Enso, UPM-Kymmene and Metsäliitto Group, amounted to a total of approximately FIM 13 billion (excl. sales profits, extraordinary items and taxes). The rise in export prices, the competitive advantage brought about by the weak euro, and the high production volumes will combine to raise the forest industry's profits this year to a record level. This is further supported by the fact that most of the industry's production inputs are of domestic origin or their invoicing currency is the euro. The combined profit from regular operations of the three companies in 2000 is thus expected to rise to FIM 25 billion.

Part of the increase in turnover and the growing profits is directly due to the weak euro. For example, about FIM 2.5 billion of Stora Enso's increased turnover for 2000 will be purely a result of the weakening euro (if currency hedging is not included and the currency distribution in the company's turnover is the same as in 1999).

On the basis of information in Stora Enso's annual reports, it can also be estimated that the weak euro will mean an increase of about FIM one billion in the company's operating costs for 2000. Calculated thus, the direct net effect of the weak euro on the company's profit will be positive, at around FIM 1.5 billion.

Assuming that the currency distribution in the turnover of UPM-Kymmene and Metsä-Serla is similar to that of Stora Enso, it can be estimated that the weak euro will have increased the combined turnover of Finland's three largest forest

companies in 2000 by almost FIM 9 billion. The full impact of the improved price competitiveness will, of course, be even greater than this.

In September, Deutsche Bank forecast that the euro will strengthen in 2001 against the US dollar and pound sterling by an average of about six per cent, against the Canadian dollar by four per cent, and the Swedish krona by two per cent. Under the assumptions stated above, it can be estimated that the turnover of Finland's three largest forest companies will fall in 2001 by over FIM 3 billion as a direct effect of the anticipated strengthening of the euro. On the other hand, operating costs will also fall by FIM 1 billion.

The above figures are only approximations, because in reality the companies' currency distributions are not the same. In Stora Enso's operating costs the Swedish krona is more important than it is to the other companies, and for Metsä-Serla (excl. MoDo) the role of the euro is emphasised on account of the location of its production plants and export markets.

### **Record Profit Trend Will Continue in 2001**

The prices of paper and paperboard are predicted to rise slightly more in 2001 than this year, whereas the prices of the production inputs for the pulp and paper industry are expected to rise only moderately. Added to this, the capacity utilisation rate is forecast to rise to a record level. The profit for the Finnish forest industry as a whole in 2001 is therefore expected to improve even further on the figure for the current year.

Sawmilling profits will also be up in 2000, because production will increase to a record level and export prices for sawnwood will rise by nine per cent. The profit level will nevertheless be affected by the price rise of about 10 per cent in the industry's most important wood raw material, spruce sawlogs. The degree of processing varies

## Cost Structure of the Forest Industry

Jaana Rekikoski and Esa-Jussi Viitala

The cost structure of all the forest industry's business units in Finland in 1998 is illustrated in the accompanying diagram. The information has been obtained from official and publicly available statistics, mainly from Statistics Finland and the Finnish Forest Research Institute (METLA).

The pulp and paper industry comprises the manufacture of pulp, paper and paperboard as well as paper and paperboard products. The wood products industry, on the other hand, is defined here as consisting of sawing, planing and impregnation of timber; the production of plywood and wood-based panels; and the manufacture of joinery products, wooden packaging and other wood products.

Figures from Statistics Finland show that in 1998, the turnover of pulp and paper industry companies operating in Finland amounted to FIM 84 billion; the corresponding total for wood products companies was FIM 28 billion. This represents a growth in turnover on the previous year's figures of seven and nine per cent, respectively.

The turnover for each of these industries includes both primary and secondary processing. In the wood products industry, primary processing accounted for 75 per cent of turnover, in contrast to the much higher figure of 95 per cent in the pulp and paper industry. The difference is mainly due to the inclusion of joinery products (including wooden houses) under secondary processing, as this represents a turnover of more than FIM 6 billion. Secondary processing in the pulp and paper industry consists mainly of the manufacture of corrugated board, sacks, paper packaging and wall coverings.

Net profit in both industries in 1998 was positive. Return on capital invested in the pulp and paper industry was about four per cent, and in the wood products industry 11 per cent. In both cases the return was down by approximately one quarter on the previous year.

The proportion of total costs accounted for by the wood raw material itself (stumpage prices, timber harvesting, transportation costs and imported timber) differs greatly in each industry. In the wood products industry it is about one third of all costs, and in the pulp and paper industry, including chips and sawdust, only 10 per cent.

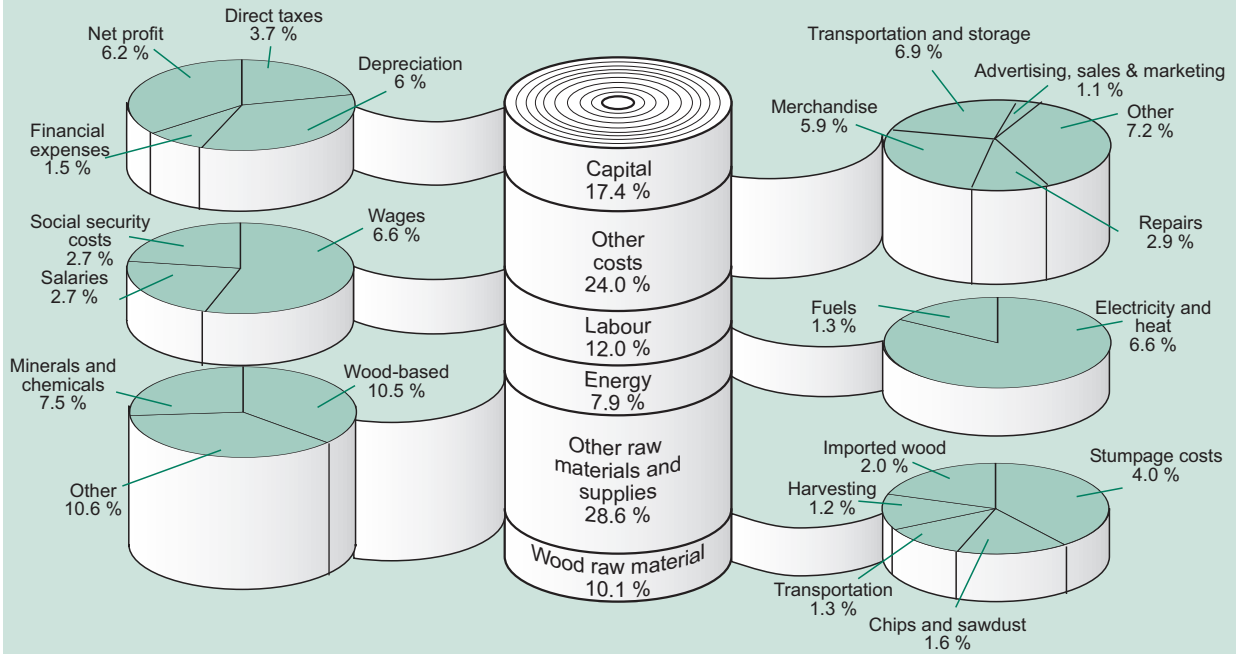
In the pulp and paper industry, fillers, coating materials, pigments and process chemicals accounted for 7–8 per cent of total costs. This proportion will increase in the future as production becomes increasingly orientated towards highly processed products, especially coated magazine and fine papers.

Financial expenses and energy costs constituted a lower proportion of total costs in both industries in 1998 than in 1997. The reasons for this were the rise in company equity ratios, the fall in interest rates and the decrease in the price of electricity. The proportion of pulp and paper industry total costs accounted for by wood raw materials also declined, by more than one percentage point, which was due to the relatively low price rises in pulpwood, chips and sawdust. In the wood products industry, the share of total costs constituted by wood raw materials remained at its previous level.

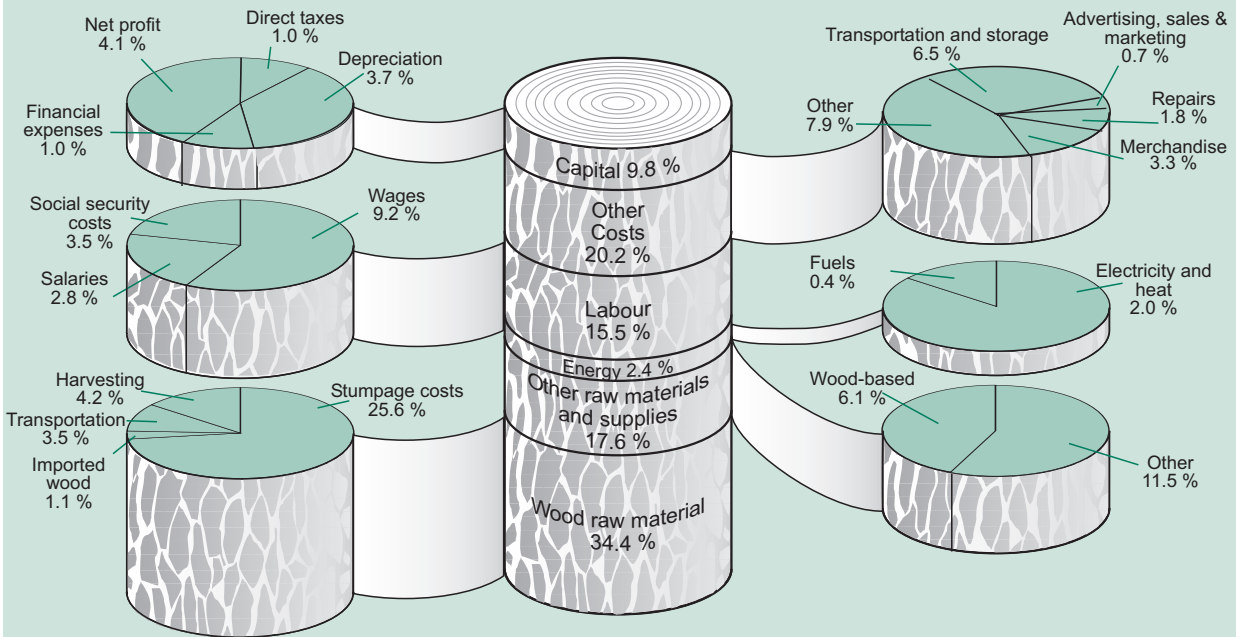
Other raw materials and supplies constitute a significant share of total costs, especially in the pulp and paper industry. About one third of these costs are for wood-based products, such as chemical pulp, mechanical wood pulp and recovered paper, which are used in secondary processing. Accurate assessment of the quantities and value of wood-based raw materials moving between business locations and within conglomerates is sometimes rather difficult, which may lead to errors in determining this cost item.



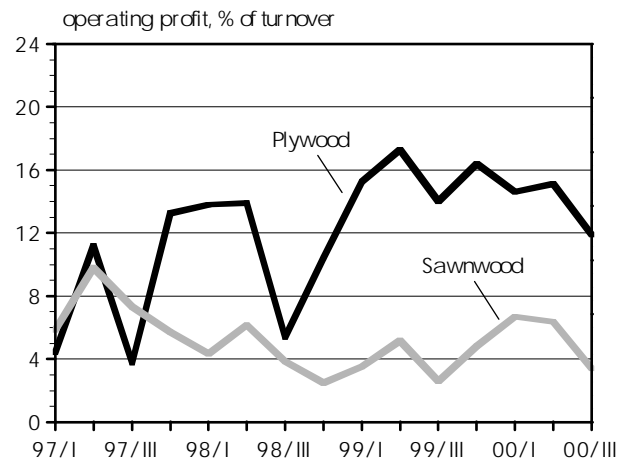
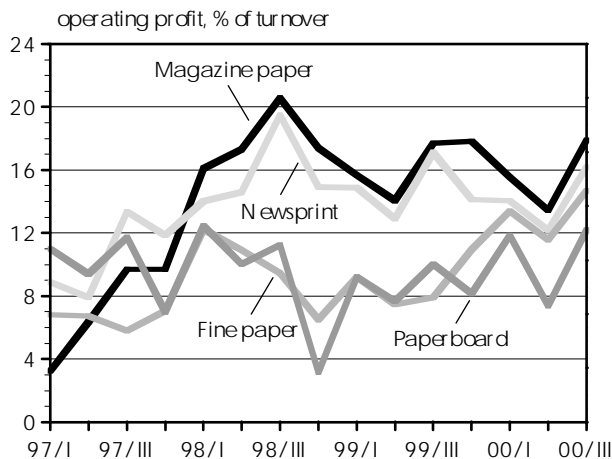
### Costs in the Pulp and Paper Industry, 1998 (FIM 84 billion)



### Costs in the Wood Products Industry, 1998 (FIM 28 billion)



Sources: Statistics Finland and Finnish Forest Research Institute (Metla).



Forest industry operating profit by product group from the first quarter of 1997 to the third quarter of 2000, as % of turnover.

Sources: UPM-Kymmene, Stora Enso, Metsä-Serla and Finnforest annual and interim reports

considerably from one mill to another, and so profits also vary widely in the sector.

The favourable market trend for sawnwood will continue in 2001, but the intensifying competition means that the rise in export prices is forecast to be only modest. With costs rising at the same time, and capacity limits being reached, the profitability of Finnish sawmilling will diminish somewhat in 2001.

The profit trend in the plywood industry will continue to be good in 2000, helped along by the consolidation of prices and the increase in production volumes compared to last year. In 2001, profits in the plywood industry will fall slightly, due to rising costs and a fall in real export prices, partly as a result of the increase in production capacity.

### Big Profits in Pulp, Magazine Paper and Plywood

Comparing the profitability of different product groups is important to forest companies wishing to concentrate on their core business. Using operating

profit as a percentage of turnover (see graphs), the best performance in the last three years has been achieved by magazine paper and plywood. This may explain why the plywood industry has been able to invest so much in expansion in recent years. These investments in new capacity, along with the seasonal variation in production, would then explain the large fluctuations in net profit for the plywood industry. The poorest performance is shown by the sawmilling industry, where operating profit has remained significantly below 10 per cent of turnover.

If the product group comparisons are made on the basis of the return on capital invested reported by the forest companies, the performance rankings do not change noticeably. In 1998 and 1999, the most profitable product groups were magazine paper and plywood (incl. laminated veneer lumber), where the return on capital invested was over 20 per cent. Sawnwood was again the poorest performer, in spite of its low capital needs.

The figures for the first six months of 2000 reveal that the same product groups are still achieving the best results. Nevertheless, the return on cap-

ital invested in the pulp industry, which is quick to react to economic fluctuations, will be in a class of its own this year: the return for the first six months of the year alone was 30–40 per cent. Only three years ago, by contrast, the return on capital invested in pulp mills was distinctly negative.

### **Corporate Restructuring Continues**

Corporate acquisitions and mergers in the forest industry are expected to continue in 2001 as the major forest companies pursue their strategies for consolidating end-product markets. The strong cash flow of these companies and their relatively high equity ratio give them a good foundation for further actions.

Concentration on core business activities will also continue. The most recent example is Metsä-Serla, which bought MoDo's fine paper production but is simultaneously withdrawing from Metsä Tissue. UPM-Kymmene also sold Walki Sack and part of the business of Rosenlew. The forest companies are also releasing capital by selling their holdings

in Transfennica, which specialises in forest industry transportation. Stora Enso has already sold most of the power assets outside its production plants.

As companies search for funding sources to finance corporate restructuring, their attentions will next turn to their own forests. For example, the Swedish company SCA has already announced that it is studying the possibility of corporatising its forest ownership and selling part or all of it to outside investors. In Finland, too, the strategic importance of company-owned forests as a raw material source is diminishing. If the industry were to see the Finnish roundwood market operating smoothly in the long term too, and even during economic downturns, and the uncertainties related to timber imports (especially those from Russia) were to be reduced, then the same kind of arrangements will undoubtedly be seen in Finland as well. Stora Enso has in fact already announced that it is prepared in principle to sell its forests in Finland, on account of their poor return. Considerable sums of money are at stake here, as the value of forests owned by the forest companies in Finland can be roughly estimated at FIM 15–20 billion.



## 3 Forestry in Finland

### 3.1 Utilisation of Wood Resources

*Finland's abundant forest resources are sufficient to satisfy the timber needs of the Finnish forest industry, with the exception of birch. Almost 50 per cent more birch is consumed than the estimated maximum sustainable removal will allow, the shortfall being made up by imported birch. In 1997–1999, commercial fellings and wood consumption by the forest industry were at record highs. The forest industry was consuming an average of 67 million cubic metres of wood a year, of which 56 million cubic metres was of Finnish origin. In 2000 and 2001, the industry's wood consumption is forecast to be even higher.*

Finland has 23 million hectares of forest, and the total volume of growing stock is approximately 2000 million cubic metres. Pine accounts for 47 per cent of this, spruce for 35 per cent and broad-leaved species for 18 per cent. The annual increment in the growing stock is about 76 million cubic metres. Some 2.4 million hectares of forest, mainly in Northern Finland, is wholly or partially excluded from commercial timber production. Forestry can be practised across an area of more than 20 million hectares, containing a growing stock of approximately 1900 million cubic metres with an annual increment of 74 million cubic metres.

Sixty-five per cent of Finland's timber-production forests is in the possession of non-industrial

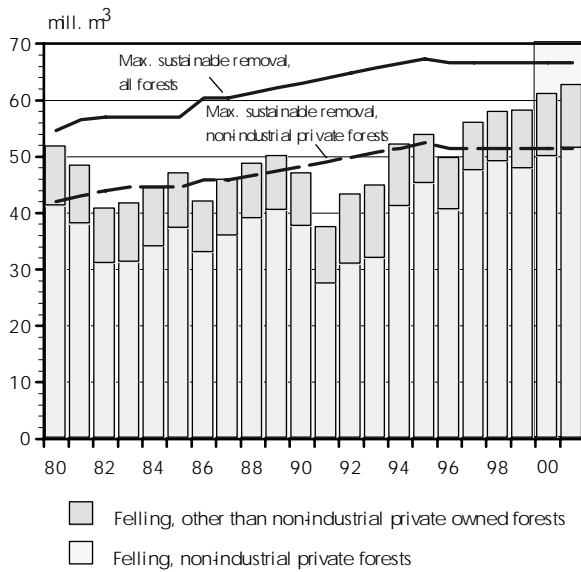
private owners, 20 per cent is owned by the state, nine per cent by companies and six per cent by other groups of owners. The state's forest ownership is concentrated in Northern Finland, which is reflected in the low average increment in the growing stock compared with forests in other ownership. Forests in non-industrial private ownership account for 74 per cent of the increment in growing stock, state-owned forests for 11 per cent, company-owned forests for 10 per cent and the rest for five per cent.

From the timber procurement viewpoint, the non-industrial private forests are of crucial importance, as 75–85 per cent of the domestic roundwood used by the forest industry is from such forests; the proportion is 65–75 per cent if imported timber is taken into account. In 1997–1999, removal of industrial wood averaged 57 million cubic metres per year. In 2000 and 2001, the removal figure will rise by a further 3–4 million cubic metres per year. This is not far short of the targets contained in the National Forest Programme (annual removal of 63–68 million cubic metres until 2010).

The calculation of maximum sustainable removal is based on information about the amount, composition and annual increment of the growing stock, and assumes that the standard of silviculture will remain unchanged. The calculation indicates the level to which fellings could rise without prejudicing the size of future removals. It is an optimisation calculation prepared at the Finnish Forest Research Institute (METLA) and includes the effect of roundwood price differentials on the composition of the maximum sustainable removal. The

maximum sustainable removal has risen steadily because the volume of growing stock has continually increased, and silviculture, at least in recent years, has been quite intensive. The additional funding granted with the National Forest Programme will probably secure silvicultural investment at this level at least in the immediate future. The increase in maximum sustainable removal seems to have levelled off, but at the present rate of timber resource use this is set to rise in the future.

Felling which exceeds the maximum sustainable removal on a temporary basis only will not jeopardise future harvests. Flexibility of this kind, which is justifiable in silvicultural terms, is extremely widespread in Finnish forests, especially in spruce stands. In spruce-dominant forests in Southern Finland, the average volume of growing stock is 172 cubic metres per hectare, compared with only 101 cubic metres per hectare in pine-dominant forests. Spruce harvests have been very high in recent years and spruce reserves have no longer been increasing.



*Fellings of industrial wood and maximum sustainable removal*

*Timber consumption by the forest industry and maximum sustainable removals in Finland*

| Tree species | Consumption 1997–99      |                                  |
|--------------|--------------------------|----------------------------------|
|              | mill. m <sup>3</sup> /yr | % of maximum sustainable removal |
| Pine         | 25.7                     | 81                               |
| Spruce       | 27.0                     | 112                              |
| Birch        | 13.1                     | 149                              |
| Total        | 65.8                     | 102                              |

Consumption includes imported timber.

Timber resources would have allowed considerably more felling (see graph) in the last twenty years than has actually occurred, but in recent years felling has increased at a rate above the estimates of maximum sustainable removal. The proportion of the maximum sustainable removal harvested is particularly great in non-industrial private forests, at over 90 per cent.

The table shows the Finnish forest industry's consumption of timber by species, and compares these figures with the maximum sustainable removals estimated for Finnish forests. In addition to the quantities stated in the table, the industry also uses some aspen and unspecified timber. Non-industrial use of wood is insignificant. The information in the table is not presented by roundwood type because, from a practical viewpoint, the distinction between sawlogs and pulpwood is often flexible, harvesting of sawlogs also accumulates pulpwood, and the wood pulp industry uses large quantities of sawmill chips, etc.

Consumption of birch is almost 50 per cent above the level of maximum sustainable removal in Finnish forests. About half of the birch for industrial use is thus imported as birch pulpwood. Perhaps somewhat surprising, spruce resources are also being used to the full (spruce imports are low but increasing). The level of maximum sustainable removal of spruce stands that is justifiable in silvicultural terms is, however, much higher than the figures in the table indicate, which allows some

room for manoeuvre, especially in the case of spruce sawlogs. According to the maximum sustainable removal calculations, spruce harvests can be sustainably increased in as little as about ten years from now. From a wood resources viewpoint, pine, and especially sawlogs, represents the best and quickest opportunity to meet the need for increased timber consumption.

## 3.2 Roundwood Markets

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*The growth in exports of Finnish forest industry products has raised the industry's demand for roundwood and increased roundwood prices during 2000. The rise in stumpage prices has been greatest in spruce sawlogs, whose price will have risen this year by about 10 per cent. With the domestic roundwood markets operating efficiently, roundwood imports this year will be up by only two per cent. In 2001, a new record may again be achieved in commercial fellings. As demand grows next year, the volume of imports is forecast to rise again to a new record level, 14.4 million cubic metres. The rise in stumpage prices is predicted to continue in 2001, because demand will be growing and prices of forest industry products will increase.*

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The growing demand on sawnwood markets has increased the demand for sawlogs considerably in 2000. In particular, the demand for spruce sawlogs and the higher prices being fetched are helping to push domestic fellings to a new record. Roundwood trade progressed well in the first half of the year, due to the encouraging situation on the end-product markets. In the 1990s, negotiations on stumpage prices typically led to indecision by the market in the spring and tended to bias roundwood sales towards the autumn. In 2000, however, roundwood purchases have been distributed more evenly

throughout the year, which has stabilised the market.

### **New Record for Commercial Fellings**

Commercial fellings are estimated to have increased by about five per cent in 2000, to almost 58 million cubic metres. The sawlog harvest will be up by six per cent and pulpwood by three per cent. The quantities of sawlogs and pulpwood harvested this year will be almost equal, due to the strong demand for both sawmilling and paper industry products.

The supply of roundwood from spruce-dominant stands in non-industrial private forests has been high this year. However, total fellings increased more in company-owned than in private forests in the first half of the year, and fellings in company-owned forests for 2000 as a whole will be up by about six per cent. Felling in forests of the Finnish Forest and Park Service will this year remain at the level of 1999, at 4.4 million cubic metres.

The prices of the different sawlog species have become more uniform since the beginning of 1999, and at the end of this year the prices of spruce, pine and birch are already very close to each other. Weekly statistics show that the rise in sawlog prices levelled off in the summer, but in the autumn they again began to rise. The prices of pine and spruce pulpwood began to decline slightly in summer 2000, which, according to the industry, was merely a result of the qualitative variation in the distribution of stands. The demand for spruce sawlogs has picked up so much that its price will be up this year by 10 per cent on last year's average, despite the ample supply of sawlogs. The stumpage price of pine sawlogs will be up this year by an average of only four per cent. The real price trend differs from the nominal trend, however, because both last year and this year only spruce sawlog prices have actually risen in real terms. In relation to export prices of pine and spruce sawnwood, stumpage prices of

*Commercial fellings and roundwood imports, 1999–2001f*

| Rounwood type/<br>owner category                 | 1999<br>mill. m <sup>3</sup> | 2000f<br>mill. m <sup>3</sup> | Change<br>% | 2001f<br>mill. m <sup>3</sup> | Change<br>% |
|--|------------------------------|-------------------------------|-------------|-------------------------------|-------------|
| Commercial fellings, total                       | 55.3                         | 57.9                          | +5          | 60.1                          | +4          |
| Non-industrial private forests                   | 47.8                         | 50.2                          | +5          | 52.1                          | +4          |
| Company-owned forests                            | 3.1                          | 3.3                           | +6          | 3.5                           | +6          |
| Finnish Forest and Park Service forests          | 4.4                          | 4.4                           | 0           | 4.5                           | +2          |
| Sawlogs  | 27.3                         | 29                            | +6          | 29.8                          | +3          |
| Pulpwood   | 28.0                         | 28.9                          | +3          | 30.3                          | +5          |
| Roundwood imports                                | 13.2                         | 13.5                          | +2          | 14.4                          | +7          |
| Commercial fellings and roundwood imports, total | 68.5                         | 71.4                          | +4          | 74.5                          | +4          |

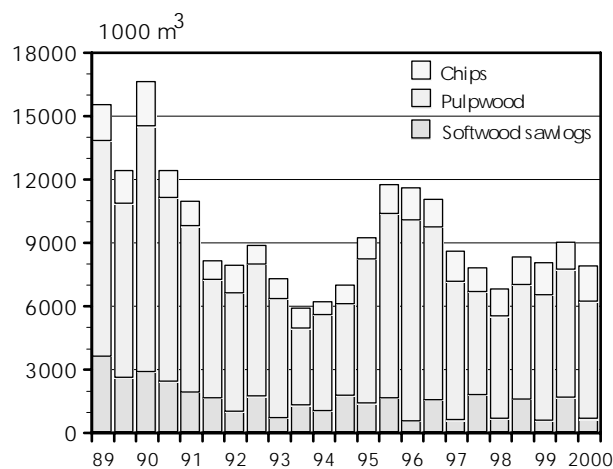
sawlogs have risen this year to a level higher than at any time in the 1990s, which is already visible in the deteriorating profitability of sawmilling.

The price trend for the different types of pulpwood has been even more uniform in 2000 than for sawlogs. Due to the high demand for magazine paper the average stumpage price for spruce pulpwood will be up this year by about four per cent. On the pine and hardwood pulpwood markets, imports continue to be high, although the domestic supply of pine pulpwood is also plentiful. As a result, the average prices of pulpwood this year will be at last year's level, even though the rise in the price of chemical pulp has been dramatic.

### **Roundwood Supply from Private Forests at High Level**

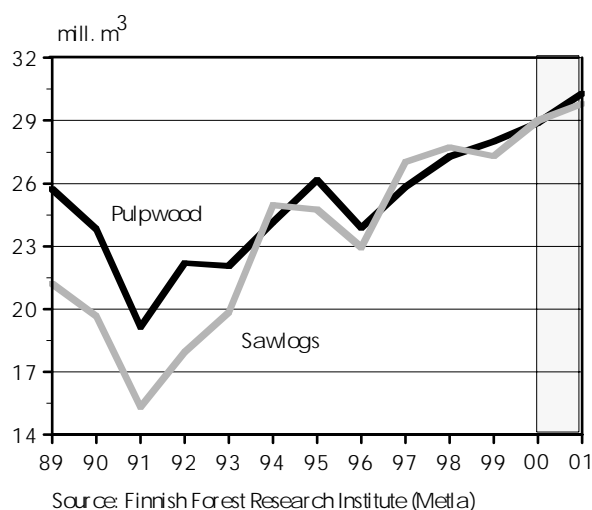
The forest industry's roundwood purchases from non-industrial private forests in January–August 2000 amounted to almost six million cubic metres more than in the corresponding period in 1999, which included a quite spring. In contrast, roundwood trade in the latter part of the year is expected

to be less busy than last year. As in previous years, and on account of the high demand for sawlogs, standing sales have been higher than delivery sales. Standing sales will account for about 82 per cent of the market in 2000. The price trend in delivery sales



Source: Finnish Forest Research Institute (Metla)

*Forest industry stocks of harvested timber at six-month intervals (June 30 and December 31), 1989–2000, 1000 m<sup>3</sup>*



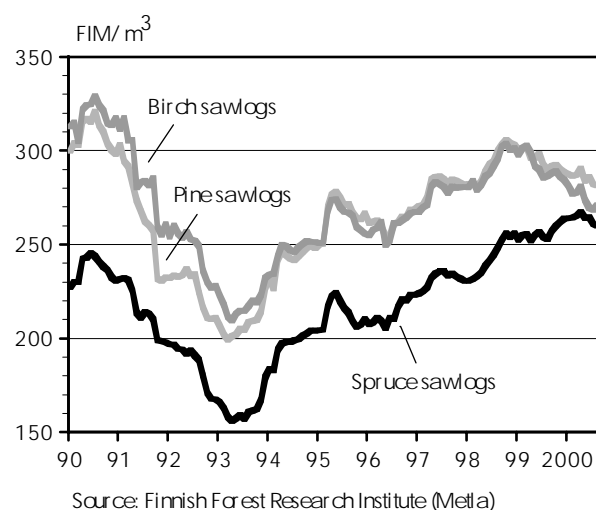
Commercial fellings, 1988–2001f, mill. m<sup>3</sup>

has been weaker than in stumpage prices, due to the demand structure of the industry.

The high purchase quantities at the start of the year have swelled the forest industry's stocks of wood stands. The industry's stocks of harvested wood amounted to 8.3 million cubic metres at the end of June 2000, which can be regarded as normal in relation to the 1990s trend. Stocks of softwood sawlogs fell by one million cubic metres compared with the start of the year, due to the increase in production in the sawmilling industry. Stocks of pulpwood, which constitute almost 70 per cent of the forest industry's total stocks, fell by only 0.5 million cubic metres in the first six months of 2000.

### Busy Year for Roundwood Imports

In 1999, imported roundwood accounted for about 17 per cent of all wood consumed by the Finnish forest industry. With the domestic roundwood markets operating efficiently, the proportion of imported roundwood used by the industry in 2000 will be slightly lower than last year. The export tax imposed by Russia on its roundwood exporters dis-



Real stumpage prices for sawlogs, FIM/m<sup>3</sup>

rupted trade at the start of the year, when the export charge of EUR 5 per cubic metre reduced Finnish imports of Russian roundwood in January to half their normal level. The tax has since been removed from birch pulpwood and import quantities are rising to the level of last year. Roundwood imports for the sawmilling industry, in particular, have been increasing this year.

Over the last five years, the composition of imports has changed as the relative proportion of imported spruce sawlogs has increased and birch pulpwood decreased. Independent sawmills, in particular, have increased their imports of sawlogs considerably. Information gathered from the members of the Finnish Forest Industries Federation shows that in 1999 birch pulpwood still accounted for 56 per cent of roundwood imports. Imports of roundwood and wood chips in 2000 will be up by about two per cent on last year, to 13.5 million cubic metres; pulpwood accounts for about 9.5 million cubic metres of this and sawlogs for about 2.5 million cubic metres, with the remainder being waste wood and chips.



## Stumpage Price Index and Forest Product Export Price Index

Pekka Ollonqvist

The change in the forest product export price index this year and in 2001 is expected to be different to the change in the stumpage price index for domestic roundwood (both inflation-adjusted using the wholesale price index). The export price index will rise, whereas the stumpage price index will fall.

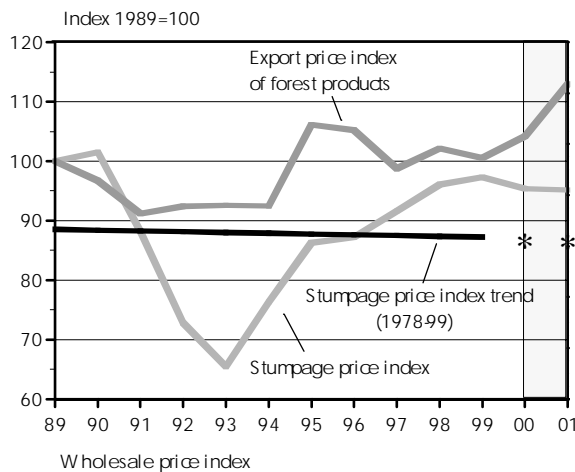
In 1999, the export price index fell by about 1.5 per cent on the previous year's level, despite the favourable development in export prices at the end of the year. However, there were differences amongst the product groups: nominal export prices rose for sawnwood and pulp, but fell for plywood, paper and paper products.

The stumpage price index rose in 1999 by slightly more than one per cent on the previous year. This was due to the rise in the price of spruce and birch sawlogs; the average prices of pine sawlogs and pulpwood, on the other hand, fell. The stumpage price index for 1999 was in fact more than 10 per cent above the long-term trend for 1978–1998 (see graph). The slump in the index in the early 1990s is explained by the deep recession in Finland during

those years.

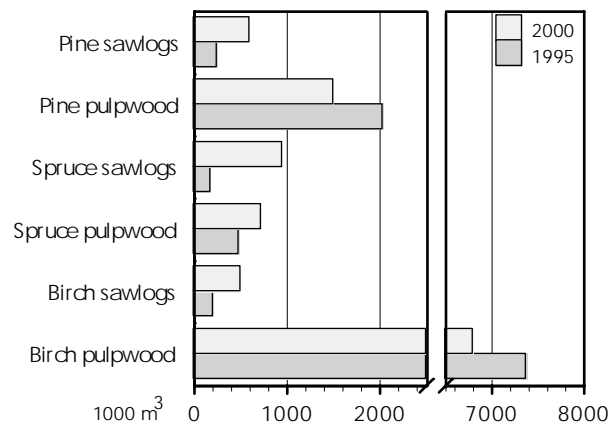
The export price index for 2000 is expected to increase 3.5 per cent on last year's level. In 2001, it is expected to rise further, by more than eight per cent on this year's figure. By way of comparison, it should be noted that in 1995, at the peak of the business cycle, the real export price index rose by almost 15 per cent.

Although stumpage prices have risen in nominal terms during the current year, in real terms they will be down on last year by between 0.1 and 7.8 per cent, depending on the roundwood species. On average, the stumpage price index for all types of roundwood will be two per cent lower than last year. Nevertheless, the importance of the deflator chosen for use in assessing this year's trend should be emphasised. If the estimated stumpage prices are inflation-adjusted by the consumer price index, the stumpage price index would *rise* from last year by almost two per cent. The real stumpage price index is expected to fall in 2001 from its level for this year, by 0.2 per cent.



*Real stumpage price index, forest product export price index and 1989–2001f stumpage price index trend*

Sources: Research Institute of the Finnish Economy (ETLA), Finnish Forest Research Institute (Metla), Statistics Finland and National Board of Customs



Sources: Finnish Forest Industries Federation and Finnish Forest Research Institute (Metla)

Roundwood imports, 1995 and 2000 (1000 m<sup>3</sup>)

### Demand for Sawlogs Shifting to Pine

With the economic outlook for the forest industry's export markets remaining good in 2001, the demand for roundwood will continue to rise. Exports of sawnwood will be up by slightly less than paper industry exports, and the busy construction sector in Finland will also ensure the demand for sawlogs remains high in 2001. Whereas this year the demand for sawlogs has been biased towards spruce, in 2001 the increase in exports of pine sawnwood will boost the demand for pine sawlogs and consequently fellings of pine.

Thanks to the demand for paper and rising paper prices, the emphasis on the Finnish market will shift more towards pulpwood than at present. Furthermore, new capacity for the wood pulp industry in eastern Finland will come on stream, which will rely to a great extent on imported wood.

There are currently no foreseeable factors that would significantly weaken the supply of wood from non-industrial private forests in 2001 compared to the current year. The trend is, in fact, quite the opposite, as the transition period in the forest

taxation system will help to maintain the good supply of sawlog-dominant stands. Pressures for a rise in stumpage prices will thus be moderate again in 2001.

Roundwood trade from non-industrial private forests will increase in 2001 by around four per cent. Fellings from the industry's own forests will continue to be high, and the Finnish Forest and Park Service will increase its fellings by 2–3 per cent. The high demand being sustained for forest industry products and the rise in prices will serve to increase fellings on the domestic roundwood markets next year to another new record, or about 60 million cubic metres.

The rise in stumpage prices, especially for pulpwood, will also be restrained by imports of roundwood, which will increase next year by almost seven per cent, to around 14.4 million cubic metres. If the supply on domestic markets proves to be lower than assumed here, the increase in imports in 2001 may turn out to be even higher.

### Rise in Stumpage Prices Will Continue Next Year

Although stumpage prices will continue to rise in 2001, the price trend for the different types of roundwood will nevertheless differ from this year's situation. The demand for sawnwood in the main

Average stumpage prices in non-industrial private forests

| Roundwood       | 1999<br>FIM/m <sup>3</sup> | 2000f<br>FIM/m <sup>3</sup> | 1999/<br>2000f<br>change, % | 2000f/<br>2001f<br>change, % |
|-----------------|----------------------------|-----------------------------|-----------------------------|------------------------------|
| Pine sawlogs    | 271                        | 282                         | +4                          | +4                           |
| Spruce sawlogs  | 239                        | 263                         | +10                         | +2                           |
| Birch sawlogs   | 269                        | 270                         | +1                          | +1                           |
| Pine pulpwood   | 89                         | 89                          | 0                           | +3                           |
| Spruce pulpwood | 132                        | 137                         | +4                          | +5                           |
| Birch pulpwood  | 88                         | 88                          | 0                           | +2                           |

market area, Europe, will be higher for pine because the rapid increase in the price of spruce sawnwood causes substitution between the two species. The price of spruce sawlogs will not therefore rise as markedly as it has done in 2000, even though spruce exports to Japan will still be increasing. The average price rise for softwood sawlogs next year is forecast to be 2–4 per cent. Of the different pulpwoods, the stumpage price of spruce pulpwood is expected to increase the most, by five per cent, as a result of the rise in magazine paper prices. The price increase for chemical pulp will also be reflected in the price of pine pulpwood, which will rise by an average of three per cent from this year's average. The high imports of birch pulpwood will ensure that the rise in its price will be slightly below the other pulpwoods, at about two per cent.

In the absence of the balancing effect of recommended prices, the regional characteristics of the roundwood market will become more emphasised. In regions of high demand, especially in eastern Finland, which will be gaining new pulpwood capacity, the rise in prices could be a little above average. In Northern Finland, on the other hand, the rise in stumpage prices in 2001 may be lower than presented here.

### 3.3 Investment and Profitability in Non-Industrial Private Forestry

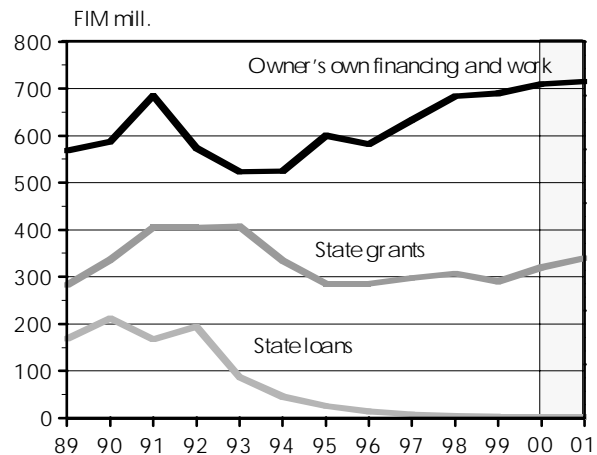
*Total investment in timber production in Finnish non-industrial private forestry will reach FIM 1.05 billion this year. Regeneration obligations mainly due to clearcutting of spruce stands have increased the level of planting and thus total expenditure. Thanks to the growing amount of forest extension and planning, state funds are being used more effectively this year and will continue to be in 2001. This will also lead to more investment in timber pro-*

*duction by the private forest owners themselves. This year, gross stumpage earnings will rise to over FIM 10 billion for the first time, which will boost the level of funds for future investment purposes.*

*For the sixth successive year, the net earnings for non-industrial private forestry are above the long-term average. However, continued increases in income in the future will not be possible under the present formula, by increasing fellings of spruce sawlog stands. Nevertheless, it appears that the conversion of growing stock into cash has been very popular this year and will continue so in 2001. Even a rise in costs will not prevent new records being set for net earnings.*

#### Total Investment Exceeds FIM 1 Billion

The level of investment by non-industrial private forest owners in 1999 was a little under FIM 700 million. This figure will be exceeded in 2000, however, mainly as a result of the statutory regeneration obligations arising from the increased clearcutting



Source: Finnish Forest Research Institute (Metsä)

*Financing of silvicultural and forest-improvement works in non-industrial private forests, 1989–2001f (at 1999 prices)*

of spruce stands. As spruce usually grows on nutrient-rich land, regeneration by planting has increased as a proportion of the total area of forest regeneration. In 1999, the expenditure by forest owners themselves rose for the first time to over 70 per cent of the total investment in timber production. This year and in 2001 the corresponding proportion will be slightly under 70 per cent.

In 1999, about FIM 30 million less in state loans and subsidies was used than in 1998. Partly for this reason, the total investment in timber production last year was below FIM 1 billion. In the current year, however, investment should exceed FIM 1 billion, provided that use of state subsidies has been successfully marketed to forest owners. In 2001, total investment will increase somewhat from this year's level.

### **More Emphasis on Projects to Manage the Forest Environment**

The Government's budget proposal for 2001 reserves a sum of FIM 366 million to ensure sustainable timber production. The main aim of the measures to be implemented with this allocation is to advance the goals set in the National Forest Programme. Since 1998, the priority in ensuring timber production in non-industrial private forests has been in tending of young stands and in harvesting fuelwood, and this will continue in 2001. A sum of FIM 260 million has been reserved for the costs of all works, of which FIM 140 million is for tending of young stands.

Forestry also involves furthering the management of the forest environment and carrying out afforestation. A total of FIM 25 million is reserved for promoting environmental management. The allocation in last year's budget proposal was FIM 15 million. A further sum of only FIM 22 million has been reserved for 2001 for afforestation costs to be funded from the main budget division for agriculture. A much larger sum is needed for compensating the loss of earnings already experienced in

afforestation; FIM 30 million has been reserved for this in the budget proposal.

### **Stumpage Earnings in Non-Industrial Private Forestry Rise to FIM 10 Billion**

In 1999, stumpage earnings from non-industrial private forests fell by over two per cent on 1998, to FIM 9.2 billion. In 2000, stumpage prices have risen considerably and commercial fellings have increased in non-industrial private forests by 3–4 per cent on last year's figure. This year, gross stumpage earnings from non-industrial private forests will be FIM 10.2–10.4 billion. In real terms, this is an all-time high for stumpage earnings from non-industrial private forests. At today's prices, even a level of FIM 8 billion has only been reached in 1974, 1980 and four times in the late 1990s. In 2001, a further rise in stumpage prices will boost gross stumpage earnings to almost FIM 11 billion.

As the production of sawnwood has increased substantially in recent times, felling in non-industrial private forests has concentrated on sawlogs. As a result, well over two thirds of all stumpage earnings has been from sawlogs. In 1999, spruce sawlogs constituted almost 45 per cent of all stumpage earnings in Southern Finland, and this figure is expected to be even higher for 2000.

### **Gross Earnings in Southern Finland over FIM 1000 per Hectare**

Since 1995, gross stumpage earnings in non-industrial private forestry have remained above the long-term average. In Southern Finland, earnings per hectare are above the level of the previous cyclical peak (1989) for the fourth successive year, and in Northern Finland for the third successive year. Last year did not follow the trend, however, as gross stumpage earnings fell below FIM 690 per hectare of forest land; the drop on the 1998 level was nevertheless only FIM 25 per hectare (see table). Earn-

Balance sheet calculations for non-industrial private forestry, 1997–2001f, FIM/ha at 1999 prices (wholesale price index)

|   | 1997 | 1998 | 1999 | 2000f | 2001f | Average<br>1989–98 |
|---|------|------|------|-------|-------|--------------------|
| <b>Gross stumpage earnings, FIM/ha</b>                                  |      |      |      |       |       |                    |
| Whole country   | 649  | 712  | 687  | 760   | 810   | 506                |
| Southern Finland  | 857  | 933  | 903  | 1 000 | 1 060 | 650                |
| Northern Finland  | 222  | 256  | 244  | 260   | 280   | 228                |
| <b>– Gross costs, FIM/ha</b>  |      |      |      |       |       |                    |
| Whole country   | 103  | 112  | 112  | 118   | 122   | 85                 |
| Southern Finland  | 122  | 130  | 131  | 137   | 142   | 105                |
| Northern Finland  | 65   | 74   | 74   | 78    | 81    | 52                 |
| <b>+ Subsidies, FIM/ha</b>  |      |      |      |       |       |                    |
| Whole country   | 21   | 23   | 20   | 23    | 23    | 24                 |
| Southern Finland  | 18   | 20   | 19   | 21    | 21    | 20                 |
| Northern Finland  | 27   | 29   | 23   | 26    | 27    | 41                 |
| <b>= Net earnings, FIM/ha (before taxes and external capital costs)</b> |      |      |      |       |       |                    |
| Whole country   | 567  | 622  | 595  | 670   | 710   | 422                |
| Southern Finland  | 754  | 822  | 791  | 890   | 940   | 545                |
| Northern Finland  | 184  | 211  | 193  | 210   | 230   | 176                |

Northern Finland = Oulu and Lapland provinces

Sources: Statistics Finland and Finnish Forest Research Institute (Metla)

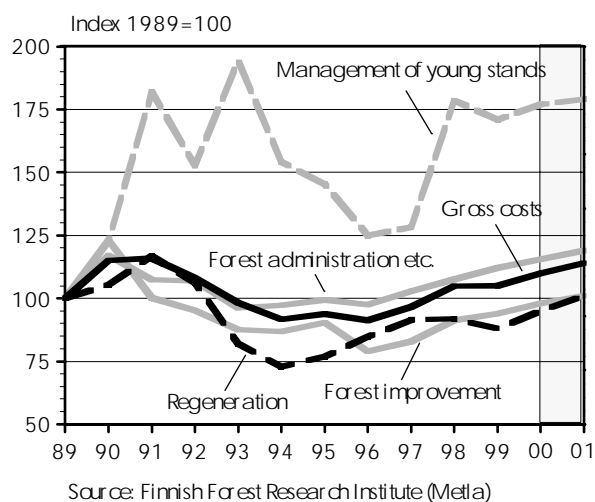
ings in Southern Finland have averaged more than FIM 900 per hectare, and in Northern Finland almost FIM 250 per hectare.

Income from commercial fellings has been an average of 91 per cent (1989–1999) of the recorded gross stumpage earnings for non-industrial private forestry; the remainder includes the estimated value of wood for household use and insurance indemnities. Income from sawlogs has constituted an increasing proportion of stumpage earnings in the 1990s, rising from two thirds to 70 per cent. Spruce has clearly become the most important species in terms of income from roundwood sales. Indeed, in the 1990s, income from spruce rose to over half of the total (54 per cent in 1999). The growth has been due to the high demand for spruce sawnwood and magazine paper.

Nothing is expected to prevent gross stumpage earnings per hectare rising this year and in 2001 to almost FIM 800. In Southern Finland the average gross stumpage earnings will exceed FIM 1000 per hectare. This will be achieved even if the growth in felling volumes is below the forecast production growth in the forest industry and with only a fairly modest rise in stumpage prices. The rise in the average stumpage price weighted by felling volume will be balanced by the increase in the proportion of cheaper thinning roundwood harvested.

### **Costs Set to Rise only Moderately**

The gross costs of timber production in non-industrial private forestry can be divided into four cost



*Real costs of non-industrial private forestry, 1989–2001f*

items: 1) regeneration (clearing the cutting area, soil preparation of the regeneration site, and artificial regeneration); 2) managing young stands (tending of seedling stands, supplementary planting and improving young stands); 3) forest improvement (pruning, fertilisation, ditching, and construction and maintenance of forest roads); and 4) forest administration (e.g. fees to local forest management association and other general costs incurred in administering forests (based on costs of the average reduction in site productivity tax)). The first three of the cost items are part of the total investment in timber production.

Costs are also divided into state subsidies and costs met by the forest owners themselves. This does not include the costs of borrowed capital, which in the case of forest improvement loans amounted to about FIM 35 million (FIM 2.6 per hectare) in 1998. The costs do, on the other hand, include the value of the work done by the forest owners.

The gross costs of timber production and administration in non-industrial private forestry amounted to an average of FIM 110 per hectare in 1999 for the whole country, of which one fifth was covered

by state subsidies (see table). In Southern Finland the costs totalled FIM 130 per hectare, and in Northern Finland about FIM 70 per hectare. In Northern Finland, one third of the costs was covered by state subsidies.

Forest regeneration and administration have been the largest cost items, each accounting for about one third of total costs. Comparison of the late 1990s with the years 1989–1991 reveals that management of young stands and administration have increased as a proportion of total costs, while regeneration and forest improvement have decreased.

The gross costs of non-industrial private forestry have risen since the mid-1990s (see graph), although in real terms their 1999 level was the same as in 1989. The expenditure on managing young stands has more than doubled because the backlog of seedling stand management has been cleared in response to the take up of state subsidies for the purpose. The increase in expenditure on this work will continue, as both the volume and per-hectare unit costs will probably rise. Artificial regeneration in areas of spruce-dominant final cutting will increase total regeneration costs.

Annual changes in non-industrial private forestry costs are significantly smaller than the annual fluctuations in income. Regeneration costs depend mainly on the fellings of previous years, whereas the amount, and therefore the cost, of young stand management and forest improvement is clearly influenced by the policy on state subsidies. Current statistical compilation does not allow the reasons for changes in actual administration costs to be fully identified.

### **Forest into Cash at Record Pace – Net Earnings Soar**

In 1999, the net earnings from timber production in non-industrial private forestry (gross stumpage earnings – gross costs + subsidies) amounted to



*Real net earnings for non-industrial private forestry, 1989–2001f, and as a proportion of gross stumpage earnings (net earnings share)*

approximately FIM 600 per hectare. In Southern Finland the net earnings, at FIM 797 per hectare, were four times the corresponding figure for Northern Finland, FIM 200 per hectare (see table). In the recession years 1991–1993, the net earnings from non-industrial private forestry plummeted to about half the level they had been at the end of the 1980s (see graph). They have since risen to a level considerably higher than in the previous cyclical peak, and the new century has begun with record net earnings: over FIM 700 per hectare for 2000. If the trend in the domestic and export markets continues as projected, the net earnings in Southern Finland will rise in 2001 to over FIM 1000 per hectare.

The net earnings share (net earnings/gross stumpage earnings x 100) has risen to an extremely high level, almost 90 per cent (see graph). The amount of gross stumpage earnings corresponding to the net earnings share can be invested in other activities than timber production.



## Featured Topics

### **Can the Business Cycles in the US Construction Industry be Used to Forecast Exports of Finnish Sawnwood?**

Anne Toppinen and Riitta Hänninen

The number of new housing starts in the United States has for decades been regarded as a good indicator in forecasting total exports of Finnish sawnwood. But is the linkage still there?

#### **1990s Growth in US Economy has Boosted Construction**

More than half of the sawnwood consumption in the US is destined for use in new construction, and a majority of the demand for sawnwood is met by domestic production. Almost all imported sawn softwood to the US, amounting to about one third of consumption, is from Canada. Canada is also an important competitor of Finland and Sweden on the European sawn softwood market. As Canadian exports to Europe are very sensitive to cyclical fluctuations in Canada's main market, the US, it is worth taking a closer look at the economic fluctuations in the US construction industry and at how these fluctuations are reflected in exports of Finnish sawnwood.

The upward trend in the US economy during the 1990s boosted housing construction. In 1997, the US construction industry consumed about 120 million cubic metres of sawnwood, and new construction accounted for over half of the country's sawnwood consumption. New housing starts in 1999 numbered 1.66 million. Consumption of sawnwood in the US has grown during the last 30 years by an average of

one per cent each year, but the trend in the number of new housing starts has been almost constant. The proportion of total sawnwood consumption used in new housing construction has fallen as consumption in repair and maintenance has increased. Use of OSB and MDF board has also increased in the 1990s, replacing sawnwood in construction.

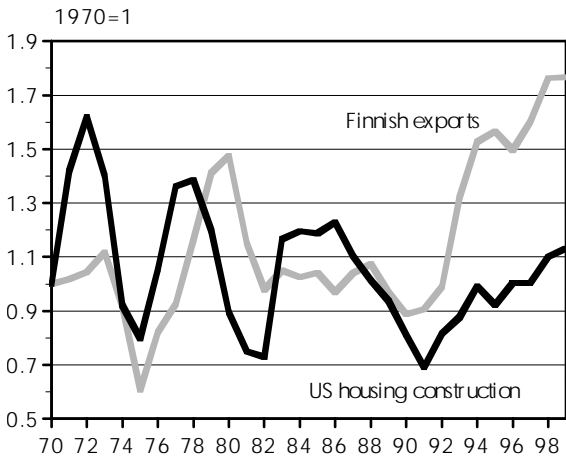
#### **A Change in the Link Between Finnish Sawnwood Exports and US Construction**

The graph below illustrates how, in the 1970s and 80s, the fluctuations in total Finnish sawnwood exports quite clearly followed the cyclical trend in US housing construction (as measured by construction of single-family houses), with a time lag of about one year. This pattern changed in the 1990s and the link between the markets has weakened. The ability to forecast total Finnish sawnwood exports on the basis of US construction activity has thus been impaired.

There are several reasons for the weakening of the connection. The reduction of supplies to Europe from Russia in the 1990s was the most important factor boosting export opportunities for Finnish sawnwood. Indeed, total exports of Finnish sawn softwood doubled between 1990 and 1999.

The boom in the US economy in the 1990s led to an increase in the need for imported sawn softwood. This was not only because of the increase in demand



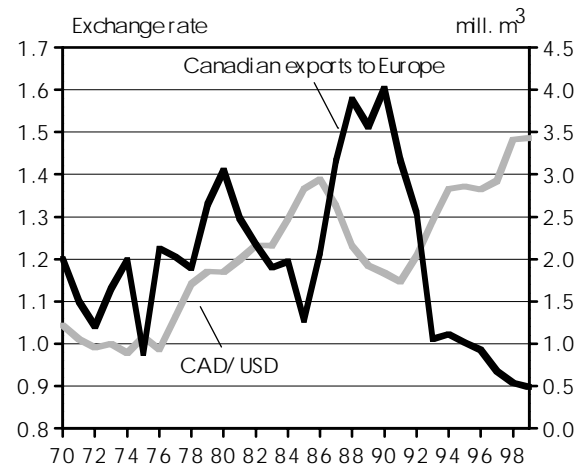


*Finnish sawnwood exports and the number of construction starts of single-family houses in the United States (1000 starts), 1970 = 1*

for sawnwood, but also due to a reduction in fellings to protect old-growth forests on the US west coast. The market share held by Canada in the US therefore grew considerably. Canadian exports to Europe have, correspondingly, declined since their record level of 4 million cubic metres in 1990 to about 0.5 million cubic metres in 1999. The proportion of Europe's imported sawn softwood originating from Canada thus fell during the 1990s from 14 per cent to less than two per cent.

Besides the level of demand in the United States, the orientation of Canadian exports may also have been influenced by short-term exchange rate fluctuations. Indeed, it appears that as the Canadian dollar weakened against the US dollar after the early 1980s, Canada's exports to the US grew in response to their increased price competitiveness. Simultaneously, Canadian sawnwood exports to Europe declined (see graph). As the Canadian dollar strengthened against the US dollar, the pattern was reversed: competition intensified on the European sawnwood markets as Canada increased its supply to Europe. Thus Canadian imports have also affected the equilibrium of sawnwood prices in Europe.

The structural changes that occurred on the European sawnwood markets following the dramatic



*Exports of Canadian sawn softwood to Europe and the exchange rate of the Canadian against the US dollar*

reduction in the supply from Canada and Russia in the 1990s have been more significant than exchange rates in influencing Finnish exports. US construction indicators can still be used in forecasting Finnish sawnwood exports, to the extent that they are used to illustrate the prospect of Canadian exports being directed towards Europe. The decline in the relative importance of the indicators during the 1990s must, however, be taken into account.

The slight reduction in construction activity in the United States in summer 2000 can be expected to increase the supply of Canadian sawnwood to Europe in 2001. However, the extent of this effect will depend on the price competitiveness of Canadian producers with respect to European producers.

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## What Do the Share Prices of Forest Industry Companies Tell Us?

Esa-Jussi Viitala

### Do Share Prices Anticipate Forest Industry Results?

If stock market investors acted rationally, the trend in the Helsinki Exchanges forest industry index would anticipate the performance of the three largest Finnish forest companies, UPM-Kymmene, Stora Enso and Metsä-Serla. So has this happened in practice?

A simple analysis shows that the index has anticipated the interim profits (before sales profits, extraordinary items and taxes) of the three companies quite well. The strongest indication has been for the profits of these companies six months hence. Correlations also suggest that investors tend to gaze into the near future: they attach greater weight to the next three interim results of forest companies than to their current performance.

In the first six months of 2000, however, the link between the stock market values of the forest companies on the Helsinki Exchanges and their anticipated profits appears to have been broken. Interest in the new technology companies and their growth expectations was at a peak during those months. Although the profit expectations in the forest industry were very good at the time, the HEX forest industry index fell significantly. It still remains to be seen whether this was an exceptional period or a permanent phenomenon.

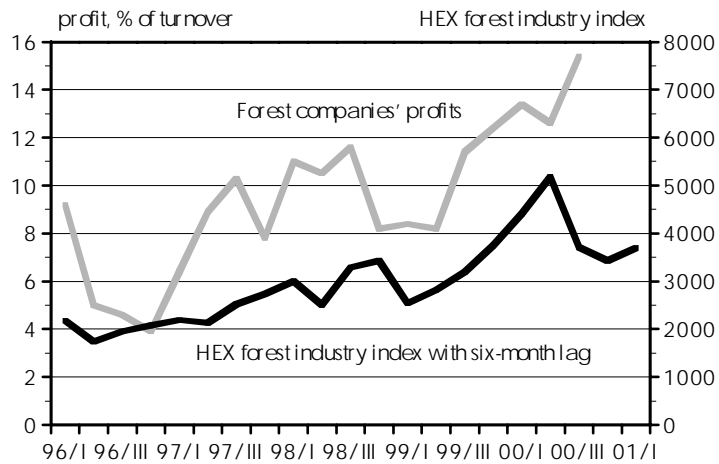
The excellent profit performance of the forest industry and the encouraging underlying trends in the sector are expected to continue over the next 18 months. If the above link is still firmly in place, it could be assumed that the share prices of Stora Enso, UPM-Kymmene and Metsä-Serla would rise, at least during the next few months.

### Are Forest Companies Undervalued on the Stock Market?

Determining the 'correct' level for forest company share prices is, of course, an entirely different matter. The P/E values of the forest companies, which describe a company's stock market value in relation to earnings per share, are currently amongst the lowest of all the sectors on the Helsinki Exchanges. The corresponding values for telecommunications companies are many times greater. Based on the P/E values, the forest industry is in the same category as the construction and transportation industries – and surpassed by, for example, the food industry and the metal and engineering industry. On the New York Stock Exchange, the average P/E value of forest companies this year has been about 10, compared to the average of 30 for all listed companies.

For investors, interest in the forest industry is influenced not only by the profit and dividend prospects for the near future but also by the companies' net worth, ownership base and the growth expectations for turnover and profits in the long term. The lacklustre trend in forest indices compared to the major stock exchange industrial and general indices is, in fact, partly due to the poor growth expectations associated with forest companies in relation to new technology companies.

Forest companies have, however, generally paid fairly high dividends compared to companies in other sectors and particularly the telecommunications sector. Although the Modigliani-Miller theorem popular in financial textbooks states that corporate dividend distribution policy should not influence the market value of companies, in practice this is not necessarily so when taxation and market imperfections are taken into account.



*Forest industry profits and the HEX forest industry index, 1996–2000*

UPM-Kymmene and Stora Enso have recently also practised a type of indirect dividend distribution policy by purchasing their own shares on the market and cancelling them. Whether or not this has been the best alternative from the shareholders' viewpoint is worth asking. In any event, considerable sums of money have been involved.

### How Risky are Forest Industry Shares?

In the short term, the stock market interest in forest industry companies is also dampened by the great fluctuations in their economic performance. Traditionally, a rise in pulp and paper prices has led to major expansion in capacity, which has then led to a collapse in prices. This has been reflected in the volatility of forest company share prices.

Although forest industry shares are often regarded as a risky investment due to the cyclical nature of the sector, this has not necessarily reduced their interest to investors with a broad portfolio. How closely the cycles in the forest industry follow the general economic cycles – i.e. how well forest industry shares can be used to spread the risks in the investment portfolio – has often been of more importance than volatility.

Neither can the volatility of forest companies necessarily be regarded as high. On the contrary, forest companies on the New York Stock Exchange, for example, have beta values of market risk which are quite low (0.3–0.8). Put another way, the standard deviation of forest company share prices is around 30–80 per cent of the market average. Beta values should nevertheless be approached with caution because a large fluctuation in the share price may also indicate that the company is being targeted for corporate acquisition or takeover, or is vulnerable to such a move.

The shares of UPM-Kymmene and Stora Enso appear to have the lowest market risk (0.33 and 0.43). This may be the result of their product range, but may also be because these companies have not been quoted long on the New York Stock Exchange. The beta value for the world's largest forest company, International Paper, is 0.50, a little below the figure for Weyerhaeuser, the world's biggest producer of sawnwood, at 0.67. The company that appears to have the greatest fluctuation in its share prices is Willamette Industries, which manufactures paperboard, sack paper, fibreboard and uncoated fine paper mainly in the United States. The world's largest newsprint producer, Abitibi-Consolidated, and

the mainly US-based Boise Cascade also have a risk level greater than other forest companies.

It has also been suggested (Sorjonen 2000) that Finnish forest industry shares are, in practice, risk-free from the viewpoint of investors with a broad euro area portfolio. This conclusion was based on a comparison of the standard deviation of Finnish forest company share prices with the Eurobloc 300 share index, which describes the trend for Europe's 300 largest quoted companies. This conclusion should, however, be treated with caution, because the period examined was quite short (from the start of 1999 to February 2000) and featured an exceptionally strong rise in share prices. The trend in the stock market general indices was affected by powerful price swings in the new technology shares, which perhaps made the riskiness of forest industry shares appear low. However, it is clear that a significantly lower risk is associated with forest industry shares than, for example, IT shares.

On account of their relatively low risk, forest industry shares are an attractive alternative especially for institutional investors with a large investment portfolio. On the other hand, to commit capital in this way requires the acceptance of a relatively 'low' return. Perhaps partly for this reason, the share price trend for forest companies in recent years has been rather subdued compared to the general indices on the stock market. In the early 1990s the general and forest industry indices of the big stock exchanges differed very little from each other. The turning point was in 1996, when forest company profits fell slightly. Since then, the Dow Jones Industrial Average has doubled, but the forest and paper industry index on the New York Stock Exchange has remained almost unchanged.

The index movement on the Helsinki Exchanges has become differentiated even further: the forest industry index has doubled since the start of 1996, but the HEX general index has risen seven or eight-fold, with the influence of Nokia, in particular. However, since early 1997, the trend in the weight-restricted HEX Portfolio Index, where the influence of individual companies (in practice Nokia and Son-

era) is limited to 10 per cent, has been only slightly above the forest industry index. In addition, it should be noted that the share indices for many other traditional 'smokestack' sectors have risen on the Helsinki Exchanges quite modestly in recent years, compared to the technology companies.

### **Concentration in the Pulp and Paper Industry Reduces Risk for Investors**

Concentration in the forest industry will continue actively over the next few years. With ever fewer companies in the sector controlling every greater market shares, control over capacity and prices may well be easier than before. Provided other factors remain unchanged, this should reduce the volatility or risk inherent in forest shares in the future. This could then be expected to induce a rise in the value of forest shares. However, if the capital markets operated efficiently, the effects of the concentration trend would already have been discounted, at least in part, in the forest companies' current value.

Concentration is also occurring in other sectors, and so the relative value of forest companies in relation to other listed companies will not necessarily change. The result will ultimately depend on which sectors can improve company profitability the most by increasing control over capacity and price, benefiting from economies of scale and combining product development and logistics. For forest and paper products, the question is largely one of price elasticity of demand and substitution amongst competing commodities. Both of these will continue to be of key importance in relation to the competition between printed and electronic communications, and the competition amongst different construction products.

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## Problems with Measuring the Profitability of Forestry

Esa Uotila

In forestry, the long time horizon for roundwood production and the role of the growing stock as both production machine and end-product make it difficult to estimate profitability. The value of capital employed (mostly growing stock) is substantial compared to income. On the other hand, expenditure used to obtain income is relatively low and the importance of depreciation and external capital is small in relation to most other sectors. Many business profitability indicators are poorly suited to forestry activities, and their interpretation must take into account the special features of forestry.

There are other factors involved besides business profitability in the decisions taken by forest owners and by policy-makers. Profitability is, however, the basis for sustainable timber production. The main considerations in measuring the actual level of profitability in forestry are presented below.

### Net Earnings – Absolute Profitability

The usual and simplest way of determining actual profitability is to do a balance sheet calculation, which identifies the absolute profitability for the financial period, or the difference (profit, surplus, net earnings) between income and expenditure. In forestry, the net earnings of timber production have traditionally been calculated by subtracting from the gross stumpage earnings the difference between gross costs and state subsidies. Calculation of profitability per unit area has a long tradition in Central Europe. In Finland, the per hectare net earnings in 1989–1998 before direct taxes and external capital costs were an average of FIM 420 (at 1999 prices); the range was from FIM 208 per hectare in 1993 to FIM 616 per hectare in 1998.

As a measure of profitability, net earnings is imperfect. It is largely dependent on stumpage earnings and takes no account of maximum sustainable removal or the amount of operating capital. It can be used to make internal profitability comparisons for forestry between different years and regions, but

comparison with other sectors is difficult. It really only gives a measure of long-term profitability in cases where fellings and the increment in growing stock correspond with each other (e.g. a so-called normal forest). Straightforward maximisation of net earnings would lead to excessive felling in relation to the needs of sustainable forestry and to cost minimisation. Profit would be made by selling forest capital and without concern for future fellings.

### Relative Profitability

Comparing income from operations against capital employed gives the percentage return, which is a general measure of relative profitability. In forestry, its use is hampered by the need to define the value of capital, i.e. of the growing stock and forest land. A solution is to multiply the estimated quantities of different types of standing stock by the actual stumpage price. This will overestimate the value of the growing stock because actual stumpage prices are based on harvested stock, which is, on average, more valuable than trees left standing. The value of land, on the other hand, is left out of the calculation completely.

The estimated value of the growing stock in Southern Finland in the years 1996–1998, which were part of the cyclical upturn, was approximately FIM 19 000 per hectare. For the same period the net earnings in forestry were about FIM 720 per hectare. On this basis, a return of 3.8 per cent before taxes and external capital costs was obtained for the capital employed in the growing stock. In 1991–1993, the worst years of the recession, the corresponding return was 1.8 per cent.

Estimating the relative profitability of forestry based on returns and capital does not, however, resolve the problem of taking account of sustainability. A simple way of quickly increasing the percentage return would be to overcut, thus increasing the numerator in the ratio, i.e. income, and at the same time to reduce the denominator, i.e. value of capital employed.

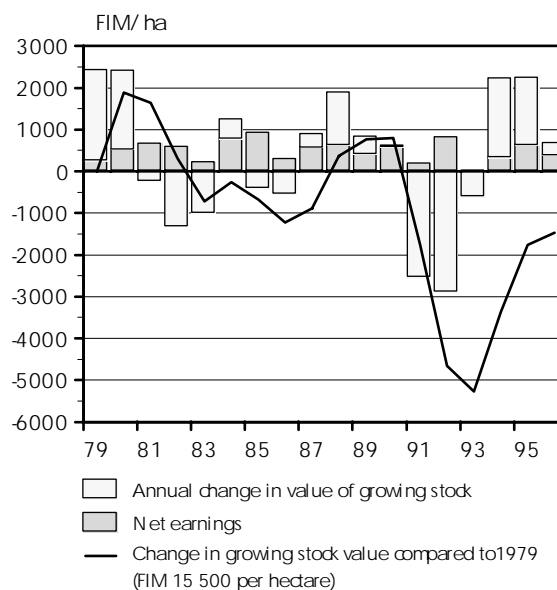
### Including Change in Value of Assets in the Calculations

A better picture of profitability is gained by looking at the changes in the value of growing stock capital, alongside the actual income and expenditure. The problem is that the annual fluctuations in stumpage prices are often so large that the actual income and expenditure in forestry are lost in the changes in value of the standing stock estimated on this basis. In analysing profitability, the annual fluctuation in the value of the growing stock, which is dependent on stumpage prices, can be reduced by using constant stumpage prices or moving averages. The traditional alternative to taking account of changes in the value of the growing stock capital is to examine only the difference between the planned cut and the actual harvests. This way the changes in the value of capital would be of the same order of magnitude as income from roundwood sales, but the profit would be related to a planned harvest defined on the basis of many factors, some of them subjective.

A profitability calculation method incorporating fluctuations in the value of growing stock has been developed based on both net earnings and a separate analysis of changes in volume and market prices affecting the growing stock value. This allows attention to focus not only on the profit and loss account but on the longer term trend and short-term fluctuations in growing stock value.

The graph illustrates a forest holding profitability analysis using both the profit and loss account and changes in the value of the growing stock. In this case, the forestry net earnings are positive in all years except 1993, although within the aggregated data the net earnings in Southern Finland are actually always positive. Inclusion of the value change in the growing stock improves the annual profit considerably in 1979 and 1980 and also in 1994 and 1995, but weakens it especially at the start of the 1990s.

Inclusion of the value change in the growing stock gives a more profound picture of the long-term profitability. In the period examined (1979–1996), the real value of the growing stock owned in the example holdings fell by about FIM 1500 per hectare. The combined net earnings for the period were



*Profitability analysis based on net earnings and changes in the value of the growing stock. The data is from the accounts for 12–15 forest holdings*

FIM 8500 per hectare, which means the inclusion of the growing stock value reduces the profit for the period examined by almost one fifth (17 per cent). Conclusions should not be drawn too hastily, however, as the analysis period chosen has a significant effect on the result.

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## **Changes in the Structure of Finnish Private Forest Ownership in the 1990s**

Heimo Karppinen, Harri Hänninen and Pekka Ripatti

Non-industrial private forest (NIPF) owners control 62 per cent of Finnish forest land. They provide around 80 per cent of the domestic roundwood used by the forest industry. Therefore up-to-date information on private forestry is of particular interest.

Since the end of the 1960s, private forestry has been in a state of transition. Changes in the ownership structure continued during the 1990s, in some respects at an increasing pace. Changes in the structure of ownership have traditionally raised the threatening prospect of diminishing supplies of roundwood, as forest owners become less dependent on regular forest income and the aims of forest ownership become more varied. However, studies conducted over the last ten years have concluded that the impact of changes in the ownership structure on the supply of timber has been only minor. The results presented here are consistent with those studies and are based on a nationwide postal questionnaire survey conducted by the Finnish Forest Research Institute (METLA) in 1999, in which responses were obtained from 4821 forest owners.

### **Fewer Farmers**

The main changes occurring in the structure of forest ownership have been a decline in the number of farmer owners; forest owners moving house to somewhere outside the forest holding; migration to urban areas; an ageing of the population of forest owners; and a growing proportion of female forest owners. Polarisation has also occurred in the size distribution of forest holdings, so that there are now a greater number of small and large holdings. The driving force behind these changes has been the changing economic structure of society, the exacerbation of regional development disparities, and migration pat-

terns within the country. Moreover, Finland's accession to the European Union has brought farmers many changes and imposed new requirements, which are also reflected in forest ownership.

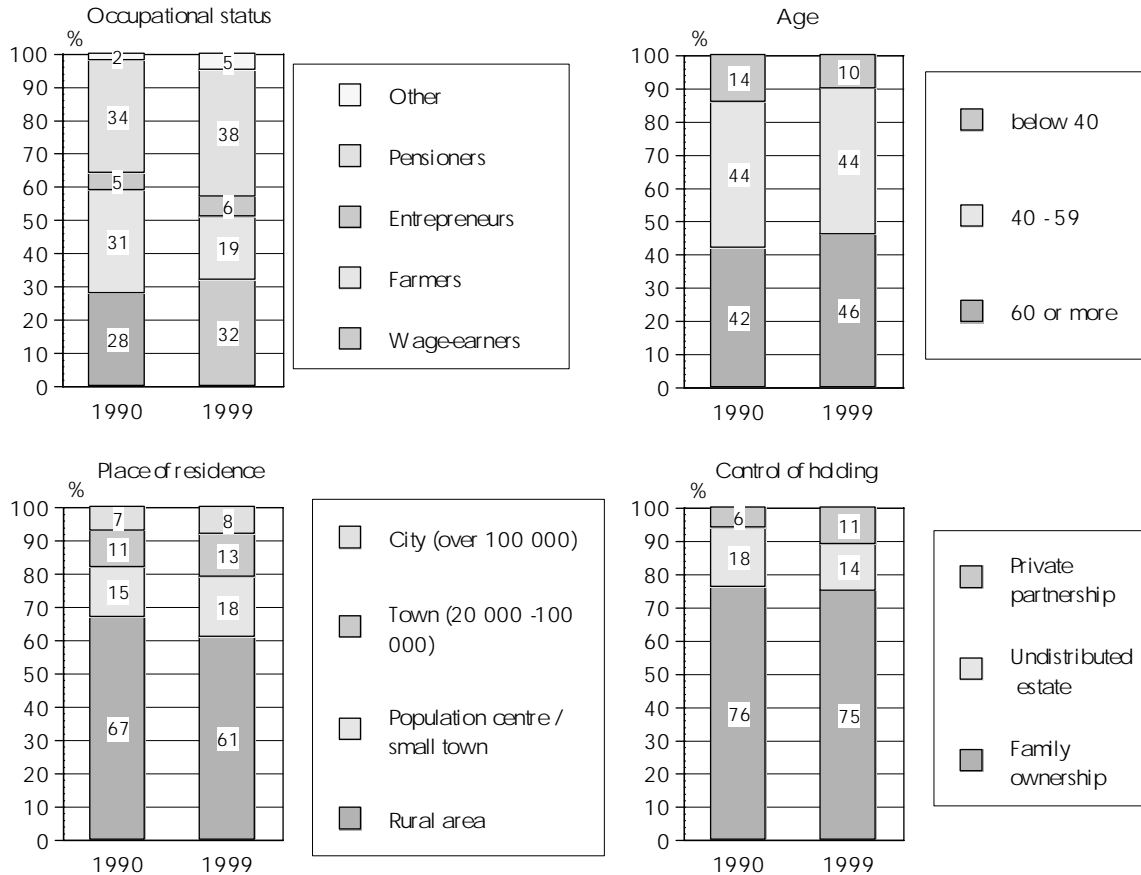
The proportion of forest owners who are active farmers declined during the 1990s from one third to one fifth (see graph). This is no surprise, as the number of farms has decreased as a result of EU membership, for example. However, farmers do still own almost one third of the total area of non-industrial private forests.

Forest ownership by wage-earners and pensioners has increased over the last ten years. Almost half of all forest owners are 60 years of age or more, and only one in ten is below 40. Indeed, the average age of forest owners has risen in the last ten years from 54 to 57.

### **Only One Fifth of Forest Owners Live in Urban Areas**

Public discussion on forest ownership has often exaggerated the proportion of forest owners who are town and city dwellers. In part, this has been due to a blurring of the definition of urban areas, as many rural municipalities have become towns. A further reason may be that the powerful rural-urban migration pattern of recent years has not affected forest owners to the same extent as the rural population at large. Despite the general move to towns and cities seen in Finland as a whole, 61 per cent of forest owners still live in sparsely populated rural areas, and almost one fifth live in a village or small town. Only 21 per cent of forest owners live in urban areas of more than 20 000 inhabitants.

Almost half of all forest owners still reside permanently on their forest holding, and almost one



*Trend in composition of forest ownership in the 1990s (% of owners)*

fifth live outside it but in the same municipality. Consequently, only one in three forest owners live outside the municipality of their forest holding.

### From Undistributed Estate to Private Partnership

The relative decline in holdings under family ownership came to a halt in the 1990s and has stabilised at three quarters of all holdings. An interesting change has occurred, however, in the proportion of jointly owned holdings which are managed by undistributed estates (i.e. by the heirs to a deceased's undistributed estate) and by private partnerships. Ownership in the form of an undistributed estate has increasingly often

been converted to a private partnership, which is perhaps desirable from a forestry viewpoint. An undistributed estate is not intended to be a permanent form of ownership and is sometimes a difficult one. Holdings managed by private partnerships already constitute almost as large a share of the total as those in the hands of undistributed estates.

The proportion of female forest owners has traditionally been rising along with changes in society at large. This trend has now levelled off and stabilised at one quarter of all forest owners. This proportion did in fact decline slightly during the 1990s, despite women's life expectancy being higher than men's and the rise in average age of forest owners. One explanation might be the increase in the proportion



of holdings turned into private partnerships which were formerly undistributed estates 'controlled' by widows.

### Change in Ownership Structure Will Not Reduce Timber Supplies

More timber per hectare is sold each year, on average, by farmers than by other occupational groups (see table). This was also the case in the 1980s, although to a lesser extent. It is probable that the rationalisation of farms has led to more efficient farming and forestry operations, and that forest income has been used to fund further investment in agriculture. Even if the already low proportion of farmer forest owners were to continue to decline, this would not seriously affect the supply of timber.

There is scarcely any difference amongst the other occupational groups in average sales volumes. Pensioners, for instance, no longer differ from wage-earners in this respect. The period analysed (1994–1998) was, however, one of economic boom, which may have evened out the sales differences between the groups.

An urban lifestyle has often been considered to signify a low dependence on forest income, which would be reflected in roundwood supply. However, forest owners living in cities and other built-up areas appear to have been selling even more timber than those living in rural areas. This is not surprising, because besides farmers actively engaging in timber trade there are also many wage-earners and especially pensioners living in sparsely populated rural areas.

Timber sales on holdings managed by undistributed estates are practically as high as sales on private partnership holdings and not far short of those on family-owned holdings. The increase in felling activity on undistributed estate holdings may be due not only to the prospering economy but also to the fact that many inactive undistributed estate holdings have been turned into private partnerships.

Earlier studies found that sales volumes fall as forest owners become older. The reasons may be the change in the owner's consumption patterns at different stages of life, and consumption differences

between generations. No conclusive explanation has yet been determined.

The effect of age appears to have remained unchanged during the 1990s: elderly owners sell less than middle-aged and younger owners. The fact that female owners are less active in felling than male owners is also expected. One explanation given for this is women's longer life expectancy than men's.

On the basis of timber sales behaviour in the 1990s, it cannot be concluded that changes in the

*Actual timber sales 1994–1998 and sales intentions 1999–2003, by forest owner group*

|                                   | Sales volume<br>1994–98<br>m <sup>3</sup> /ha/yr | Have sold<br>timber<br>1994–98<br>% of forest owners | Intend to sell<br>timber<br>1999–2003 |
|-----------------------------------|--|--|---------------------------------------|
| <b>Occupational status</b>        |  |  |                                       |
| wage-earner                       | 3.8  | 59   | 43                                    |
| farmer                            | 4.4  | 84   | 69                                    |
| entrepreneur                      | 3.7  | 56   | 43                                    |
| pensioner                         | 3.7  | 60   | 30                                    |
| other                             | 3.7  | 54   | 35                                    |
| <b>Place of residence</b>         |  |  |                                       |
| rural area                        | 3.7  | 68   | 49                                    |
| population centre /<br>small town | 4.0  | 58   | 38                                    |
| town (20 000–100 000)             | 4.3  | 58   | 36                                    |
| city (over 100 000)               | 4.1  | 56   | 32                                    |
| <b>Control of holding</b>         |  |  |                                       |
| family ownership                  | 3.9  | 67   | 45                                    |
| undistributed estate              | 3.7  | 54   | 37                                    |
| private partnership               | 3.8  | 61   | 41                                    |
| <b>Age</b>                        |  |  |                                       |
| below 40                          | 4.2  | 69   | 57                                    |
| 40–59                             | 4.0  | 66   | 51                                    |
| 60 or more                        | 3.7  | 62   | 34                                    |
| <b>Sex</b>                        |  |  |                                       |
| male                              | 3.9  | 68   | 49                                    |
| female                            | 3.7  | 52   | 26                                    |
| <b>Overall</b>                    | 3.9  | 64   | 44                                    |

structure of forest ownership have had the effect of decreasing the supply of timber. It should be noted, however, that the analysis period was one of economic boom.

### Enthusiasm for Timber Sales Fading?

Two thirds of forest owners sold timber from their holding at least once during the period 1994–1998, but less than half of all forest owners intended to sell timber during the next five year period, 1999–2003 (see table). The same declining trend is evident in all owner groups. Amongst farmers, however, as many as four in five had sold timber in 1994–1998 and two in three intended to do so in 1999–2003, which is a higher proportion than for the other occupational groups. Most pensioners intended not to sell, even though they had earlier sold timber to the same extent as wage-earners. On forest holdings in the possession of undistributed estates, the projected sales frequency was only slightly below the average. The male-female difference in timber sales will probably further widen in the future.

Both actual and intended timber sales were greater on forest holdings subject to site productivity tax, regardless of the ownership group, than on holdings subject to sales revenue tax. In other words, in

all ownership groups there is an attempt to take advantage of the change in the taxation system during the transition period 1993–2005.

Although the evaluations made by forest owners themselves indicate that they will not be doing as much business on the timber markets in the early years of the new century as in the late 1990s, the continuing high level of timber sales in 1999 and in the current year suggest that forest owners may have underestimated their future timber sales.

### Sources

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## Accuracy of Forecasts for the Years 1994–1999

*The Finnish Forest Sector Economic Outlook* was first published in autumn 1991, under the name *The Finnish Forest Sector Review* (in Finnish only). The publication has since appeared every year at the end of October in Finnish, and in December in English (since 1998). The first issue mainly focused on the year's trends so far and contained no actual forecasts for the following year. Over the years, increasing attention has been paid to forecasting, and absolute numerical forecasts have been prepared for the following year.

Below is an analysis of how accurate the forecasts of a numbers of key variables have been over the last six years (1994–1999). The forecasts for the

following year (Jan-Dec) have always been made on the basis of the information available at mid-October. In practice, the forecast horizon has therefore been 1.3–1.5 years ahead, depending on the latest publication date of the data used in a particular forecast.

The table presents two key statistics for comparison. The first of these is the absolute value of the forecasting error (deviation) as an average over the six-year period. The smaller this value, the better the forecasts have been. For instance, the value of 4.5 per cent for the stumpage price of spruce sawlogs indicates that the forecasts of the following year's stumpage price made during the last six years has

*Forecasting errors for selection of key variables, 1994–1999*

| Variable   | Absolute value of forecasting error, average (%) | Accuracy of forecasting the direction of change (% of forecasts) |
|--|--|--|
| 1. Sawnwood production (m <sup>3</sup> )                           | 9.1  | 67   |
| 2. Paper production (tonnes)                                       | 7.2  | 67   |
| 3. Unit price of sawnwood exports (FIM/m <sup>3</sup> )            | 10.4   | 50   |
| 4. Unit price of paper exports (FIM/tonne)                         | 7.5  | 33   |
| 5. Capacity utilisation rate of paper and paper-board industry (%) | 4.9  | 33   |
| 6. Capacity utilisation rate of sawnwood industry (%)              | 5.6  | 33   |
| 7. Stumpage price for spruce sawlogs (FIM/m <sup>3</sup> )         | 4.5  | 67   |
| 8. Stumpage price for pine sawlogs (FIM/m <sup>3</sup> )           | 1.7  | 100  |
| 9. Stumpage price for spruce pulpwood (FIM/m <sup>3</sup> )        | 3.2  | 83   |
| 10. Stumpage price for pine pulpwood (FIM/m <sup>3</sup> )         | 4.6  | 50   |
| 11. Commercial fellings (1000 m <sup>3</sup> )                     | 4.1  | 100  |

deviated from the actual stumpage price by an average of 4.5 per cent. The second statistic presented is the success in forecasting the direction of change. For example, the figure of 67 per cent indicates that for four out of the six forecast rounds, the direction has been correctly predicted. Correspondingly, a figure of 50 would indicate that the direction of change has been forecast incorrectly as often as it has been forecast correctly.

The figures in the table show that stumpage prices and commercial fellings have been forecast most accurately of all. The forecasting errors are relatively small and the direction of change has, on average, been forecast quite well. The stumpage price for pine sawlogs and the direction of change for commercial fellings have always been forecast correctly. Most difficult of all, as expected, has been the forecasting of the export prices for forest industry products. The changes in markka-denominated export prices depend on many factors which are difficult to predict, such as exchange rates. The average forecasting error has been highest for the unit price of sawnwood, at about 10 per cent. This result is also somewhat expected, as the business cycles in saw-

milling are greater than for the paper industry. Although the change in the capacity utilisation rate for the different sectors has been forecast correctly only one time in three, the forecasting error has been relatively small.

A more extensive analysis than presented here indicated that for some variables there has been a small systematic forecasting error. The *Economic Outlook's* forecasts have, for the most part, been a little too pessimistic regarding production and exports of sawnwood and plywood, exports of pulp, and stumpage prices for sawlogs. Only the stumpage price of birch pulpwood has incorporated a small systematic overestimation.

It would also be interesting to compare these forecasts with those made by other institutions. Unfortunately this is rather difficult to do, because the other institutions (e.g. Pellervo Economic Research Institute (PTT), the Research Institute of the Finnish Economy (ETLA), the Ministry of Finance, and the Finnish Forest Industries Federation) have not produced forecasts for the forest sector to the same degree of detail and/or as systematically.

# **'The System of Forecasting Business Cycles in the Forest Sector'**

**A research project of the Finnish Forest Research Institute (METLA)**

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## **Project tasks**

- To produce the *Finnish Forest Sector Economic Outlook*
- To develop models for forecasting exports of Finnish forest industry products
- To develop forecasting models for roundwood markets
- To produce market reviews on the forest sector
- To develop and maintain the MESU database

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