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Research Department

Statistics Norway

Annual Report 2005

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Introduction

The Annual Report 2005 for the Research Department of Statistics Norway presents the main fields of research in 2005 with complete lists of publications and staff. The Research Department as presented in this report, includes the Social and Demographic Research Unit and the Statistical Methods and Standards Unit which administratively are placed in other departments in Statistics Norway. Other research activities within Statistics Norway are not included in this report.

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, March 2006

Ådne Cappelen
Head of Research Department

General research objectives

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

enhance 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.

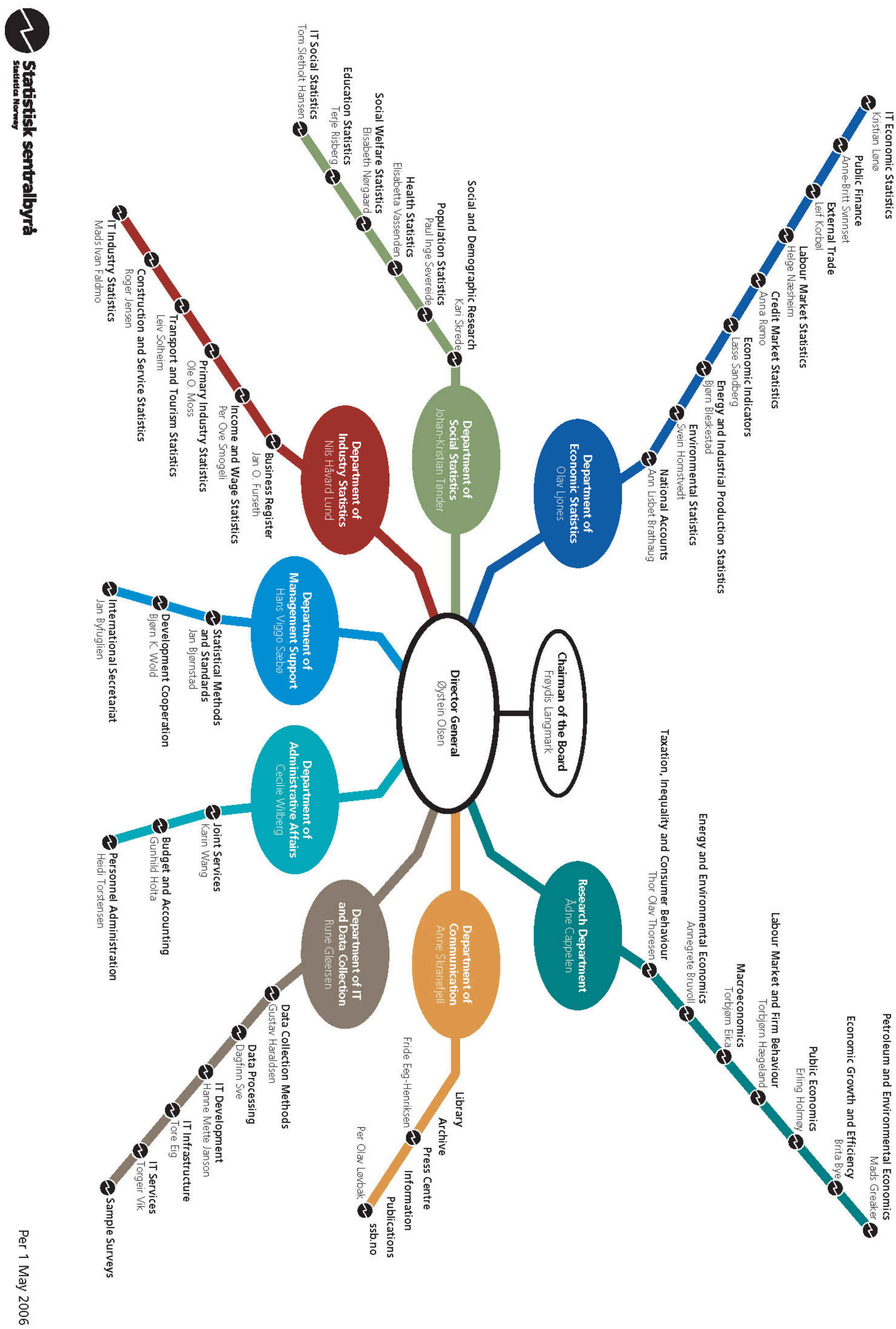
develop models for analyzing demographic, economic, environmental and social issus

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.

give 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.

Organization of Statistics Norway



Taxation, Inequality and Concumer Behaviour

The research unit is focused on micro data methods and applications. The research falls into several areas, with the following as key activities:

1. **Developing and applying the tax-benefit model system LOTTE and other static micro simulation models**

2. **Understanding and application of methods for consumer behaviour**

3. **Describing distributional effects of policy interventions**

Main findings

A reformed tax schedule is in place from 2006, which implied that the tax-benefit model LOTTE system has been extensively used by the Storting (Parliament) and the Ministry of Finance in 2005, calculating effects on revenue and income distribution from the tax changes. The LOTTE model system (now) consists of three modules: a module for simulations of personal income taxes, LOTTE-Skatt, a module for indirect taxation, LOTTE-Konsum, and a module describing the labour supply effects of changes in the personal income tax, LOTTE-Arbeid. The latter module has just been developed, in cooperation with the research unit for Labour market and firm behaviour.

Revenues from indirect taxes, in particular on tobacco and alcohol, were estimated by the Ministry of Finance using direct and cross-price elasticities for detailed commodities from our model KONSUM-G. A new version of this microbased macro model of consumer demand was established in 2005, using a new detailed utility tree, taking into consideration among other things cross-border shopping, tax-free shopping, and smuggling.

A study that emulates an econometric method introduced by Hamilton (2001) and that provides estimates of the bias in Canadian CPI has been published in *Canadian Journal of Economics*. The test uncovers that the Canadian CPI overestimated the cost of living during the 90s, but that it may have underestimated the cost of living in the final years. The article speculates that house prices may be key to understanding this development.

We published an article in *Scandinavian Economic History Review*, launching a Top-3 list over the great unsolved puzzles in economics. Hypotheses were presented on why the puzzles remain puzzles -- after decades where economists have exerted great intellectual effort into solving them, and sketches made on how they may be solved in the future. Puzzles are characterized by their multifaceted nature, and it is explained how this is a key trait for the three problems. Three major events in economic history are juxtaposed with insights from economic theory, and it is demonstrated that the theory cannot explain the events. Thus, the events remain anomalies -- but not necessarily forever.

A novel econometric test for whether a country has escaped the resource curse or not, and an application to recent Norwegian history has been published in *Resources Policy*. It turns out that Norway did escape for at least two decades, but that current experience leaves the question open-ended and dependent upon the management of oil revenues in the near future.

As a contribution to the debate about the inheritance tax we have studied parent's gift behaviour. Our analysis shows that equal sharing of gifts between children may be intentional in a model of altruism, where parents also act according to a fairness norm, see Discussion Papers 439.

In the paper "The Impact of the Norwegian Tax System on Saving and Portfolio Choice" we present the savings incentives inherent in the tax system before the 1992 tax reform, and examine the impact of the tax reform on portfolio composition and on the rate of personal saving across households. Our main finding is that the tax reform induced households to increase savings by more rapid repayment of debt.

Previous analyses measuring under-reporting of income among the self-employed revealed methodological problems. A study analysing these problems suggests improved methods to assess effects of tax avoidance among the self-employed, see Discussion Papers 414.

An analysis that contrasts results of two recently expounded micro-level data approaches to derive robust intertemporal characterizations of redistributional effects of income tax schedules has been carried out for Norwegian data 1992–2004, see Discussion Papers 434.

A new analysis of Norwegian rental market unraveled a high degree of market fragmentation, where prices are heavily influenced by factors not usually gathered for rental indices. In particular, price discrimination according to tenant type, and huge rebates over time challenge the notion of *one* rental market price.

The effect of taxes on the individuals' choices of educational direction, and thus on the economy's skill composition, is discussed in Discussion Papers 419. A proportional labour income tax induces too many workers with high innate ability to choose an educational type with high consumption value and low effort costs. This increases the skill mismatch and aggregate unemployment in the economy. The government can correct for this distortion by use of differentiated tuition fees or tax rates.

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Energy and Environmental Economic

The energy and environment research group focuses on how national, international and natural external conditions influence the value of national energy resources, the efficiency in the markets and possible future development in energy and environmental resources. Studies of the behaviour of firms and households and their adaptation to environmental policy are essential, as is the development of partial energy market models and integrated energy market and general equilibrium models. The domestic energy market is dominated by hydropower production with stochastic inflow, which generates separate focused studies on production and transmission capacity limits, strained markets and owner concentration issues. Interlink with thermal markets in neighbouring countries makes international trade studies an important research area.

Main findings

The Norwegian electricity market was deregulated in 1991. In a separate article the background for the deregulation, the design of the market and some consequences are discussed. The main conclusion is that the deregulation brought about expected results with respect to decrease in or stabilisation of prices, reduced investments in production capacity due to earlier overcapacity, stabilisation of tariffs in the network although capital cost increased, and more equal electricity prices among consumer groups.

Water inflow shortage and high electricity prices have brought up several important subjects concerning the vulnerability of the Norwegian hydropower market. Closer evaluations of the price elasticity, volatility and market power are important for the understanding of the total risk for a close to a hundred per cent hydro based power production. We analyse how the electricity market responds to varying precipitation, inflow and climate changes. The results imply that even higher price responses are likely to occur under probable precipitation failure scenarios.

Climate changes imply both a warmer and more humid climate in the Nordic countries. More precipitation, and a changing precipitation pattern over the year changes the seasonal production possibilities in a hydropower based electricity market. Warmer weather also implies a different accumulation and melting of snow that influence on the optimal stocking of water in a hydro basin. Finally, increasing temperature implies a lower electricity demand for heating purposes. All these effects are estimated and the total market effects are simulated in a simultaneous electricity market model. The main conclusion is that higher inflow reduces unit cost in production of hydropower and consequently prices drops compared to the situation without climate changes. The price effect on demand overrides the temperature effect so total demand increases.

Future electricity demand depends on several uncertain factors such as economic growth, structural changes, the cost of expansion and technological change. Demographic components are important as a driver for economic growth but also as a driver for electricity demand through household composition. As primary energy sources for electricity production the development of prices on coal and natural gas together with the permit price for emission on greenhouse gases are also very important for the electricity market. In three scenarios we show that uncertainty about all these issues transmit to a broad interval of possible outcomes on supply and demand in the Norwegian electricity market in 2030. In 2030 the estimated interval is 140-159 TWh compared to a level of 125 TWh today.

The Norwegian manufacturing of energy intensive products holds long term electricity price and volume contracts that expire in a few years. The European Surveillance Agency has stated that future contracts should be based on market principle. This implies sharply increasing electricity input cost, worsening of the competitiveness for these industries and eventually a shutting down of several firms. A separate expert committee has studied the legal EU framework for setting up a separate electricity market for energy intensive industries and the possible market outcome for prices in such a market. The main conclusion is that the banning of all kinds of subsidies, which limits the supply side, and the lack of objective criterion for restricting the number of customers in such a market imply that the market will never produce sufficiently low prices for this industry. In fact an industry market will probably produce the same prices as the ordinary market.

The introduction of green certificates (or electricity certificates) is meant to stimulate the introduction of renewables in the electricity market. This implies an initial subsidy on the supply side and a tax on the demand side that is redistributed among suppliers and purchaser of electricity according to the elasticities in the market. In a project the introduction of a joint certificate market is analysed. Three main conclusion may be drawn: first a joint market is more cost effective than a separate country by country based market and second a joint market will favour the introduction of renewables in Norway. Finally the set up of the market is vital to the functioning. A limited certificate period may produce unfortunate results.

The deregulation of the electricity markets in the Scandinavian countries and the introduction of NordPool implied access to detailed high frequent data (hourly) on prices, demand and supply, which made it possible to estimate short term elasticities in this market. However, in an hourly basis both demand and supply shift upward and downward due to temperature, working hours, sleeping hours etc. Besides most consumers do not face the real time price but rather a short-term contract price. To account for this we have developed a simultaneous supply and demand model for Norway and Sweden to estimate short-term price elasticities. The main result is that the wholesale price elasticities are low, they vary throughout the day and the week, and elasticities are substantially lower in Sweden than in Norway. The lower price elasticities in Sweden are mainly due to the more fixed price contracts in Sweden.

Information about the distribution of household energy consumption on different end-uses (space and water heating, lighting, cooling, cooking, etc.) is important when considering the potentials for energy savings and substitution, since these vary between end-uses. We have analysed household electricity end-use consumption by the use of an econometric conditional demand model and data for 1990 and 2001. The results show that the distribution of electricity consumption on different end-uses differs significantly for these years due to different outdoor temperatures, relative energy prices, and increase in the stock and efficiency of electrical appliances. We also find that, compared to the prevailing engineering results for end-use distribution, Norwegian households use significantly less electricity for heating.

Relocation of dirty production and environmental pressure to economies with laxer abatement regimes can be one of many explanations to environmental improvements in rich countries. An observed decoupling over the past 20 years was not associated with an increase in pollution leakages abroad. Rather, while we have observed a decoupling from 1980, Norway increased their burden of emissions, as the emissions related to export increased far more than the emissions abroad embodied in our import. In future projections, we find a lower degree of decoupling than in the past, as the same time as leakages increase.

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Macroeconomics

The unit is engaged in empirical studies of the Norwegian economy - structure and development - in a macroeconomic perspective. The research is mainly based on Statistics Norway's short-term statistics and national accounts data, and development and use of econometric time series methods and models. Important external users of the models are Ministry of Finance, Ministry of Labour and Social Inclusion and Stortinget (the parliament).

Business cycle analysis

Economic surveys and forecasts are published quarterly in parallel editions in Økonomiske analyser (ØA) and Economic Survey (ES). ØA is a paper publication and is also available on the Internet, while ES is only published electronically. The forecasts are constructed using the quarterly macroeconometric model KVARTS. The Research Department is a member of AIECE (Association d'Institutes Européens de Conjuncture Economic) and the UN-based Project LINK, linking several national macro models to a global model.

Documentation: ØA 1/2005, 3/2005, 4/2005, 6/2005, ES 1/2005, 2/2005, 3/2005, 4/2005, [96], [97], [99], [100] and [102].

Macroeconomic models and econometric analysis

The unit develop and use the two large macro-econometric models - the quarterly model KVARTS and the annual model MODAG. Except from the difference in data frequency, the economic content in the two models is almost identical. The KVARTS model is used for forecasting and economic 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. The MODAG model is mainly used by the Ministry of Finance for forecasting and policy analysis, and by the unit itself in assisting fractions in the Standing Committee on Finance and Economic Affairs in the parliament. Both models have been central tools in various historical/counterfactual studies of the Norwegian economy.

The models comprise at the moment 28 sectors of production and 48 commodities. Although many of the parameters in the models are econometrically estimated, several coefficients, including the input-output structure, are each year calibrated to the most recent final national accounts data.

For most production sectors (22) a set of factor demand equations are specified based on Cobb-Douglas production functions. The factors specified are labour, energy (nested CES-elements for electricity and fuel), other material inputs, and three components of fixed capital (machinery, transport/equipment, and structures). Separate prices of imports, exports and domestic production for the domestic market, are specified for each commodity. The price formation is modelled according to the theory of monopolistic competition. Import prices are determined as functions of a limited number of world marked prices and the exchange rate. The exchange rate may be determined by a combined PPP and UIP approach, where also the oil price is included. The modelling of exports volumes and import shares are based on the Armington approach.

Households' supply of labour 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 macro-consumption function and a housing investment equation. Both depend on household real income and after-tax real interest rate. 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. This is also the case for direct personal taxation, where the tax rates are aggregated from a microeconomic model which links the actual tax structure to the large micro-database of recent individual tax forms. The Norwegian economy is characterised by a comprehensive public transfers system and the link between labour market variables and parts of the transfers to old age pensioners are modelled in a simpler way.

In 2005 both models were reestimated, based on the revised national accounts data published for 2003 in 2005. As part of the reestimation, the macro consumption function and the equation for investments in housing have been significantly changed. In addition, work has been centred around the following topics: Exchange rate and financial sector modelling, forward looking expectation in inflation targeting, and methodological problems related to testing trend breaks in time series.

Main Findings

In all four economic surveys in 2005, our forecasts predicted inflation below or on target for the next three years without any significant increase in Norwegian signal rates. Norway has been in a pronounced cyclical upturn since early 2003. We have expected it to turn into a moderate cyclical downturn during 2006, but with unemployment continuing to decline. Weaker growth in the euro-area and in the oil investments less expansive fiscal and monetary policy, were some main factors behind the predicted turning point.

There have been large fluctuations in the nominal exchange rate between Norwegian kroner and the Euro since 2001. These fluctuations are explained by changes in the corresponding short-term interest rate differential. In 2001 and 2002, a period where the krone strengthened substantially, ECB lowered their interest rates while the interest rate in Norway was kept at a relatively high level. Then, when the interest rate in Norway came down to approximately the same level as in the Euro-area, the krone weakened considerably. Also the price of oil is of importance for the exchange rate. An increase in the price of oil by 10 percent, is estimated to strengthen the krone relative to the Euro by approximately 0,8 percent.

The theory of purchasing power parity (PPP) implies that there is a long run equilibrium level for the real exchange rate between two countries. Half-life is often used to test how fast the real exchange rate adjusts towards this long run level. International studies indicate a half-life of 3-4 years, and it is an established agreement that this is too long for the PPP-theory to be valid. However, when the theory of PPP is combined with the interest rate differential (and the oil price) the half-life of shocks in the exchange marked can be reduced. Impulse responses show that the half-life of shocks in the Norwegian-German real exchange rate is between 1 and 1½ year, depending on the source of the shock. This result indicates that the deviations in the real exchange rate to a large degree also can be explained by interest rate differential between the countries.

Institutional factors in the labour market affect the outcome of wage negotiations and are important for the macroeconomic performance. Employment protection legislation, unemployment benefits and coordination between both employers and workers play a particularly important role. The most important explanation for the low unemployment rate in Norway compared to other OECD-countries, is the high degree of coordination and centralization in wage negotiations. The development in unemployment in Norway and Sweden is illustrative. Unemployment rose in both countries after a period of decentralization in wage setting during the 1980's, and fell again when wage setting was recentralized in the early 1990's in Norway and in the late 1990's in Sweden.

Bjørnstad completed his PhD thesis at the University of Oslo titled "Institutions, markets and unemployment - Understanding unemployment in the modern economy". The thesis consists of four chapters. The first chapter focuses on how prolonged unemployment may demoralize the unemployed to seek reemployment, delaying employment further. In macro this may explain why the unemployment level has not declined in many countries. In chapters 2 and 3 Norwegian manufacturing wages are modelled empirically. Competitiveness in manufacturing is found to be an important determinant for the overall wage level (chapter 2), and for workers in all educational categories (chapter 3). A hypothetical decentralization in the Norwegian wage setting is analysed in chapter 4. The results show that competitiveness in manufacturing would be weakened and unemployment will rise in case of a decentralization.

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Labour Market and Firm Behaviour

The central aim of the unit is to obtain new knowledge of the functioning of the labour market and firms' behaviour through econometric analyses of Statistics Norway's microdata, and to use this knowledge in analysing economic issues. In connection with this work, the unit also contributes to the development of relevant theories, methods and databases.

Our main fields of analysis include

- The relation between labour supply and business cycle conditions
- Labour supply effects of tax reforms
- The relationship between technological change and workers' retirement decisions.
- The choice of and returns to education
- Indicators for the performance of schools
- Education and inequality: Sorting, resources and outcomes
- Barriers to increasing female employment
- Measurement of capital and innovations
- Effects of fiscal incentives to R&D
- Efficiency, growth and firm exit
- Price index methods
- Econometric methods

Main findings

Based on a comprehensive and detailed dataset with variables on pupil performance, family background and school attended, we have constructed, calculated and published the indicators for the performance of schools at the lower secondary level in Norway. The results demonstrate the importance of accounting for differences in pupil composition when comparing schools with respect to performance

During 2005, the analysis of the effects of the Norwegian tax incentive scheme for R&D investments, SkatteFUNN, has continued. Preliminary results suggest modest positive effects on R&D investments in firms.

We have carried out an econometric study on the relationship between profitability and firm exit behavior. Explanatory variables are derived from economic theory and mixed logit models have been estimated for six export-oriented manufacturing industries. The results show that increased profitability significantly lowers the exit probability. Moreover, firms with a large capital stock tend, ceteris paribus, to have lower probability of exit. According to our model, the latter result can be attributed to the impact of adjustment costs. We find that the differences in estimated annual exit probabilities between firms that exited in the data period (1993-2002) and firms that did not, is moderate. Exiting firms are not characterized by having a high probability of exit just prior to exiting. On the other hand, the differences in estimated annual exit probabilities between firms that exited in the data period, and firms that did not is highly persistent. Consequently, there is a significant difference between the survival function of the two groups.

We have used a new matched employer–employee data set from Norway for two manufacturing industries and one service industry to describe changes in the demand for capital and labour, changes in labour productivity and changes in the skill composition of the labour before, during, and after episodes of large investments ("investment spikes"). We obtained a number of important findings. First, spikes account for a large share of aggregate industry investment. Second, investment spikes are accompanied by substantial capital deepening, while labour productivity is relatively unaffected. Third, the growth patterns of materials and hours worked are similar and much smoother than are those for capital. The observed patterns of factor adjustment are not consistent with the assumptions of homothetic production technology and (strictly) convex adjustment costs; rather, they indicate the presence of non-convexities in capital-adjustment costs.

We have studied the effects on business cycle conditions on labour supply. With respect to married/cohabitating female workers between 25 and 60 years, we have studied the so called "discouraged worker" effect on labour market participation, that is to which extent female workers withdraw from the labour force under slack economic conditions. We find such effects to be of substantial magnitude and furthermore that the effect varies with age, length of education and number of children. We have also analyzed the effects of unemployment duration and economic incentives on decisions to leave the workforce.

Several articles on econometric methods have been published in highly ranked international journals

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Public Economics

The aim of the unit is to analyse the most important factors behind the development in public revenues and expenditures. Growth in tax revenues, transfers and demand for public services are strongly dependent on demographic factors, development in supply of labour, economic growth in general and its allocation. Main research issues include fiscal sustainability assessments, as well as effects on incentives, social efficiency, income distribution and the government budget of reforms in the social security and the tax system. An important objective for the research is to provide quantitative information.

The on-going research projects may be categorized as follows:

1. Micro simulation of the effects on individual public pension benefits, income distribution and government pension expenditures of changes in demography and the social security system. These studies are based on the dynamic micro simulation model, MOSART. The model is also used by the government in current work on the specifications of the new public pension system.
2. Detailed analyses on the forces driving government consumption expenditures, including demography, service standards, relative prices and efficiency in local government service production. The empirical models used include MAKKO and KOMMODE. The latter model includes endogenous allocation of expenditures to various service sectors.
3. Microeconometric studies of individual and aggregate labour supply behaviour, especially how labour supply responds to changes in the tax system and several welfare schemes.
4. Theoretical and empirical studies on income distribution. Specifically, the distributional effects of various welfare schemes are taken into account.
5. General equilibrium analyses of fiscal sustainability. So far such studies have used the CGE model MSG6 to study the long run fiscal effects of ageing, pension reforms and other policy reforms intended to mitigate the fiscal effects of ageing, as well as tax reforms. The unit has started developing a new Overlapping Generation (OLG) model in order to improve the analyses within this field.
6. New micro data on household saving has facilitated econometric studies of the saving behaviour of Norwegian households. The studies have examined how household savings depends on age, and how it responds to credit liberalization and to revaluations of real assets.
7. Regional economics. Here the analyses focus on regional labour mobility and economic development within Norwegian regions. The model REGARD is used in some of these projects.

In 2005 the unit, represented by at least 1 co-author, has published or has got accepted 6 articles has or in international journals with referee, 2 articles in international books, 1 SES from SN, 9 Discussion papers from SN, 4 reports from SN, 3 articles in Economic Analyses from SN, 3 articles in Norwegian books, 2 articles in other Norwegian journals, and 7 other papers. Contracts related to work on the models MOSART, KOMMODE and MAKKO were fulfilled. The main publications from the joint Nordic project "Economic Renewal and Demographic Change" and the project "Urban and Regional Labour Market Mobility in Norway" were completed.

Selected findings

Discussion Paper 402 derives the asymptotic properties of the empirical rank-dependent family of inequality measures, which has the favourable feature of including the Gini coefficients, and any member of this family can be given an explicit and simple expression in terms of the Lorenz curve. It is demonstrated that the empirical Lorenz curve, regarded as a stochastic process, converges to a Gaussian process.

Discussion Paper 437 introduces an alternative method for decomposing the Gini coefficient by income sources. Rather than decomposing the Gini coefficient or any other inequality measure into a within-inequality term, a between-inequality term and eventually an interaction term, the basic quantities of the introduced method are the effects of marginal changes in variables that are used to specify the population subgroups

Discussion Paper 412 develops regression models for analysing how spread/inequality in distributions of a resource varies as a function of covariates. It shows that a generalized van Zwet type dispersion ordering for distributions of positive random variables induces an ordering on the Lorenz curve, the Gini coefficient and other measures of inequality. This result and distributional orderings based on transformations of distributions is used to motivate parametric and semiparametric models whose regression coefficients measure effects of covariates on inequality. In particular, the paper extends a parametric Pareto regression model to a flexible semiparametric regression model, and gives partial likelihood estimates of the regression coefficients and a baseline distribution that can be used to construct estimates of the various conditional measures of inequality.

Discussion Paper 417 combines a dynamic microsimulation model and a CGE model to estimate macroeconomic effects of two suggested reforms of the public pension system. Whereas maintaining the present system implies that the payroll tax rate must be increased from about 13 percent today to 25 percent in 2050, both proposals imply that taxes can be reduced from the present level in all years up to 2050. Most of this reduction can be attributed to higher employment.

Discussion Paper 418 uses a dynamic microsimulation model to estimate the how future public pension expenditures depend on demographic development, the pension system and determinants of labour supply such as education, disability, retirement age, participation rates and part time work. A robust result is a substantial growth in the future tax burden. A pension reform, which stimulates postponed retirement is found to be the most effective remedy for improving fiscal sustainability.

Discussion Paper 413 uses a large scale dynamic CGE-model to estimate sustainable paths for wage growth and the activity in the traded goods sector, especially manufacturing. Under plausible assumptions we find that about 0.5 percent annual reduction of manufacturing employment is sustainable. The real appreciation over the last 7 years has been substantially above a sustainable trend.

Social and economic studies 110 contains the main results of a research project analysing the urban and regional labour market mobility in Norway. The study finds large variations in mobility structure between regions belonging to the same region category. The degree of gross mobility and centralisation is highest for skill intensive business services. Inhabitants in the capital region have higher education compared to other regions. There is a strong negative correlation between employment growth in a region and the propensity to move out of the region. There is a positive correlation between individual geographic mobility and income growth. Data suggests that mobility depends on regional income differences.

Discussion Paper 408 introduces a method of measuring poverty based on region-specific poverty lines, which accounts for regional differences in prices and needs within a country. The overall extent of poverty is only slightly affected by the change in definition of poverty line. However, the analysis of poverty based on country-specific thresholds produces downward biased poverty rates in urban areas and upward biased poverty rates in rural areas. Poverty rates among young singles and non-western immigrants are significantly higher than what is suggested by previous empirical evidence based on a joint country-specific poverty line.

Discussion Paper 424 introduces a new measure of tax base mobility conditions based on the geographic profit variability of industrial sectors. The econometric analysis shows a systematic negative relationship between mobility conditions and tax level among municipalities in Norway.

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In addition: 2 students, 5 external associates

Economic Growth and Efficiency

The purpose of the research activities in this unit is to contribute to increased understanding of long-run adaptation of the Norwegian economy to changes in policies with special attention to impacts of taxation, industrial policy, trade policy, innovation policy and environmental policy on macroeconomic efficiency and economic growth processes. Our main tools are general equilibrium models.

The most recent version of the numerical general equilibrium model (MSG-6) has endogenous labour supply, intertemporal consumer and producer behaviour based on perfect foresight, an integrated emissions-to-air module linked to the economic activities, a detailed description of the electricity market and a specified representation of the link between firm and industry behaviour, where heterogeneity between firms and imperfect competition are accounted for. This year's work has been concentrated on re-calibrating the model to a new base year (2002) and implementing the re-formulation of the model of public revenue and expenses. The re-estimation of the elasticities of substitution in the production technology for the different industries has been completed and implemented in the model.

The unit's other main project is a project aimed at improving our understanding of the growth mechanisms in a small, open, oil- and gas producing economy as the Norwegian. The project puts especially emphasis on the development of new environmental friendly technologies. Interactions between innovation policies and abatement policies have impact on the abatement costs of achieving environmental emission targets. This year's activity has been concentrated on developing and analysing a pilot version of a computable general equilibrium model with endogenous technological change. This pilot version has 10 private industries and 1 governmental industry. Technological change is modelled as a result of research and development (R&D) activities performed by optimising agents. The output of general R&D activity is new technological solutions that are purchased by capital producers in order to supply new varieties of capital equipments. There is monopolistic competition in the capital markets and love of capital variety in demand, so that productivity in the final goods industries increases with R&D activity, number of patents and of real capital firms producing different capital varieties.

Main findings

The production structure in the MSG6-model consists of 40 sectors with 9 nested CES-aggregates for each sector. This study estimates the elasticity of substitution between pairs of input-factors in 6 of these CES-aggregates; *Buildings and constructions versus Heating*, *Other inputs versus Services from structures*, *Machinery versus Energy*, *Machinery services versus Labour*, *Labour and Machinery services versus Transport services*, and *Various material inputs versus Modified real value added*. The study finds smaller substitution parameters between *Machinery services* and *Labour*, and between *Machinery* and *Energy* in some sectors, compared to previous studies. The study find positive substitution parameter in most sectors between *Labour and Machinery services* versus *Transport services*, and between *Various material inputs* versus *Modified real value added*. Previous studies do not provide estimates for all these substitution parameters. A factor price increase generates different effects on the demand for input-factors when substitution parameters from this study are implemented into the production structure compared to previous parameter values.

Documentation: Andreassen, L. og G. Bjertnæs (2006): Tallfesting av faktoretterspørsel i MSG6, Notater 2006/7, Statistisk sentralbyrå.

Due to risk and risk aversion, the representative investor requires a risk premium when investing in shares. This latter feature of reality may be implemented in a CGE model by including a risk premium in the user costs of real capital. But a problem shows up if the CGE model is non-stochastic and does not explicitly include costs associated with risk. The risk premium will then appear as an additional return on investments in real capital as compared with investments in financial capital, and not as a mere compensation for risk. In this paper three different, ad hoc, adjustment methods concerning the stated problem are proposed. The empirical implications of the methods are investigated, taking an analysis of neutral taxation of housing, a policy experiment that leads to large reallocations from real to financial capital, as the starting point. This analysis is undertaken by using a non-stochastic CGE model with a risk premium, but without costs associated with risk. The endogenous adjustment method where the risk premiums are abolished in the model simulations seems to be preferable to the two other recursive methods, which adjust the welfare measure *after* the model simulations.

Documentation: Åvitsland, T. (2006): The problem with a risk premium in a non-stochastic CGE model, Documents 2006/2, Statistisk sentralbyrå.

The relationship between innovation incentives and economic welfare and growth is analysed. Two distinct policy alternatives are simulated; a general subsidy towards production of capital varieties, and a general subsidy that stimulates entry of new firms in the capital varieties industry. Both policy alternatives are financed by higher lump sum taxes such that public revenues are constant between the reference path and the policy alternatives. By simulating the computable general equilibrium model that includes endogenous technological change mechanisms, the results show that stimulating the production of real capital through a production subsidy is the best innovation policy in terms of welfare. This measure stimulates R&D in order to provide new capital varieties. In addition the output of capital within each firm increases. The latter effect turns out to be important, due to imperfect competition among capital-producers and thus sub-optimally low provision initially. In the other policy alternative where entry of new capital producing firm is directly stimulated, R&D and the number of capital varieties increase, but output within each firm falls. This latter effect contributes negatively to welfare due to imperfect competition in the market for capital varieties. The overall welfare effect of the entry subsidy is negative.

Documentation: Innovation policies and welfare in a small, open economy: a CGE analysis of induced technological change, Bye, Brita, Taran Fæhn, Tom-Reiel Heggedal and Birger Strøm, unpubl. manuscript, Statistics Norway.

Staff

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Petroleum and Environment Economic

The aim of the research unit is to investigate how national and international policies and other conditions affect the value of Norwegian natural resources and the state of the environment in Norway. A central part of the research work is to develop and maintain model tools that enable us to consider important natural resource and environmental issues related to economic development.

The oil market is very important for Norway, and is naturally in focus for our research. A simulation model for the international energy markets, with special attention to the supply side of the oil market, has been developed. The model has been used to analyse the future development of the oil price, and will be used to analyse other oil market issues as well as gas market and climate policy issues. The European gas market is also important for Norway, and the supply of Russian gas and LNG from distant sources is crucial for the future gas prices in Europe. Both these sources of gas supply are examined in separate studies (econometric analyses and simulation models. Sustainable development with emphasis on natural resources management has also been analysed with point of departure in the development of Norwegian national wealth. Moreover, the first steps have been taken in order to extend the analysis of national wealth from a sustainability perspective into the Arctic region.

The Kyoto Protocol and international climate policy are also examined within a simulation model for CO2 abatement in different regions. The effects of the protocol without the U.S. have been analysed, and the position of Russia as a big player in both the quota market and the European gas market is investigated. Moreover, the potential for CDM projects in the agricultural sector of developing countries, as well as energy projects in China, are analysed. The market effects of different allocation rules in national quota markets are also examined. Economic activity in the Arctic, and impacts of climate change, will be analysed in a new project.

To achieve long-term climate targets, carbon-free energy technologies have to be further developed, and the innovation and learning processes in this respect are analysed within theoretical and numerical models. We examine the effects of innovation and abatement policies on the technological development and economic welfare. The market structure of the R&D sector is also important here, and the Porter hypothesis is examined under various assumptions.

Firms' behaviour with respect to the environment is investigated in several projects. First, we study how the risk of environmental policy and the demand for green or ethical funds affect firms' investments decisions. This question is analysed both theoretically and empirically. We have also investigated how firms act in accordance with their pollution regulations, and how the authorities act in accordance with violations of these regulations. Consumers' behaviour is also investigated through experimental analyses, focusing on how social norms affect consumers' actions.

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Statistical Methods and Standards

The general aim of methodological statistical research is to improve the quality in collection, production and analysis of statistics. The research encompasses the following areas:

- **General survey design and estimation in survey sampling**
- **Nonresponse and imputation**
- **Variance estimation**
- **Small area estimation and registers**
- **Census methodology**
- **Time series and seasonal adjustment**
- **Disclosure control**
- **Statistical standards and metadata**

Non-response and imputation

Work in the area of statistical adjustment to reduce non-response bias has continued in 2005. In particular, a report is being prepared under the title: Coping with Non-response under Decreasing Response rates. The report covers measures taken during data collection to increase contact rates as well as securing positive cooperation with the contacted households and businesses. The report also summarises experiences concerning use of statistical adjustment methods for unit non-response as well as imputation for item non-response.

Documentation (to appear) HB 2006, NOT 2006)

Variance estimation

Statistics Norway is increasing its efforts in giving estimates of uncertainty in official statistics, taking into consideration sampling design, non-response and imputation method. The research aims at developing variance estimates and related confidence intervals, of different types, not only the usual estimated sample variance (s.v.) of the population total estimator. Other measures of uncertainty are estimated conditional s.v. for post stratified and calibrated estimators, estimated model variance and estimated method variance.

Small Area Estimation

Small area estimation has been the subject of a number of studies throughout the years. A wide range of methods has been investigated including synthetic estimation, empirical Bayes methods, model-based approach and neural network.

Statistics Norway has carried on the research that was originated in the EU 5th-framework project on small area estimation (EURAREA). In addition design-based measures of uncertainty in estimation have been proposed and studied.

Use of Administrative Registers

Use of administrative registers often improves surveys by reducing the sampling variance, reducing the bias caused by non-coverage and non-response, and imposing consistency between the various sources of data. Instead of considering single surveys, recent research has focused on the effects of registers for measure of changes. The current research aims at methods beyond post-stratification and calibration, which may be more suitable and flexible for certain types of data, such as the household income and wealth. Research in this respect is closely linked to that on combining data sources and integrated statistics.

Time Series and Seasonal Adjustments

Statistics Norway uses the X-12 ARIMA seasonal adjustment program developed by the Time Series Staff of the Census Bureau ‘s Statistical Research Division to make seasonal adjustments of economic time series. It has been necessary to make adds-on to make correct adjustments for Norwegian holidays. I 2005 the division has participated in predicting mortality using the Lee-Carter Method. The results will be published and presented at the European Population Conference in 2006

Disclosure Control

Disclosure control is relatively new as a research topic in Statistics Norway. Work done so far has dealt with confidentiality problems in frequency tables. Methods for stochastic controlled rounding have been extended to multiple two-way marginals for higher dimensional tables (unpublished). The Web StatBank Norway and the matching of register data into surveys pose new research challenges in this field.

Documentation: Confidentiality problems related to survey data in Norway and some possible approaches. WP 41, UNECE work session in statistical confidentiality, Skopje, March 2001. Available at CIRCA.

Rounding as a confidentiality measure for frequency tables in Statbank Norway. In proceedings from Work session on statistical data confidentiality, Luxembourg, April 2003.

A ranking approach to confidentiality in survey data. WP23, proceedings from UNECE conference on confidentiality in statistics, Geneva, November 2005. To appear

Survey Design

Statistics Norway continues to study the general theory of sample surveys. The research aims at providing sound theoretical foundations for a number of sampling techniques that have been found to be useful in practice. These include the common designs used in business surveys and the two-stage sampling designs for clustered populations, as well as stratified sampling design. The results also provide valuable insights to the design of sample surveys in general.

A detailed study of the effects of non-response and misclassification has been conducted. The non-sampling errors are modelled and evaluated. It is important for policy makers as well as social-economic researchers to understand both sources of error

Coordination of samples from economic surveys to reduce and control response burden is a challenge in Statistics Norway. Studies in the potential of using permanent random number technology for this purpose are ongoing.
Documentation: DP 440/2005

Statistical Standards and Metadata

General aspects
Work concerning statistical standards in Statistics Norway is decentralised so that each division is given the responsibility for classifications within their own statistical field. This concerns all aspects of the classifications unless otherwise decided by the Director General. For the purpose of coordination a Standards Committee is established. The committee acts as a catalyst and supervises statistical standards. The Division for Statistical Methods and Standards serves as the secretariat of the Standard Committee and is responsible for the central work connected to standards.

Classification database
Statistics Norway, in cooperation with Statistics Denmark, has established a database for statistical classifications, which is also available on the Internet. In connection with this work, Statistics Norway has participated in the Neuchâtel group (also consisting of Statistics Sweden, Statistics Denmark, Statistics Switzerland and Run-Software from Germany) where the aim has been to establish a common terminology for classification databases.

Metadata
An important part of the standardization work is connected to metadata, and Statistics Norway has developed a specific strategy for development within this area. The goal is that all our metadata systems should work together as one comprehensive system. To achieve this goal, different metadata systems have been developed and linked. One example is the variables documentation system that documents important/central variables. This system is used as a tool for standardization of variables, and improves accessibility to variables information. In 2005 our work within variables documentation was focused on developing further functionality and links to other relevant metadata systems.

Main findings
A prediction approach to sample design is developed. This is done under the assumption that prediction of totals should be supplemented by a need to predict individuals. It turns out that balancing between optimal prediction of the population totals and controlling individual prediction, provides a fruitful model-based approach to sampling design.

The bias in the sample gross labour flow estimates are modelled. Both types of non-sampling errors cause large bias in the observed gross labour flow estimates. The directions as well as the magnitudes of the two types of biases are assessed.

Models for estimation of small area cross-classifications are developed and evaluated. These turn out to provide greater flexibility than the existing methods. In addition estimates with better precisions are obtained.

Design based properties of the model based small area confidence intervals are studied both in theory and by using empirical data. The model-based intervals can obtain the nominal level of confidence, while greatly improving the efficiency of the traditional design based methods.

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Social and demographic research

The general objective of the division is to analyse demographic development and changes in economic and social living conditions of the population. The research activities combine micro- and macro analytic approaches to the analyses of demographic and socioeconomic processes. On-going activities are divided into four areas: (a) Population development, migration and mortality, (b) Fertility, nuptiality and changes in family structure, (c) Immigration and social change and (d) Living conditions and social participation. 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).

Demographic research

Population development, migration and mortality

A new set of national and regional population projections was released in December 2005 for the period 2005-2060 for all of Norway and for 2005-2025 for municipalities. A projection of the immigrant population for 2005-2060 was also published, being the first official projection of the immigrant population in Norway by age, sex and region of origin. 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 internationally. We are involved in cooperation with the other Nordic countries on the projection of mortality in population forecasts and advice the Ministry of Foreign Affairs in the United Nations Commission for Population and Development. A senior research fellow is currently coordinator of the Working Group on the Demography of Conflict and Violence of the International Union for the Scientific Study of Population.

Documentation: ØA 1/2005, 6/2005, [7], [8], [9], [10], [61], [103], [104], http://www.ssb.no/emner/02/03/folkfram/, http://www.ssb.no/innvfram/

Fertility, nuptiality and changes in family structure

In recent years a substantial part of the research has focused on structural changes in central demographic processes, in particular fertility, nuptiality (marriage and cohabitation) and family formation. Analyses of recent fertility trends are based on an extension of earlier analyses of register data for the period 1935-1990. For more complex analyses of fertility trends and new patterns of family formation, population register information is linked to various sources containing possible explanatory variables. We analyse the growth, types of, and attitudes to cohabitation during recent history and the family formation process in a gender perspective as well as registered partnerships (same-sex marriages). In another project family dynamics are related to divorce determinants. We also study cohabitants' commitment to their partnership, their propensity to marry, and the interrelations between first birth and first union formation. The division is involved in the Generations and Gender Programme coordinated by UNECE in Geneva. We are coordinating the planning for a Norwegian Gender and Generation Survey in 2007. The division also participates in several collaborative networks with other research institutions. We coordinate a Nordic network on register data analyses of family formation and effects of family policies, and participate in a network using interview data to compare family formation in Sweden and Norway. We also take part in a network on same-sex partnerships in Europe.

Documentation: SA 69, SSP 2/2005, 5/2005, 6/2005, ØA 1/2005, 6/2005, Reprints 295, 297, [21], [23], [38], [39], [109], http://www.ssb.no/magasinet/norge_sverige/art-2005-01-24-01.html

Social research

The activities concerning social research are increasingly focusing on more specialized analyses and research projects and less on general social reporting. Most of this research is financed as commissioned research. We do both cross-sectional and longitudinal analyses, based on surveys as well as administrative registers, including generational changes in the level of living over the life course, differences between various population groups, and gender differences in the outcomes of social processes. The level of living is studied both in terms of material conditions such as income, housing and labour market participation, in terms of social integration and isolation, and as time use patterns, often with a focus on the effects of social welfare policies on particular population groups.

Immigration and social change

The living conditions and integration process of immigrants and refugees are studied in several projects, including an analysis of people's attitudes to immigrants and immigration and an analysis of changes in residential patterns of immigrants in Oslo from 1988 to the present. A larger survey on the level of living of 10 different non-western immigrant nationalities is also being conducted. The fieldwork started in 2005. A supplementary survey of young people with immigrant background from Pakistan, Turkey and Vietnam will be launched in 2006.

Documentation: NOT 2005/51, SA 67, [41], [53], [54], [89], [90], [91], http://www.ssb.no/vis/magasinet/slik_lever_vi/art-2005-03-04-01.html

Living conditions and social participation

A substantial part of the ongoing research focuses on various aspects of the living conditions of parents and children, including parents' working time arrangements, the division of domestic labour and the effects of the cash-for -care program for parents' labour supply. In particular, we focus on couples' working hours. We are also engaged in a project evaluating the new regulations of child maintenance, projects exploring the living conditions among farmers, a project looking at the relationship between criminal careers and living conditions, as well as a project investigating the living conditions in the inner city of Oslo. We have also taken part in the planning of a new survey on students' living conditions.

Documentation: REP 2005/9, 2005/10, 2005/21, 2005/22, 2005/23, 2005/35, SA 74, SSP 4/2005, Reprints 301, [20], [49], [50], http://www.ssb.no/vis/magasinet/slik_lever_vi/art-2005-05-03-01.html, http://www.ssb.no/vis/magasinet/slik_lever_vi/art-2005-09-23-01.html

Main findings

- A new analysis of mortality trends for the period 1900-2004 yields approximately the projected levels of life expectancy as for the previous projection (2002-2050).
- The new projection indicates a strong growth of the immigrant population, from the current 360 000 to between 1 and 2 mill. in 2060 (from 8 to 19 - 27 per cent of the total population).
- The age of childbearing is still increasing in the Nordic region, but Norwegian women are younger at first birth than women in the other Nordic countries (except Iceland). Norwegian women with low education have considerably lower childbearing age than similar groups in the other countries.
- Most young Norwegians intend to have a family in the future. Young women are slightly more in favour of marriage and children than young men.
- The demographic characteristics of registered partnerships (same-sex marriages) in Norway and Sweden are quite similar. Divorce risk patterns are not very different in same-sex and opposite-sex marriages, but the risk levels are considerably higher in same-sex partnerships.

- The 2005 survey on attitudes to immigrants and immigration revealed increasing acceptance of refugees and a more positive evaluation of immigrants' social and cultural contributions. The attitudinal change may be influenced by more favourable business cycles and reduced numbers of asylum seekers.
- Ten percent of a birth cohort have been charged with crime at least once during ages 15 to 24. Problematic living conditions increase the risk for a continued and more severe criminal career.
- One year after the 2003 child maintenance reform, there were only minor changes in the time spent by non-resident parents with their children. There was, however, a slight decrease in the level of reported conflicts between the parents.
- There were only small differences in economic welfare between parents not living together in Norway 2002. In two out of five cases, the non-resident and in equally many cases the resident parent, had the highest welfare of the two.

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Administration

Personnel and budget

The total staff in the Research Department in 2005 was 75 in total number of persons. From 2005 the Research Department has been organized in 7 thematic groups.

The financial resources of the research activities stem partly from the government budget as allocated within Statistics Norway. About 45 per cent of total expenditures in 2005 are project financed. The bulk of the project revenues comes from research grants from the The Research Council of Norway. The balance from contracts with Ministries, primarily the Ministry of Finance, Ministry of the Environment, Ministry of Petroleum and Energy, Ministry of Labour and Social Inclusion, Ministry of Local Government and Regional Development and Ministry of Foreign Affairs.

Distribution of operating costs in 2005. 1 100 NOK

	Government Budget[1]	Project[2]	Total
Reserach Department	23 682	25 734	49 416
Social and Demograpich Reserch	3 714	6 719	10 443
Statistics Methods and Standards	5 500	1 500	7 000

[1] Infrastructure not included.

[2] Infrastructure included.

Staff

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*Part time

Statistics Norway Publications

Sosiale og økonomiske studier

110 **Stambøl, Lasse Sigbjørn:** Urban and Regional Labour Market Mobility in Norway. (161 sider)

Statistiske analyser

69 **Rein Bore, Ragnhild (red.):** Hundre års ensomhet? Norge og Sverige 1905-2005. (160 sider)
Artikkel: **Cappelen, Ådne og Erling Røed Larsen:** BNP-utviklingen 1905-2005. Økonomisk utvikling og verdiskaping. (s. 6-14)
Artikkel: **Noack, Turid:** "Stockholmsekteskap" og gyngende vugger. (s. 64-65)
Artikkel: **Ouren, Jørgen:** Grenseløse fornavn. (s. 120-121)

70 Natural Resources and the Environment 2004. Norway. (246 sider)

75 Naturressurser og miljø 2005. (268 sider)

Rapporter

2005/2 Fredriksen, Dennis, Kim Massey Heide, Erling Holmøy og Ingeborg Foldøy Solli: Makroøkonomiske virkninger av pensjonsreformer. Beregninger basert på forslag fra Pensjonskommisjonen. (50 sider)

2005/8 Halvorsen, Bente, Bodil M. Larsen og Runa Nesbakken: Pris- og inntektsfølsomhet i ulike husholdningers etterspørsel etter elektrisitet, fyringsoljer og ved. (38 sider)

2005/10 Kitterød, Ragni Hege: Han jobber, hun jobber, de jobber. Arbeidstid blant par av småbarnsforeldre. (60 sider)

2005/11 Mogstad, Magne: Fattigdom i Stor-Osloregionen. En empirisk analyse. (47 sider)

2005/12 Cappelen, Ådne, Frank Foyn, Torbjørn Hægeland, Knut Arild Kjesbu, Jarle Møen, Geir Petterson og Arvid Raknerud: Årsrapport for SkatteFUNN-evalueringen - 2004. (40 sider)

2005/13 Greaker, Mads, Pål Løkkevik og Mari Aasgaard Walle: Utviklingen i den norske nasjonalformuen fra 1985 til 2004. Et eksempel på bærekraftig utvikling? (44 sider)

2005/18 Larsen, Bodil M. og Runa Nesbakken: Formålsfordeling av husholdningenes elektrisitetsforbruk i 2001. Sammenligning av formålsfordelingen i 1990 og 2001. (41 sider)

2005/20 Aune, Finn Roar, Torstein Bye og Petter Vegard Hansen: Et felles norsk-svensk elsertifikatmarked. (36 sider)

2005/21 Lyngstad, Jan, Randi Kjeldstad og Erik Nymoen: Foreldreøkonomi etter brudd. Omsorgsforeldres og samværsforeldres økonomiske situasjon 2002. (164 sider)

2005/22 Kitterød, Ragni Hege: Når mor og far bor hver for seg. Ansvar og omsorg for barna før og etter bidragsreformen. (104 sider)

2005/23 Rønsen, Marit: Kontantstøttens langsiktige effekter på mødres og fedres arbeidstilbud. (39 sider)

2005/24 Gabrielsen, Karina: Climate change and the future Nordic electricity market - Supply, demand, trade and transmission. (57 sider)

2005/25 Langørgen, Audun, Taryn Ann Galloway, Magne Mogstad og Rolf Aaberge: Sammenlikning av simultane og partielle analyser av kommunenes økonomisk atferd. (44 sider)

2005/32 Belsby, Liv, Aina Holmøy, Randi Johannessen, Erling Røed Larsen, Lasse Sandberg, Leiv Solheim, Dag Einar Sommervoll: Leiemarkedsundersøkelsen 2005. (73 sider)

2005/33 Hægeland, Torbjørn, Lars J. Kirkebøen, Oddbjørn Raaum og Kjell G. Salvanes: Skolebidragsindikatorer. Beregnet for avgangskarakterer fra grunnskolen for skoleårene 2002-2003 og 2003-2004. (36 sider)

2005/36 Hægeland, Torbjørn, Lars J. Kirkebøen, Oddbjørn Raaum og Kjell G. Salvanes: Skolebidragsindikatorer for Oslo-skoler. Beregnet for avgangskarakterer fra grunnskolen for skoleårene 2002-2003 og 2003-2004. (46 sider)

2005/38 Texmon, Inger og Nils Martin Stølen: Arbeidsmarkedet for helse- og sosialpersonell fram mot år 2025. Dokumentasjon av beregninger med HELSEMOD 2005. (43 sider)

2005/40 Larsen, Bodil M. og Runa Nesbakken: Temperaturkorrigert formålsfordeling av husholdningenes elektrisitetsforbruk i 1990 og 2001. (29 sider)

Discussion Papers

401 **Klette, Tor Jakob and Arvid Raknerud:** Heterogeneity, productivity and selection: an empirical study of Norwegian manufacturing firms. (47 sider)

402 **Aaberge, Rolf:** Asymptotic Distribution Theory of Empirical Rank-dependent Measures of Inequality. (21 sider)

403 **Aune, Finn Roar, Snorre Kverndokk, Lars Lindholt and Knut Einar Rosendahl:** Profitability of different instruments in international climate policies. (36 sider)

404 **Jia, Zhiyang:** Labor Supply of Retiring Couples and Heterogeneity in Household Decision-Making Structure. (27 sider)

405 **Jia, Zhiyang:** Retirement Behavior of Working Couples in Norway. A Dynamic Programming Approach. (31 sider)

406 **Jia, Zhiyang:** Spousal influence on Early Retirement Behavior. (27 sider)

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416 **Aune, Finn Roar, Solveig Glomsrød, Lars Lindholt and Knut Einar Rosendahl:** Are high oil prices profitable for OPEC in the long run? (48 sider)

417 **Fredriksen, Dennis, Kim Massey Heide, Erling Holmøy and Ingeborg Foldøy Solli:** Macroeconomic effects of proposed pension reforms in Norway) (46 sider)

418 **Fredriksen, Dennis and Nils Martin Stølen:** Effects of demographic development, labour supply and pension reforms on the future pension burden. (29 sider)

419 **Alstadsæter, Annette, Ann-Sofie Kolm and Birthe Larsen:** Tax Effects on Unemployment and the Choice of Educational Type. (28 sider)

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