Contents

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The Annual Report 2001 for the Research Department of Statistics Norway presents the main fields of research in 2001 with complete lists of publications and staff. The Annual Report also gives a brief history of the Department and its role as a social and economic research institution. The Research Department as presented in this report, includes the Social and Demographic Research Unit which administratively is placed in another department in Statistics Norway than the Research Department. Other research activities within Statistics Norway are not included in this report. The reasons for this line of division are partly historical and partly due to the fact that the Research Council of Norway uses this definition of what constitutes a research institute within Statistics Norway.

The Research Department welcomes interest in our publications and activities in general. We are happy to provide information as well as publications to both individuals and institutions. Some of our publications, such as Discussion Papers, Economic Survey and Statistical Analyses, are available free at our website at www.ssb.no (English site: www.ssb.no/en). All paperpublications can be ordered from our Sales and subscription service or via Internet. Our website is also updated with other information about the research activities at Statistics Norway.

Oslo, April 2002

Ådne Cappelen
Head of Research Department

Brief history of the Research Department

The research activities of Statistics Norway have roots far back in the history of the institution. The statistical bureau of Norway was founded in 1876 by separating a small statistical office from the Ministry of the Interior.

The first Director General of Statistics Norway, Anders N. Kiær (1876-1913), took an active part in the international statistical cooperation and was a pioneer in the use of representative samples as a basis for statistics, especially with regard to income statistics. The research activity of Statistics Norway in the early years was modest and mostly related to analysis of data from the population census and income statistics. Later on after the turn of the century, statistical investigations of social issues and poverty conditions became an important area of research. After World War I Statistics Norway started to publish regular economic surveys.

A separate Research Department was not established, however, until 1950. In the years just preceding 1950 intensive efforts had taken place in establishing National Accounts, based on production statistics as the primary data source. The pioneering national accounts work of this period was an empirical research frontier which later would provide a basis for macroeconomic modelling and other planning and policy oriented tools. The national accounts system was completed in the early 1950s. At that time as one of very few, which integrated detailed annual input-output tables within the national accounting framework.

During the 1950s the research activities of the Research department comprised in addition to national accounts, tax research, monthly and annual economic surveys, and other research activities often directed towards improving methods of economic planning in the postwar period. Towards the end of the 1950s the first macroeconomic model of Statistics Norway – the MODIS I model – was developed as a simple input-output model, but large in relation to the computer capabilities of the time.

Throughout the 1960s and 1970s models of the MODIS family, ever increasing in size continued to be developed and used intensively by policy makers. In addition, applied general equilibrium modelling was included as an important research activity. The 1960s also initiated an era of computer based tax models run by the Research Department as a service directed primarily towards the Ministry of Finance and the Storting (Parliament). Around 1980 a new breed of macroeconometric models were finally developed.

In the 1970s natural resource accounts and energy economics became new adopted research fields, later on after 1980 petroleum economics followed. During the 1980s and even today, a major emphasis is placed on developing microsimulation models, combining advances in computer technology, econometric methods, and data availability. These models are useful vehicles for the analysis of societal change as a result of demographic development, economic growth and government policy.

In its present form, the Division and Demographic Research was established in 1991 as a separate division for research activities within the Department of Social Statistics. In a historical perspective, however, the present unit continues a more than 100 year long tradition of social and demographic research within Statistics Norway.

Statistics Norway celebrated its 125th anniversary in 2001. This milestone has spurred studies of the history of our institution and the relation between statistics and society by economic historians.

General research objectives

The general objectives of the research activities within Statistics Norway are fourfold:

Enhanced empirical knowledge
Statistics alone is an insufficient source of information for understanding social and economic development. Analysis of statistical data by means of relevant theory and analytical methods and the use of models give empirical insight and deeper understanding of the phenomena under consideration.

Analytical tools for monitoring economic and environmental development
An important use of empirical insight gained is embodied in the design of tools for government planning, usually in the form of simulation models. Modelling activities are carried out in close contact with user interests and with emphasis on government planning needs.

Feed-back to the statistics
Researchers in the Statistics Norway have a unique position close to the sources of data. This provides special opportunities for exploitation of the data expertise in Statistics Norway, for special organization of data material and links to other sources, and for influencing methods of collection of primary data. The analytic use gives feed-back effects to the statistical work and may improve the quality of official statistics.

Cumulating competence
Adequate expertise and scientific competence are obvious prerequisites for successful performance of research tasks. The research activity shall give results that can be utilized in the Norwegian society and provide documentation to secure that high scientific standards in the analyses have been maintained.

Main findings 2001

Several studies conducted on U.S. data, have found strong income responses to changes in net-of-tax rates. Similar to the U.S. Tax Reform Act of 1986, the Norwegian tax reform of 1992 entailed substantial increases in the net-of-tax rate for high-income earners. We have derived estimates of the elasticity of taxable income with respect to these tax rate changes. Our estimates of the elasticity of taxable income with respect to the net-of-tax rate range between -0.6 and 0.2, substantially lower than similar estimates on U.S. data.

Several types of labour supply models have been developed and estimated with focus on models for discrete/continuous choice over time. The main findings are that labour supply wage elasticities in Norway are much lower than found in similar studies conducted previously (with Norwegian data).

The inheritance tax have been discussed, focusing on efficiency issues and distributional effects. There are loopholes in the current system, and if there is reluctance to close these, one should consider to abolish this type of taxation.

A micro simulation model for welfare analysis of direct and indirect taxes has been applied in cooperation with the Ministry of Finance in their White papers to the Parliament (Storting). The effects of changes in the tax system on the distribution of standard of living are presented in decile tables and inequality and welfare measures. Direct and indirect taxes are ranked according to their distributional efficiency. The ranking is robust to many changes in assumptions and data sets.

An empirical study examining the dispersion of total consumption between households in the period 1975-1995, found that consumption inequality among households did not increase in the early 90s in Norway. In fact, if anything, inequality seemed to decrease after the comprehensive tax reform of 1992. The finding is thus a useful supplement to studies of income inequality.

An analysis of the significance of owner-occupied housing for the overall distribution of income in Norway found that the imputed rent on owner-occupied dwellings is more or less proportional to net income, and thus contributes positively to inequality in consumption opportunities. The tax-system reduces the user cost of owner-occupied housing capital by about 50 per cent.

Preliminary analysis of fiscal competition between local governments find that household and firm mobility influence local government service allocation and taxation. Local governments with high household mobility tend to shift spending towards areas that are important for household location decisions, from care for the elderly towards day care. Local governments experiencing high firm mobility tend to charge lower fees.

Based on disaggregated data from a new common national accounting standard, we find that part of the productivity growth differential between Norwegian and Swedish manufacturing in the 1990s reflects differences in manufacturing structure. Sweden has a higher proportion of manufacturing industries with very strong productivity growth, primarily the telecommunication industry. Productivity growth in Norway is dominated and reduced by developments in the industries Food products, beverages and tobacco, and Publishing and printing. Productivity growth differential between Norwegian and Swedish manufacturing is virtually eliminated when adjustments are also made for the countries' differing manufacturing structure.

The existence of *forward-looking behaviour in export price formation* was studied based on Norwegian national account data and a new testing procedure. According to the study, there is no evidence that forward-looking behaviour is important in this area. We find that export price behaviour has remained stable despite that monetary policy in Norway has moved from a fixed to a floating exchange rate regime, completed with the introduction of inflation targeting in 2001.

Using a *large scale macroeconomic model* we compare the effect on labour market *mismatch* and *educational premiums* of two different ways to carry through expansionary fiscal policy. Increased public spending tends to decrease unemployment for highly educated workers more than for workers with less education. Thus both mismatch and educational premiums increase. A reduction in the level of VAT has the opposite effect

Analyses of the performance of local labour markets in the Nordic countries show that the self-sufficiency of local vacancy filling tends to increase in upswing periods and decrease in recessions. Norwegian regions differ, however, from regions in other Nordic countries, showing lower rates of self-sufficiency in the more central labour markets compared with smaller regions. In general, there is higher job-migration and higher educational level of job-migrants in Norwegian regional labour markets than in Finland and Sweden.

The *output and inputs of the Norwegian higher education sector* was estimated by using a methodology introduced by Dale Jorgenson and Barbara Fraumeni. The estimates are derived from the increase in discounted lifetime income attributable to one year of higher education. The estimates of inputs include the opportunity cost of students' time. If non-market income is included in the output measure, the aggregate social value of human capital investments in higher education in 1995 is estimated to NOK 73 billions, more than five times higher than the corresponding cost-based figure reported in the Norwegian national accounts. Excluding non-market income, the estimated output is NOK 49 billions.

An empirical study of the economic returns to labour market experience and firm-specific seniority finds that more educated workers have higher experience and seniority premiums, indicating that they learn more on the job. Thus formal education and on-the-job learning are complements rather than substitutes. Earnings differentials by education are found to be smaller, all else equal, for younger cohorts. This finding appears to be driven by changing selection patterns into education over time, and not declining quality of education.

The Norwegian residential electricity consumption increased by an average of three per cent annually during the period 1976-1993. Nearly half of the growth is due to an increase in the number of households, while the remainder reflects an increase in average consumption per household. The increase in average consumption per household is due to an increasing number of households possessing electric household appliances, an increase in real disposable household income and in the floor space of dwellings.

An analysis of the short-term price sensitivity within the Norwegian and Swedish power markets shows price elasticities of the magnitude -0.02 to -0.05. The results are based on a simultaneous model approach including supply and demand equations and weekly data for the period 1996:1 to 2001:26. We find lower short-term price sensitivity for Swedish electricity users. This result may be explained by the fact that a large fraction of Swedish end-users buy electricity at fixed contractual prices.

A study of the Norwegian national wealth during the last 70 years shows that the value of human capital has clearly dominated wealth. Except for the petroleum wealth, which was highly valued in the early 1980's, the resource wealth has only constituted a minor share of the total wealth. The study further shows that the value of the national wealth has been very much dependent on the expectations of technological progress in the overall economy. Consumption levels have in general been significantly below the permanent income from the national wealth.

Induced technological change affects the optimal choice of environmental policy. If there are spillover effects from technological progress, e.g., through learning by doing, subsidies in addition to environmental taxes may correct market failure. However, it may be difficult to find the appropriate technology to subsidize, and subsidies to one technology may destroy the possibilities for yet untried technologies. Consequently, environmental taxes may be preferable. Environmental taxes may be differentiated in order to stimulate learning effects in industries with spillover effects.

Studies of consumer behavior find that consumers judge outdoor equipment as an item they are willing to pay relatively more for as they become richer. Since purchase may indicate usage, it may reveal that consumers in the future will purchase and use outdoor equipment that reduces the quality of environmental amenities. Also, since purchase in effect uncovers a lower bound for willingness to pay for one factor in the production of outdoor experience, it may indicate that households in the future also are willing to pay for the other input, environmental amenities.

The concept of emission minimizing consumer prices is defined as a price vector that minimizes direct and indirect emissions from consumption, given the standard of living of a representative consumer. The greenhouse gas emission minimizing consumer prices implies a 27% reduction in greenhouse gas emissions. This measures an upper limit for emission reductions through changes in the composition of consumption, given emission intensities for each commodity and constant standard of living.

Stochastic population projections have found that there is an 80 per cent chance that Norway's population, now 4.5 million, will number between 4.3 and 5.4 million in the year 2025, and 3.7-6.4 million in 2050. The probabilistic population forecasts of the youngest and the oldest age groups show largest uncertainty, because fertility and mortality are hard to predict. As a result, prediction intervals in 2030 for the population younger than 20 years of age are so wide, that the forecasts are not very informative. In 2050, uncertainty intervals are very large for virtually all age groups.

Analyses of single parents' labour market participation show great differences between the employment structure of single parents and married or cohabiting parents. The strong increase in the employment of mothers with small children during the last twenty years has not been accompanied by a corresponding increase among single mothers. Throughout the entire period the unemployment rate of single mothers and fathers has been significantly higher than for married and cohabitant mothers and fathers. The labour market participation of single mothers as well as fathers is characterised by their great vulnerability to changing economic cycles in the labour market. While amendments in welfare benefit regulations appear to have marginal effects on labour market participation.

A pilot project using register data shows that approximately 80 per cent of children born outside marriage have cohabiting parents. The project also shows that cohabiting couples with children are rather unstable. Over a period of one year 8 per cent of these couples married and 6 per cent separated. About one third of all children who experience a family break down have parents who lived together without being married.

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The Division for Public economics provides analyses within the following research areas: 1) Analyses of the effects on private incomes and public revenues from taxes and transfers, 2) Analyses and projections of household composition, labour force, education and social security, and 3) Analyses of regional economics and local government expenditures. The studies are mainly based on Statistics Norway's micro data and consist of econometric analyses as well as developing and utilising micro simulation models. To analyse labour market imbalances, regional development and local government expenditures, macro models are also used. Different ministries are the main users of the analyses, and the Division has for many years had the responsibility for providing the Ministry of Finance and the Storting (Parliament) with analyses of taxes and the social security system.

Taxes and transfers

Our major tool in analyses of personal income distribution and effects on public revenues from changes in the tax system has traditionally been the tax-benefit model LOTTE. This model is a static microsimulation model based on a sample of detailed income tax returns for about 40 000 individuals, with additional information from administrative registers and interviews. The individual records can be aggregated to households and married couples, and the results can be weighted in terms of consumption units. For any change in the tax system the model simulates tax revenues, disposable incomes, and average and marginal tax rates for individuals and households. Model results comprise effects on tax revenues and income distribution of specified policy changes. The model is extensively used by the government, especially the Ministry of Finance, and by the Storting (Parliament).

The LOTTE-system also includes a tax law module that is used to calculate taxes, disposable incomes, marginal tax rates etc. for households with given characteristics. The model system also includes a module for indirect taxation, which makes it possible to analyse the effects of direct and indirect taxes simultaneously. Last autumn micro simulation results based on the model were presented in a White Paper (St. Prop. nr. 1 2001-2002) from the Ministry of Finance for the first time.

Development of labour supply modules for simulations of behavioural effects of changes in taxes and transfers is another important field of research. These studies emphasize that non-pecuniary benefits might be at least as important as hours of work for individual behaviour in the labour market. It is assumed that households choose from a finite set of job "packages", which are characterised by wage rate, (offered) hours of work and non-pecuniary attributes. Three projects apply this framework, one baseline model and two more complex ones. One of the sophisticated models also includes the choice of childcare arrangements in the mothers' decision making framework. This model is currently employed in an evaluation of a recent reform of the transfer system for families with children - the home care allowance reform. Another model considers that preferences for working hours might be correlated over time. The estimation procedure applied in this project allows unbalanced panel data sets.

According to official figures the inequality in post-tax income increased in Norway in the period 1991-99. This period was initiated by a major reform in the personal income tax in 1992, which also included substantial tax reductions at high income levels. In one project we have derived results that indicate that the behavioural response to the reform is small. In another project we discuss whether the tax reform and other subsequent changes in the tax system have contributed to the widening of the income distribution 1991-99, or that reduced taxes and rising inequality is merely a coincidence. Various micro based sources of information are employed to discuss this issue.

Documentation: SA 45, REP 2001/5, 2001/32, DP 284 (2000), 287 (2000), 308, Reprints 197, ØA 2/2001, [4], [10], [35].

Population, education, labour market and social security

Analyses and projections of household composition, labour force, education and social security are centred around the MOSART model. MOSART is a dynamic cross-sectional stochastic microsimulation model with the calendar year as time unit. The model starts with a one-percent representative sample of the Norwegian population in 1993 based on administrative data, including public pension entitlements in the form of annual labour market earnings since 1967 when the current social security system was introduced. The life span of each individual is simulated with respect to migration, death, births, household formation, education, labour supply and income, disability pension and retirement. Public pension benefits are calculated from the simulated life courses, and the current version of the model also includes a simple simulation of income and wealth in general, taxes, transfers, savings and inheritance. The model simulates the entire population for one year, before entering the next year, enabling inter-personal relations and external constraints on the number of events in the simulation. The length of the projection period depends on the purpose of the analysis, usually lying somewhere between year 2010 and 2060. The MOSART model is extensively used by government ministries, especially The Ministry of Finance, in analysing long-run developments in the labour force, public disability and old age pension schemes.

Work continued on a project seeking to see whether relatively two simple OLG-models can supplement the projections made by the MOSART model. In MOSART changes in the economy are exogenous, while in an OLG-model they are explicitly modelled as the result of optimising agents. One model looks at the effect on economic growth of having an expanding health sector with low productivity growth, and the other looks at the effect on growth of education and fertility. Both models will be calibrated against historical data and the working of the models will be illustrated using simulations.

A new project analysing the impact of technological progress for reductions in number of jobs and the decision to withdraw from the labour market among elderly workers, was started during 2001. The aim of the project is to analyse whether technological progress may explain the decision among elderly workers to get an early pension and to identify the characteristics of persons who choose to withdraw from the labour market before the formal pension age at 67.

In order to analyse the possibility of disequilibrium in different segments of the labour market a simple submodel to the macroeconometric model MODAG and the microsimulation model MOSART is established. In this model supply and demand for different kinds of labour by education are compared by using the number of persons as the unit of measurement. To analyse labour market imbalances in the health and social welfare sector in more detail, a special model is constructed giving projections for supply and demand for 18 professional groups. A corresponding model is constructed for the educational sector to analyse labour market imbalances for four groups of teachers.

Documentation: SES 101 (1998), ØA 2/2001, 6/2001, [37].

Regional economics and local government expenditures

The regional macroeconomic model REGARD is used to support the analyses and projections of the development in regional labour markets and migration. The present economic part of the model is a simple submodel to the macroeconometric model MODAG where national figures for gross production, gross investments and employment in 28 industries are distributed to 19 counties by coefficients from the most recent regional national accounts from 1997. A demographic model block takes care of internal migration and labour force participation. The model provides projections of labour market imbalances, illuminating the implications for regional employment, labour force and population growth of a given macroeconomic scenario and from changes in economic policy. In 2001 the model was used in the preparation of economic surveys for two Norwegian regions. The model was also used in regional analyses for the Norwegian government long-term programme (2002-2005) and for a report to the Parliament regarding regional policy.

A research project, "Educational strategies for territorial competitiveness", investigating regional labour market mobility patterns and performances in Nordic countries was completed in 2001 by cooperation with researchers in Finland, Iceland and Sweden. The main approach has been to make comparative analyses of the performance of some local labour markets based on gross-stream data.

Three new projects on labour market mobility started up in 2001. A project investigating urban development in Norway with special focus on labour market mobility within and between cities and regions is included in the Norwegian Research Councils' programme "Urban development - driving forces and planning challenges". Another project investigating local tax policy, competition and mobility across municipalities is started as a cooperation project with NTNU in Trondheim. This project is included in the Norwegian Research Councils' Tax research programme. Finally a project "International comparisons of local labour markets and policies" is established by cooperation with a Nordic project group and researchers from The Netherlands, Spain and United Kingdom. All projects continue in 2002.

In analysis of local government production a macro model MAKKO is used to project employment and the number of clients in local public services in Norway. At the aggregate level, MAKKO contains submodels for services provided by local governments, like kindergartens, primary and secondary education, health care and care for the elderly.

A microeconomic model KOMMODE has been developed to analyse the fiscal behavior of local governments. A linear expenditure system has been applied to the estimation of price and income elasticities for eight service sectors. The econometric model treats budget deficits and expenditures in different service sectors as endogenous variables. Moreover, the model accounts for heterogeneity in local tastes and production costs. A number of projects that applies KOMMODE in analyses of income distribution, efficiency and economies of scale are in progress. The model has also been applied to derive a classifications of municipalities.

A project on the distribution of local government services was in progress in 2001. To measure the value of public services we develop a method that accounts for variation in unit costs and the state of health in each local jurisdiction. Moreover, we utilize client statistics as the basis for imputations of the value of services that is allocated to each local resident. Preliminary results show that the distributional profiles vary across different types of services.

In a PhD project fiscal competition between local governments is in focus. In the first analyses, local government decisions are analysed dependent on local mobility conditions. We have gathered a database that allows various descriptions of mobility for households and firms, and included mobility indicators at the municipal and regional level, together with the traditional economic, demographic and political variables.

Documentation: REP 2001/27, 2001/35, NOT 2001/6, 2001/19, ØA 5/2001, [38], [41], [47], [62], [66].

Hedonic price indices

The project "Price indices for capital goods - part 2" was almost finished in 2001, and a report will be published in the beginning of 2002. The primary aim of the project has been to study what methods are suitable for estimating indices for capital goods. Six particular products have been selected to represent these kinds of goods. A market analysis for each of these products is completed. However, data collection has been difficult and time consuming. Therefore the actual estimations of indices are only done for washing machines and PCs. The analysis is promising, especially when the hedonic method was used. Data collection and the estimations will continue in a new project in co-operation with Eurostat.

Documentation: [58].

Staff

Stølen, Nils Martin, Senior Research Fellow, Director of Research

Andreassen, Leif, Research Fellow
Benedictow, Andreas, Economist*
Eriksson, Bengt, Economist
Fjærli, Erik, Research Fellow
Fredriksen, Dennis, Research Fellow
Hansen, Kirsten, Adviser
Hussein, Mohamed Farah, Computer Scientist (EDP)
Kornstad, Tom, Research Fellow
Langset, Bjørg, Economist
Langørgen, Audun, Research Fellow
Lian, Bård, Adviser (EDP)
Madsen, Hilde, Computer Scientist (EDP)*
Rønningen, Dag, Economist
Solli, Ingeborg Foldøy, Economist
Stambøl, Lasse S., Research Fellow
Texmon, Inger, Adviser
Thoresen, Thor Olav, Research Fellow
Åserud, Erik Remy, Economist

* on leave

An important objective of the Research Department the last two decades has been to develop and apply models to analyse the interactions between economic development, energy extraction and use, and environmental consequences. In the last five years we have focused on the functioning of a deregulated Nordic electricity market and the development of a European gas market. Consequences for Norway following the implementation of instruments to restrict the emissions of greenhouse gases according to the Kyoto Protocol have been studied in various analyses. Methodological issues concerning valuation of the environment and calculating the petroleum wealth has also been important subjects, as has analyses of the economic consequences of different waste policies.

The European and Nordic energy markets

The Norwegian residential electricity consumption increased by an average of three per cent annually during the period 1976-1993. Political signals indicate that the growth in Norwegian residential energy consumption should be reduced, and that it may be necessary to increase energy taxes. Based on data for the sample of households from the annual consumer expenditure survey, we have studied factors that are of importance explaining the growth in Norwegian residential electricity demand during this period. Nearly half of the growth is due to an increase in the number of households, while the remainder reflects an increase in average consumption per household. The increase in average consumption per household is due to an increasing number of households possessing electric household appliances such as dryers and dishwashers, an increase in real disposable household income and in the floor space of dwellings.

Empirical estimates of long run effects on residential electricity demand from changes in the electricity price are usually estimated by cross-sectional variation in the current stock of electric household appliances across households at a certain point in time. In a new study, we use a discrete-continuous approach modeling the long run effects by investments in new appliances. We apply the annual Norwegian Survey of Consumer Expenditure for the period 1975 to 1994 to estimate the short and long run own price elasticities in the two approaches. We find the estimated long run elasticity only slightly more price elastic than the short run. We also find that the long run elasticity does not differ significantly between the two approaches. The reason for both results is that, since there is no alternative source of energy for these appliances, there are no substitution effects.

A price sensitive short-term electricity demand is an important prerequisite for a well-functioning and efficient electricity market. Successful market-based electricity trade relies on prices as carriers of information about marginal costs, shadow prices of generation and transmission constraints and marginal willingness to pay for electricity. Further, a price elastic demand may effectively limit the potential for market power abuse. We analyzed in 2001 the short-term price sensitivity within the Norwegian and Swedish power markets. Aggregate demand in this area is 270 TWh per year. Deregulated in 1991 and 1996 respectively, the Norwegian and Swedish markets are relatively mature. In order to resolve the high degree of simultaneity in the price and demand determination, which exists in deregulated electricity markets, we formulated a simultaneous model with supply, demand and price equations. We estimated the model parameters using multi-equation estimation techniques. We applied weekly data for the period 1996:1 to 2001:26. Our results for Norway indicate price elasticities of the magnitude -0.02 to -0.05. We find lower short-term price sensitivity for Sweden. This result may be explained by the fact that Sweden is a less mature market than Norway and that a large fraction of Swedish end-users buy electricity at fixed contractual prices.

We have in 2001 continued our work on electricity market equilibrium modeling. In a project financed by the national grid operator, Statnett SF, we made projections for national and regional electricity demand until 2010. The regional distribution of electricity demand is relatively stable, while the national development is highly dependent on the various assumptions about economic development. We carried out three types of projections: business as usual, high growth and environmental policy scenarios. Within each group of scenarios we varied the number of new electric sea-cables between Norway and Germany/The Netherlands. In addition, we applied different levels for Norwegian gas power generation. Finally, we investigated how the results were affected by hydrological inflow variations. One important conclusion from our work is that the number of new cables has a modest impact on Norwegian electricity prices. This result is due to the physical conditions of the hydropower system. While thermal power systems are expensive to regulate and prices in such systems tend to vary heavily over the course of a day, hydropower is flexible and cheaper to regulate. Consequently, electricity trade between a hydropower dominated region and a thermal power dominated region tends to be export from the hydro system during day-time and import during the night. A new cable may increase the gross trade (both export and import volumes increase) heavily - but leaving the net annual trade and annual electricity prices more or less unchanged.

Documentation: Reprints 186, 189, REP 2001/31, ØA 6/2001, [11-13], [20].

Climate treaties, the Norwegian economy and national wealth

The close link between the Nordic electricity market and the central European electricity market implies a direct link between the extraction of gas from the continental shelf, and the electricity markets both in Europe and the Nordic countries. To deal with this interaction in our analysis of energy markets we follow three lines: First, we have access to a large disaggregated macroeconometric model taking into account the interaction between economic development, energy markets and environmental problems, like emission to air. Second, together with the Frisch centre we have developed a partial equilibrium model for the Western European energy market, emphasising the trade in gas and electricity between the countries. Third, a partial energy market model allows studying consequences of imperfect markets on energy prices, demand, production and trade. These models also enable us to study the European energy market impact of different regimes for fulfilling the Kyoto protocol.

Restrictions on the emissions of greenhouse gases, through for instance the Kyoto protocol, may influence the Norwegian economy along two main dimensions: It will influence the competitiveness of Norwegian industries, and it may reduce the petroleum rent which is very important for the Norwegian national wealth. The question is how much. The models described above may be utilised to analyse the first issue. To answer the second question, dynamic models describing the supply of oil, gas and coal and the demand for these primary energy sources are applied. The model solution depends on both extraction cost, transport tariffs and taxes. This model also includes different kind of market solutions allowing for analyses of possible OPEC market power etc. One crucial determinant of the effects of climate treaties is technological development of carbon-free technologies. Induced technological change has been and is currently examined in several projects in Statistics Norway.

The petroleum wealth is an important part of the total national wealth of Norway. However, human capital is far more important, as has been documented in a recent study, which analyses the development of various components of the Norwegian wealth over the last century.

Documentation: DP 281(2000), DP 314 (2002), [54], [61].

Staff

Bye, Torstein A., Senior Research Fellow, Director of Research

Aune, Finn Roar, Adviser
Aslaksen, Iulie, Senior Research Fellow
Brekke, Kjell Arne, Senior Research Fellow **
Bruvoll, Annegrete, Research Fellow
Glomsrød, Solveig, Research Fellow
Halvorsen, Bente, Research Fellow *
Hansen, Mona Irene, Executive Officer
Johnsen, Tor Arnt, Senior Research Fellow
Larsen, Bodil Merethe, Research Fellow
Larsson, Jan, Research Fellow
Lindh, Cecilie, Economist
Lindholt, Lars, Economist
Nesbakken, Runa, Research Fellow
Nyborg, Karine, Senior Research Fellow *
Rege, Mari, Economist
Rosendahl, Knut Einar, Senior Research Fellow
Sagen, Eirik Lund, Economist
Søberg, Morten, Economist
Telle, Kjetil, Economist

* on leave
** part time

The purpose of macroeconomic analysis within Statistics Norway is to study the structure and development of the Norwegian economy by exploiting internal and external data sources and by developing and utilising macroeconomic models. The models are used both in research projects by the unit itself, and by the Ministry of Finance and the Storting (Parliment). In addition, general availability to the public of models and results is emphasised. Business cycle analysis reports are published quarterly. Current work can be reported under three headings:

1) Analyses of business cycles analysis and short run stabilization based on Macroeconometric models;

2) Econometric analysis, in particular of labour market issues;

3) Analyses of structural policy and long run trends based on General Equilibrium models.

Business cycle analysis

The Research Department publishes an annual economic survey of the preceding year and three quarterly surveys in parallel editions in Økonomiske analyser and Economic Survey. They are also available on Internet. Besides presenting the quarterly national accounts, these surveys also offer a brief presentation of the main international economic trends and forecasts of the macroeconomic development for the Norwegian economy. The forecasts are constructed using the quarterly macroeconometric model KVARTS (see below).

The Research Department is a member of AIECE (Association d'Institutes Européens de Conjoncture Economique) and of the UN-based LINK system, which links national macro models to a global model. To appraise international economic developments, the Research Department has access to the NIGEM model of the National Institute of Social and Economic Research in London, UK.

Documentation: ØA 1/2001, 3/2001, 4/2001, 6/2001.

Macroeconometric models and econometric analysis

Most of the macroeconomic research is centred around the development and use of the two large macroeconometric models – KVARTS and MODAG. The KVARTS model is used for forecasting and analysis in our business cycle reports. The model is also used to provide alternative scenarios for the Government appointed Expert Committee for Income Settlements in connection with the annual nation wide wage and income negotiations. In addition, the KVARTS model has been a central tool in various counterfactual/historical studies of Norwegian business cycles, and for policy analysis. The MODAG model is based on annual data and mainly used by the Ministry of Finance for forecasting and policy analysis. Both models are updated using the most recent final national accounts data. Although many of the parameters in both models are econometrically estimated, several coefficients, including the input-output structure, are each year calibrated to the most recent final national accounts data. Presently, the final accounts for 1997 is used for this calibration. The models have the same input-output structure and level of disaggregation, and comprise at the moment 28 sectors of production and 46 commodities.

For most private production sectors (22) a set of factor demand equations are specified based generally on Cobb-Douglas production functions but with nested CES-elements for energy commodities (electricity and fuels). The factors specified are labour, energy, other material inputs, and three components of capital inputs (machinery, transport equipment and structures). To each commodity the models specify an exogenous world market price, and two endogenous prices (for exports and the domestic market). The modelling of import shares and export volumes is based on the Armington approach.

Households supply labour, which is disaggregated by gender and age to take account of large differences in labour market behaviour for various groups. There are substantial "discouraged worker effects" and moderate after tax real wage effects in the aggregate labour supply. Household demand is specified using a macroconsumption function and a housing investment equation, both depending on household income, wealth and an after tax real interest rate. The allocation of household demand on consumer categories is based on a dynamic version of the AIDS system.

Based on the input-output structure and the commodity classification, indirect taxes and subsidies are specified in great detail. The same goes for direct personal taxation where the model tax rates are aggregated from a microeconomic model which links the actual tax structure to the large microdatabase of recent tax forms. The Norwegian economy is characterised by a comprehensive public transfers system and the link between labour market variables and parts of these transfers are modelled econometrically while transfers to old age pensioners are treated in a simpler way.

In 2001 work has been centred around the following topics: Modelling exports and import shares for manufactures, aggregation of production functions from the firm to the industry level, formation of price expectations, exchange rate modelling, consumer demand systems, supply and demand for labour by skill, wage formation by skill, productivity in manufacturing industries, and changes in fiscal policy.

Documentation: REP 2001/7, DP 303, 309, Reprints 179, 182, 200, 210, NOT 2001/31, 2001/32, ØA 2/2001, 3/2001, 4/2001, ES 2/2001, 3/2001, [6], [28], [50], [52].

General equilibrium models

The research department has for more than 20 years developed and used successive versions of a Multi-Sectorial Growth (MSG) model. The most recent model, labelled MSG-6, exists in several versions reflecting the need for different model users to design the model simulations according to their particular priorities. The most sophisticated versions include endogenous labour supply and intertemporal consumer and producer behaviour based on perfect foresight. A special feature of the MSG-6 model is that the production functions at the industry level reflect the production function of an endogenous number of heterogeneous firms. Thus, the link between firm and industry behaviour is explicitly specified.

In 2001 work has been concentrated around the following projects; pollution leakages through trade, economic effects of the Kyoto protocol, welfare effects of changes in the taxation of housing, capital taxation, welfare effects of different systems of value added taxation (VAT) including the actual 2001 norwegian VAT reform, the impact of taxation on educational choices, the importance of special tax rules for the effective assistance of industries, and measurement of inputs and output in the higher education sector in Norway.

Documentation: REP 2001/18, 2001/25, DP 298, 306, 313, Reprints 183, 192, 193, DOC 2001/4, NOT 2001/43, ØA 4/2001, [8], [25], [27], [28], [57], [74].

Staff

Holmøy, Erling , Director of Research

Boug, Pål, Research Fellow
Bjertnæs, Geir H, Economist
Bjørnstad, Roger, Economist
Bye, Brita, Research Fellow
Choudhury, Robin, Economist*
Drzwi, Wenche, Senior Executive Officer
Eika, Torbjørn, Senior adviser (Research Fellow)
Fæhn, Taran, Research Fellow
Heide, Kim, Economist
Holm, Inger, Adviser
Hungnes Håvard, Economist
Haakonsen, Laila, Executive Officer
Johansen, Per Richard, Senior adviser
Jørgensen, Jørn-Arne, Economist
Lerskau, Lisbeth, Senior Executive Officer
Naug, Bjørn, Research Fellow
Ouren, Jørgen, Adviser (EDB)
Skjerpen, Terje, Senior Research Fellow
Strøm, Birger, Adviser
Åvitsland, Turid, Economist

* On leave.

The Division of microeconometrics has the following basic aims: (1) Obtain knowledge of the Norwegian economy by econometric analyses of micro data collected by Statistics Norway; (2) Application of the microeconometric estimates and hypotheses in macro- and microeconomic simulation models developed in Statistics Norway; (3) Analyses of economic policy problems based on (1-2); (4) Adaptation and development of theories and methods related to (1-3); (5) Development of microdata, databanks and statistics related to (1-3); (6) Cumulating competence in econometrics; (7) Publishing results, with emphasis on international journals.

Labour market

The labour market studies focus on developing empirical models for analyzing individuals' behavior in the labour market, and on estimating returns to skills in the labour market.

Several types of labour supply models have been developed and estimated. These models are particularly well suited for accommodating corner solutions, non-standard budget constraints (such as kinked and non-convex tax systems), and non-pecuniary job-attributes (such as type of work).

In 2001 several labour market studies have been conducted:

(i) A particular empirical model for sector-specific labour supply (private - and public sectors) for married women has been estimated on Norwegian micro-data. The model can be applied to simulate labour supply responses from changes in taxes and sector-specific wage rates.

(ii) An empirical model for sector-specific labour supply of married women in Eritrea has been developed and estimated using micro-data from Eritrea. The states represented in the model are the sectors "wage-work", and "self-employed", in addition to "not working". The data set contains information about whether individuals are rationed or not in the wage work sector, and the model explicitly takes this into account.

(iii) Panel data for married women have been applied to estimate a life cycle consistent labour supply model. This model can be applied to simulate the impact on durations in - and transition rates between - labour market states from changes in taxes and wage rates (such as "working" and "not working").

(iv) An empirical study is concerned with the returns to experience and seniority in the Norwegian labour market, and whether the returns varies with level of education and firm characteristics.

(v) Another study asks whether the returns to education have changed across cohorts and whether any observed changes are driven by changes in self-selection.

Documentation: DP 301, 302, 304.

Welfare and inequality

The labour supply model developed in the project above has been applied extensively for welfare analysis of tax reforms. The labour supply model and tax reform analyses have also been applied to other countries, in particular Italy. A joint project with the Nordic countries comparing the development of inequality of disposable income in Denmark, Finland, Norway and Sweden during the recent 15 years, when inter alia unemployment rose dramatically, has been completed.

Documentation: DP 307, Reprints 188, 207, [1], [2], [3].

Consumer behaviour

Systems of household demand functions are estimated, tested, and implemented into a network of macro- and microeconomic simulation models, and used for policy analysis.

Statistics Norway carried out their first household expenditure survey in 1888 and has collected such data every day since January 1, 1973. The survey design includes a module of two-year rotating panels since 1975. In a long term project we construct and document detailed datasets from these surveys, including expenditures on 700 items, and combine them with price data from the consumer price index and income data from tax files.

The detailed databanks from the Household budget surveys are utilized in different projects, such as analysis of the demand for tobacco studies the development of the level and composition of consumption in Norway and its effects on the environment and welfare.

A household consumer demand model, based on a five level quasi-homothetic utility tree with demographic effects has been calibrated, exploiting inter alia our microeconometric estimates and national accounts data. This demand system, with 29 goods including 15 transportation goods, has been aggregated across all Norwegian households, implemented in an applied general equilibrium model (MSG-6), and applied for analysing environmental problems. Indirect consumer demand for emissions of greenhouse gases is analysed.

The consumer demand model above has also been implemented in a microsimulation model with 15 000 households (Lotte-konsum) for welfare analysis of tax policy. Various direct and indirect taxes and subsidies are ranked according to their distributional efficiency.

Documentation: SA 45, DP 294, 296, 297, 305, 312, DOC 2001/15, NOT 2001/20, ØA 3/2001, 5/2001, ES 4/2001, SSP 6/2001, [33], [53], [63-64], [67-72].

Producer behaviour and productivity

A project is carried out which studies how and why firms differ even within narrowly defined industries. In an empirical study on establishment panel data it is shown that non-transient differences in sales and factor input can be summarized by a single dynamic latent factor, labeled efficiency in view of a structural model. Efficiency is tightly linked to profitability and sales, but unrelated to labor productivity. Further studies will look at the relationship between this measure of efficiency and traditional measures of firm performance, both from a theoretical and an empirical point of view.

Documentation: DP 295, DOC 2001/10.

Discrete and continuous choice

Many important choice settings can be formulated as discrete and continuous choice processes where heterogeneous decision makers face different and partly unobservable choice constraints. This is a typical challenge with which the theory of discrete choice is concerned.

The research activity in this field includes the development of theory and methodology for structural analysis of data generated by individual choice from a continuous or finite set of alternatives. In particular, it is focused on topics such as

- characterization of transition probabilities for indvidual choices;
- modeling two-sided search/matching behaviour in markets with flexible contracts and limited information;
- characterization of models for discrete and continuous choice;
- development of models of consumer demand for commodities with unobservable quality attributes;
- application of the methodology in empirical analysis, and in the construction of price indexes;
- stochastic models for choice among strategies when the outcomes are uncertain.

Based on a particular formulation of the discrete/continuous choice setting, the standard theory for consumer demand has been extended so as to accommodate for products that are differentiated with respect to unobservable quality attributes, and moreover, that prices vary across product variants and stores. This extension is the basis for an empirical analysis based on micro-data, in which a consumer demand model has been estimated.

In the context of discrete choice it is of interest to be able to calculate measures such as Compensated Variation (CV) and Equivalent Variation (EV) so as to assess the effect of changes in choice sets and budget constraints in money metric terms. In 2001 we have, under rather general conditions, derived convenient closed form formulae for CV and EV, when utility is nonlinear in income.

Documentation: DP 299, Reprints 199, [4], [26].

Econometric methods for panel data

Parallel to empirical studies of panel data in the areas mentioned above, studies on methods and models for panel data are carried out. Topics covered include latent variables, measurement errors, unbalanced panel data, and heterogeneity in coefficient structure including stochastic coefficients. Furthermore, an approach is developed using ML estimation of VAR models for panel data with dynamic processes for the latent components, using ECM and Kalman filter techniques.

A project which aims to measure real capital stocks at the plant level by combining plant investment data and company accounting data has been started up, and will continue in 2002. Methodologically, the project relies on carefully formulated state space models, which enables us to integrate and combine several sources of direct and indirect information about plant level capital stocks.

Staff

Hægeland, Torbjørn, Senior Research Fellow, acting Director of Research

Dagsvik, John K., Senior Research Fellow, Professor
Biørn, Erik, Professor**
Klette, Tor Jakob, Professor**
Larsen, Erling Røed, Research Fellow
Raknerud, Arvid, Senior Research Fellow
Salvanes, Kjell G., Professor**
Sommervoll, Dag Einar, Research Fellow
Wangen, Knut Reidar, Economist
Wennemo, Tom, Adviser (EDP)
Aasness, Jørgen, Senior Research Fellow, Director of Research

** Part time.

The general objective is to analyse demographic development and changes in economic and social living conditions of the population. The research activities combine a microanalytical approach focusing on demographic and socioeconomic processes, with a macro level approach directed at describing changes in social and demographic structure. Research results from demographic analyses also serve as input for revising model structure and parameters of forecasting and simulation models in Statistics Norway. The division is responsible for BEFREG (Statistics Norway's model for national and regional population projections).

Population projections

BEFREG—population projections 1999-2050
The most recent set of projections was published in 1999 for the whole country and each municipality. Assumptions and results from three main and eight additional variants were published and is available on the home pages of Statistics Norway. A project to revise the model started in 2000 and continued in 2001. The next projections are planned to be made in the fall of 2002 for the period 2002-2050.

Stochastic forecasts
A project on stochastic forecasts was finalised in 2001. The purpose of the project was to assess the expected accuracy of Statistics Norway's population projections. The results were obtained on the basis of a probabilistic model. They were in agreement with observed forecasts in historical BEFREG projections. A EU funded project "Changing population of Europe: Uncertain future" was started in 2000. It is conducted in collaboration with the University of Oslo, two research teams in Finland and two in the Netherlands. The Norwegian teams are contributing with an analysis of forecast errors in historical population forecasts of EEA countries, and a time series analysis of observed fertility, mortality and migration variables for the EEA countries.

Documentation: SES 105, [14], [15], [42], [43].

Population development, migration and mortality

The division has a general responsibility for monitoring and analysing trends in population development, both at the national level and in a comparative context, regionally, as well as at the international level. A project has studied the influence of migration on cardio-vascular mortality for Norwegian counties, finding that generally migrants have lower cardio-vascular mortality than non-migrants, with a few exceptions. The mortality trends among old people have been studied in connection with the population projections. It was found that for the oldest old in Norway, 95 years and over, especially for men, there have been practically no improvement in mortality in recent decades, unlike for younger ages, and unlike most other countries. The division is also engaged in collaborative work with other Nordic countries on the projection of mortality in population forecasts. Within Council of Europe, we have participated in a comparative project analysing demographic characteristics among immigrant populations. We are also participating in international advisory activities on development of population registers (Bangladesh, Albania)

Documentation: REP 2001/4, DOC 2001/13, SSP 3/2001, [7].

Fertility, nuptiality and changes in family structures

Over the recent years, a substantial part of research activities has focused on structural changes in central demographic processes, in particular fertility, nuptiality (marriage and cohabitation) and family formation, including the effects of changes in female labour force participation and in family policies. The organisation and use of data from different registers are an important part of the activities of the division. Combinations of survey and register data linked at an individual level are also used.

Analyses of recent fertility trends are based on a continuation and extension of earlier analyses on register data for the period 1935-1990. For more complex analyses of fertility trends and new patterns of family formation, population register information are linked to various sources containing explanatory variables (education, income, immigration status). The doctoral project "Fertility, education and social change: Increased diversity in life strategies?" focuses on differences in fertility patterns between women with different types of educational background.

With more use of register data, the lack of data about cohabitation is an increasing problem. Statistics about cohabiting couples having children together have been published since 1987. A pilot project about extended use of register data on this kind of families has been completed in 2001. These improvements will make it possible to expand statistics as well as analyses on family patterns. The majority of cohabiting couples in Norway are, however, childless. Basic survey data on cohabitational unions with and without children are collected on a regular basis through Statistics Norway's Omnibus Surveys. These cross-sectional data sets provide, however, only rudimentary insight into the processes and the role that cohabitational unions presently have in the family formation process. A pilot project on the need for more comprehensive studies was carried out in 2001 with funding from the Norwegian Research Council. Several projects based on more comprehensive survey data will be started in 2002.

The family formation process in a gender perspective is focused, and special studies of men have been started. The project "Family formation and breadwinner models: More gender equality and increasing social disparities?" analyses the family formation of men, based on register data of registered births (recognised fatherhood) for selected male cohorts. Increased diversity in life course strategies is a key feature in the fertility as well as the nuptiality analyses of the division. Taking different kinds of diversity in family formation under consideration, a study about registered partnerships (same-sex couples) was started in 2001.

The division participates in a collaborative network with other research institutions working on register data analyses of fertility and family formation in the Nordic countries. We have also participated in the planning of a possible successor to the earlier programme Family and Fertility Studies (FFS) in Europe, called Gender and Generation Program. It includes also intergenerational questions.

Documentation: REP 2001/40, Reprints 202, 203, 209, ØA 4/2001, SSP 2/2001, SSP 3/2001, SSP 6/2001, [21], [32], [46], [60], [73].

Immigration and social change

During the 1990s, the Department of Social Statistics has carried out the so-called «Immigration Statistics Project», with financial support from and in collaboration with the Ministry of Local Government and Regional Development. From 1993 to 2000, yearly opinion data on attitudes towards refugees and immigrants have been collected and published. A major revision of the original attitude questions is now underway. From the Survey of immigrant level of living, a final report was published in 1998, and as an effect of that project we are involved in a parallel one in Denmark. In 2000, we also started work on different aspects related to the integration process of immigrants. In cooperation with the immigration authorities, we have in 2001 continued the development of a monitor for integration of immigrants, with special emphasis on refugees, and for measurement of racial discrimination.

Documentation: REP 2001/22, NOT 2001/23, SSP 2/2001, [76].

Residential concentration of immigrants
A project to analyse the development of immigrant concentrations in Oslo and to uncover social causes and effects of such concentrations was initiated in 1998, by means of register data and interview data from the 1996 Survey of immigrant level of living. The project has been supported by the IMER-programme of the Research Council in Norway. A final report is to appear early in 2002.

Documentation: SSP 2/2001.

Social integration of new and old refugee cohorts
In this project refugee cohorts, that settled in Norway from 1987 to 1999, are to be observed regarding their main economic activity during the years from 1992 until 1999, by means of register data. A previous project, monitoring some of the same cohorts for a shorter period of time, is thus carried further. The aim of the project is to model the transition to different statuses,such as ordinary employment, participation in employment programmes, registered unemployment, ordinary education, reception of pensions and/or social assistance, according to different background variables.

Documentation: [75].

Social research

The activities concerning social research are increasingly focusing on more specialised analyses and research projects and less on general social reporting. Most of the research activities are financed as commissioned research. Generally, it is a challenge to combine commissioned research activities with continued and cumulative research efforts on distribution processes and changes in social and demographic structures. We analyse generational changes in the level of living over the life course, look at differences between various population groups, and examine gender differences in the outcomes of social processes. People's level of living is analysed both in terms of material conditions such as income and housing, in terms of social integration and social isolation, and in terms of time use patterns and the relationship between people's time allocation and their time use preferences. Analyses of development of living conditions of particular population groups and analyses of effects of social welfare policies constitute a considerable part of our research activities in this field. We focus both on the development over time for different subgroups of the population (in terms of gender, generation, age and family life stage), as well as on more specific groups, for instance single parents, retired persons, farmers and parents with small children. Analyses are based on surveys as well as register data, and we undertake both cross - sectional and longitudinal analyses.

In 2001 we finalised several projects where the most of the work had been carried out in 2000. Results from the project "Moving towards the good society?" were published early in 2001. The main focus of the project was on the development with respect to the level and distribution of living conditions, contrasted with the development in attitudes and societal ideals of the population. The project was funded by the Ministry of Finance and constituted an input to the work with the Long term program for the period 2002-2005. In 2001 work has been undertaken in order to make a shorter and more popular version of the report. This will be published early in 2002. The final report from the project evaluating the impact of the cash for care reform on female labour supply, childcare demand and the division of household labour was published in 2001, as well as the final report from a project on early exit from the labour force.

Documentation: REP 2001/3, 2001/26,
NOT 2001/21, [17], [44], [45].

Current projects

The doctoral project "Welfare changes, living conditions and social integration. Norway 1973-1995" studies the development and consequences of social integration in Norway during the last 20-25 years. It investigates whether there have been trends towards social isolation and disintegration in the general population and for particular groups. Possible connections between processes of disintegration and social isolation and the growth in «new» welfare problems, like suicide and violence, are also discussed.

Another doctoral project on parents' time use and time use preferences examines changes and variations in Norwegian parents' activity patterns and time use preferences over the last 30 years. The main focus is on unpaid work, in particular differences and new divisions between groups of women as far as the organisation of various unpaid tasks are concerned. A discussion of various theoretical approaches to unpaid work and leisure activities is also undertaken, and the concepts and measures used in diverse data sources are discussed. The project is based on Time Use Surveys and other sample surveys.

A project on labour market adjustments during single parenthood compares the employment patterns of single parents to those of married/cohabiting mothers and fathers. The analysis is partly based on time series of cross sectional data; Labour Force Surveys and several other sample surveys. In addition, individual employment careers before, during and after single parenthood are analysed, using Statistics Norway's register based longitudinal data on individuals (FD-Trygd). So far, the findings indicate that the labour market participation of single mothers as well as fathers is characterised by their great vulnerability towards changing economic cycles.

The project "Housing consumption and capital accumulation in a life course and generation perspective" analyses the development and changes in housing standards, housing expenditure, home ownership and corresponding capital accumulation in the Norwegian population during the 1970s, 1980s and 1990s, with main focus on the last part of the period. The project looks at various age groups and birth cohorts. Young adults are given particular attention. Analyses are based on periodical surveys on Housing Conditions and Level of Living.

The division has also carried out two analyses for a public commission on housing policy, respectively on the development of housing conditions over the period 1987-97 and on the relationship between demographic change, migration and demand for housing. The analyses will be published in the REP series parallel to the presentation of the report from the Commission in February 2002.

Documentation: REP 2001/24, Reprints 178, 184, 190, 194, 204, 205, [16], [30], [31].

Staff

Skrede, Kari, Senior Research Fellow, Director of Research
Barstad, Anders, Research Fellow
Blom, Svein, Research Fellow
Brunborg, Helge, Senior Research Fellow
Foss, Aslaug Hurlen, Mathematician **
Hansen, Liv, Executive Officer
Hetland, Arve, Senior Executive Officer (Graduate Student, Informatics)
Keilman, Nico, Professor **
Kitterød, Ragni Hege, Research Fellow
Kjeldstad, Randi, Senior Research Fellow
Lappegård, Trude, Sociologist
Lyngstad, Jan, Research Fellow
Lyngstad, Torkild Hovde, Senior Executive Officer, (Graduate Student Sociology) **
Løwe, Torkil, Sociologist
Noack, Turid, Research Fellow
Nymoen, Erik H., Geographer
Rønsen, Marit, Research Fellow
Seierstad, Ane, Statistician
Tysse, Tone Ingrid, Economist*
Østby, Lars, Senior Research Fellow ***

*) on leave
**) part time
***) Senior Research Fellow in the Department for Social Statistics, and associated with the Division for Social and Demographic Research

Personnel and budget

The total staff in the Research Department in 2001 was 72 in total number of persons. The distribution by division is given by the table below.

The financial resources of the research activities stem partly from the government budget as allocated within Statistics Norway. About 37 per cent of total expenditures in 2001 are project financed. The bulk of the project revenues comes from research grants from the The Research Council of Norway and from contracts with Ministries, primarily the Ministry of the Environment, the Ministry of Finance, the Ministry of Petroleum and Energy, the Ministry of Local Government and Regional Development and the Ministry of Foreign Affairs.

Staff

Ådne Cappelen, *Assistant Director General, Head of Research Department*

Frenger, Petter, *Senior Research Fellow*
Roll-Hansen, Hege, Research Fellow (Stat. history)
Søbye, Espen, *Adviser (Stat. history)*
Aaberge, Rolf, *Senior Research Fellow, Professor*

Malo, Solfrid, *Senior Executive Officer*
Salvesson, Sigmund G., *Clerical staff*
Skoglund, Anne, *Executive Officer*
Vaagen, Otto Gerhard, *Head of Administration*
Walseth, Aud, *Executive Officer*

Distribution of operating costs in 2001. 1000 Nok

	Government Budget	**Project**	**Total**
Personnel	19 352	8 288	27 640
Office expenses etc.	3 086	4 672	7 758
Research Department	**22 438**	**12 960**	**35 398**
Social and Demographic Research	2 687	3 645	6 332

Personnel (full time equivalnet) in Research Department in 2001

Division/Unit	**Government Budget**	**Project**	**Total**
Head of Department and Administration	7	1	8
Public Economics	10	7	17
Resource and Environmental Economics	14	5	19
Macroeconomics	14	6	20
Microeconometrics	5	3	8
Research Department	**50**	**22**	**72**
Social and Demographic Research	6,5	6,5	13

Scientific competence structure of persons working in the Research Departement

	Research Department	**Social and Demographic Research**
Senior Research Fellow, Professor	2	-
Senior Research Fellow	12	3
Research Fellow	19	6
Economist	15	0
Geographer		1
Mathematician	2	
Statistician		1
Sociologist	2	2
Adviser	9	
Computer scientist	1	1

Statistics Norway monographs are published in the series Social and Economic Studies and Statistical Analyses, other research reports and documentation in the Report series or as Documents/Notater. The Discussion Papers series comprises research papers intended for international journals or books. There is also a Reprint series of journal articles and book chapters by staff employees. The Research Department publishes two periodicals: Økonomiske analyser, in Norwegian with 9 issues a year, and Economic Survey, in English with 4 issues a year.

Social and Economic Studies (SES)

105 **Nico Keilman, Dinh Quang Pham, and Arve Hetland (2001):** Norway's Uncertain Demograpic Future.

Statistical Analysis (SA)

45 **Kirkeberg, Mads Ivar, Tom Kornstad og Aud Walseth (red.)**: Inntekt, skatt og overføringer 2001 (Income, tax and transfers 2001).

46 *Naturressurser og miljø 2001.*

47 *Natural Resources and the Environment 2001. Norway.*

Reports (REP)

2001/2 **Halvorsen, Bente, Bodil M. Larsen og Runa Nesbakken:** *Hvordan utnytte resultater fra mikroøkonometriske analyser av husholdningenes energi-forbruk i makromodeller? En diskusjon av teoretisk og empirisk litteratur om aggregering* (Microeconometric analyses of residential energy demand versus macroeconomic models. A discussion of theoretical and empirical literature on aggregation)

2001/3 **Rønsen, Marit:** *Market work, child care and the division of houshold labour. Adaptations of Norwegian mothers before and after te cash-for-care reform.*

2001/4 **Brathaug, Ann Lisbeth, Helge Brunborg, Elin Skretting Lunde, Elisabeth Nørgaard og Åsne Vigran:** *Utviklingen av aldersrelaterte helse-, pleie- og omsorgsutgifter* (Development of age-related health care expenditures).

2001/5 **Håkonsen, Lars, Tom Kornstad, Knut Løyland og Thor Olav Thoresen:** *Kontantstøtten - effekter på arbeidstilbud og inntektsfordeling* (The Home Care Allowance - Effects on Labour Supply and Income Distribution).

2001/7 **Sollie, Marte og Ingvild Svendsen:** *En økonometrisk studie av arbeidstilbudet i Norge* (An econometric study of Norwegian labour supply).

2001/18 **Fæhn, Taran, Jørn-Arne Jørgensen, Birger Strøm, Turid Åvitsland og Wenche Drzwi:** *Effektive satser for næringsstøtte 1998. Beregninger som inkluderer skatteutgifter* (Effective Rates of Assistance 1998. An Assessment Including Tax Expenditures).

2001/21 **Døhl, Øystein og Jan Larsson:** *Faste versus stokastiske heterogenitetskoeffisienter i ubalansert datasett ved analyse av teknologiforskjeller mellom bedrifter* (Heterogeneous technology in firms:Fixed versus random coefficients tested on an unbalanced data set).

2001/22 **Østby, Lars**: *Flyktningers sekundær-flyttinger under 1990-tallet* (Internal migration among refugees arrived to Norway during the 1990s).

2001/23 **Halvorsen, Bente, Bodil M. Larsen og Runa Nesbakken:** *Fordelingseffekter av elektrisitetsavgift belyst ved ulike fordelingsbegreper* (Distributional effects of household electricity taxation illustrated by different measures of income).

2001/24 **Løwe, Torkil:** *Boligkonsum og husholdningsstruktur. Livsfase- og generasjonsendringer i perioden 1973-1997.*

2001/25 **Fæhn, Taran, Jørn-Arne Jørgensen, Birger Strøm og Wenche Drzwi:** *Reduserte aggregeringsskjevheter i beregninger av effektive satser for næringsstøtte 1998.*

2001/26 **Tysse, Tone Ingrid:** *Effects of Enterprice Characteristics on Early Retirement.*

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294 **Wangen, Knut R. and Erik Biørn:** *Individual Heterogeneity and Price Responses in Tobacco Consumption: A Two-Commodity Analysis of Unbalanced Panel Data.*

295 **Raknerud, Arvid:** *A State Space Approach for Estimating VAR Models for Panel Data with Latent Dynamic Components.*

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