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Plans and Reports

Statistics Norway

Statistisk sentralbyrå

Research Department

Statistics Norway

Annual Report 2006

Contents

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Introduction

The Annual Report 2006 for the research activities of Statistics Norway presents the main fields of research in 2006 with complete lists of publications and staff. Research activities reported here takes place in the Research Departement, but includes also the Social and Demographic Research Unit and the Statistical Methods and Standards Unit which administratively are placed in other departments in Statistics Norway.

Statistics Norway 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, February 2007

Ådne Cappelen
Director of Research

General research objectives

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 policy making, usually in the form of simulation models. Modelling activities are carried out in close contact with user interests and with emphasis on government policy making needs.

give feed-back to the statistics

Researchers in 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.

Organisation of Statistics Norway

Per 1 February 2007

Taxation, Inequality and Consumer Behaviour

The Unit for Taxation, Inequality and Consumer Behaviour is responsible for developing and applying the tax-benefit model system LOTTE and other static micro simulation models. Our research focuses on micro econometric studies, modelling of consumer behaviour and analyses of the distribution of income and wealth.

Main areas of research

Much of the econometric research aims at the parameterisation of our micro simulation models. 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. Other important research fields are the role of housing markets – for example for estimation of the CPI, for measurement of income inequality and for household saving – and investigation of behavioural and distributional effects of the tax system and of tax reforms.

Main findings

The tax-benefit model LOTTE system has been extensively used by the Storting (Parliament) and the Ministry of Finance. The unit was responsible for estimation of direct and cross-price elasticities for detailed commodities from our model KONSUM-G. These estimates were used by the Ministry of Finance to calculate of revenues from indirect taxes, in particular on tobacco and alcohol. Documentation of the model system LOTTE is now accessible on web-site.

Several publications were accepted in 2006. A paper on the effects of Norwegian family policies was published in *Fiscal Studies*. An article on whether consumer's behaved as if they perceived price increases were in line with CPI-measurements or not was accepted for publication in the *Scandinavian Journal of Economics*. This article uncovers that Norwegian consumers during the 90s behave as if prices increased 35% while the CPI estimates that they rose 22%. Another article which was published in the *Journal of Consumer Policy* estimates the relation between different modes of transportation and material standard of living in the United States and theorizes that there may exist potential double dividends; both a Pigou correction and progressive taxation; in a green taxation scheme since rich households tend to utilize the most environmentally unfriendly modes of transportation. We also published an article in *Journal of Real Estate Finance and Economics* showing that the level of temporal aggregation plays a vital role, and possibly biasing estimates in repeated sales models. Repeated sales models are much used when construction indices for durables and in particular, housing market indices. Moreover, this paper develops diagnostic tools, as well as rules of thumb, to avoid severe biases induced by temporal aggregation alone. Another paper analysing the Norwegian dual income tax was accepted for publication in *Finnish Economic Papers*.

Documentation: [22], [27], [28]

Some ongoing projects analyze households' saving and portfolio choice when faced with changes in marginal tax rates and interest rates. Some of the work is directly aimed at evaluating the Norwegian 1992 tax reform, with emphasis on the introduction of a flat and uniform capital tax rate. Other papers focus on the role of housing and in particular the lack of good measures of housing wealth at the micro level. We have also analyzed optimal marginal indirect tax reforms for Norway, taking into consideration efficiency, distribution, environment and health effects. The empirical basis is taken from a comprehensive system of micro and macro models of the Norwegian economy, which are combined in a consistent and transparent framework, close to textbook models on welfare analysis of marginal tax reforms. The analysis shows that the 2000 VAT reform, which lowered the VAT rate on food and introduced a new VAT on services, had a clear redistributive profile.

Documentation: DP 455

An analysis focusing on the design of an indirect electricity tax system in the presence of international regulations and multiple public goals was published in Norwegian. The unit was also involved in editing a report in Norwegian, which gives an empirical overview of important characteristics of the tax system in Norway, besides providing an international comparison.

Documentation: SA 77

Apart from research, organizing the 8th Nordic seminar on micro simulation models was an important task in 2006.

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Energy and Environmental Economics

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.

Main areas of research

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 market concentration issues. We further study the interaction between efficient policy instrument formulation to curb emissions, reduce environmental consequences and to achieve other energy policy goals.

Main findings

Water inflow shortage and high electricity prices have brought up several important subjects concerning the vulnerability of the Norwegian hydropower market. One fear is that the market could break down when precipitation and inflow fails both in the short term (weeks) and in the longer term (annual). Closer evaluations of both the demand and supply price elasticities, inflow volatility, market power issues and international trade between markets based on heterogeneous supply technologies are important for the understanding of the total risk for abruption in a close to a hundred per cent hydro based power production system. Analyses of market effects under the lower end of the 90 percent inflow interval, i.e. an overall inflow shortage of 25 per cent below normal, indicate that significantly higher prices are likely to occur in the Nordic power market in the future than in the past. The price effects are less than one would expect when compared to observed short-term inflow shortages, but prices remain higher for a longer period of time. The analysis does not indicate any malfunctioning problems in the market.

Documentation: DP 472, ØA 4/06

To analyse the consequences of water inflow uncertainty for prices and efficiency in a hydropower dominated system, we apply a two-period theoretical model. We study three different market structures, perfect competition, monopoly and oligopoly. The shape of the demand function under different distributions of water inflow shows to be very important. The uncertainty of inflow increases the possibilities to exercise market power. The distribution of the total uncertainty matters, but the distribution among producers does not. When introducing thermal power into the power market, the residual demand function is important for the hydropower producers' possibilities of exercising market power.

Documentation: Forthcoming DP

In 1991, an Energy Act changed the electricity industry dramatically. Prior to the liberalisation we observed severe inefficiencies in the industry. There were no mechanism that spurred the firms to minimise costs, no open spot market that could ensure that all the available water was used for producing electricity, and there existed large differences between the prices paid by different consumer groups, creating a large potential for misallocation of resources. The authors argue that the Energy Act led to better resource allocation and benefits for consumers. In particular, the spilling of water observed prior to the liberalisation vanished and prices of electricity fell. The differences in prices between consumer groups diminished, leading to better allocation of resources. Investments declined, making reallocation to more profitable investment alternatives in other industries possible. Eventually the rate of return in the power industry increased as demand and supply were more based on sound investment principles.

Documentation: [55]

Policy instruments to obtain environmental, energy or efficiency goals are used to change individual behaviour. The total effectiveness of the instruments with respect to the aim depends on the aggregate response of all consumers. As consumers are not homogeneous with respect to demand flexibility, aggregating to total responses is not straightforward. We have studied the necessary assumptions to be made about the micro function to circumvent aggregation biases if we were to predict aggregate demand response using micro information. A micro simulation model is built to describe the heterogeneity in household electricity consumption. The aggregation biases create the need for theoretically consistent framework for calculating macro demand from micro demand. We have developed a general framework for calculating macro parameters using micro information when income, prices and the price and income derivatives are allowed to vary across consumers. This framework is used to develop an aggregated version of the micro simulation model, which will be used to simulate the main driving forces in the historical development.

Documentation: DP 452, DP 489, REP 2007/7, NOT 2007/10, NOT 2007/10

In the Norwegian electricity markets, households' electricity metering systems only allow billing based on consumer profiles for long periods of time (weeks, months, years). Even though they may choose tariffs reflecting the short-term changing conditions and marginal costs in the electricity system the actual cost depends upon the profiling. This may create inefficient allocation of electricity in the short term and non-optimal investments in capacity on both the producer and the consumer side in the long term. The existing system may imply insufficient reliability of supply and higher market price volatility. A lower flexibility may also increase the possibility to exercise market power. We have discussed how automatic meter reading and direct load control technology combined with time-differentiated tariffs can increase demand response and improve the functioning of the electricity market.

Documentation: DOC 2007/6

Productivity growth may be analysed in the context of Malmquist indexes. Productivity measures ignoring environmental effects may give misleading information on total productivity growth. Further, when the time series applied are short business cycles in the form of capacity utilization may also significantly influence productivity measures. We have developed a productivity index and decomposed changing efficiency rates into a contribution from environmental factors, capacity utilization and other traditional factors and applied the model to a micro data set for the Norwegian pulp and paper industry and the inorganic chemistry industry (Bye, Bruvoll and Larsson 2006). The analysis indicates that differences between the traditional and revised efficiency measures changes are ambiguous, except from the capacity utilization element. This indicates that the environment loses when business cycles improve.

Documentation: DP 473

National and international expansion of transmission networks and diminishing returns to scale in hydropower capacity expansion has raised the opportunity cost of electricity. The resulting changes in comparative advantage between industries have in many countries been counteracted by government assistance to energy intensive industries. A good example is the implicit electricity price subsidies offered to energy intensive manufacturing in Norway through the state owned power company Statkraft. We study what share of firms that will survive in the long run when these subsidies are removed, relative prices and the equilibrium adjustments of the industry structure. The industry structure will be less specialised industry and gross trade will be reduced. The positive public budget effect allows the government to cut other taxes, which fuels the real exchange rate depreciation necessary to meet the national budget constraint.

Documentation: DP 462

Traditional national emissions accounts include direct emissions from domestic production and consumption activities. This measure may differ significantly from the emissions related to inland consumption (from both production and consumption activities) and as the driving force; i.e. when taking trade related emissions into account. We add foreign emissions related to import, and subtract domestic emissions related to export. The Norwegian consumption related CO_2 emissions, at present, are lower than the total domestic emissions. This is mainly due to the emission extensive exports of Norwegian oil production and energy intensive commodities. The difference will decrease in the future, due to reduced oil extraction and a downscaling of the energy intensive industries.

Documentation: ØA 5/2006

Pollution intensive production can be avoided domestically by increased imports and less exports of dirty products. Such trade effects may imply more emissions abroad, or pollution leakages. We find little evidence for the hypothesis that pollution leakages contribute to decouple emissions from economic growth in the Norwegian economy (Fæhn and Bruvoll 2006). Despite decoupling of emissions from economic growth over the past 20 years, there was no increase in pollution leakages. Rather, emissions related to export increased far more than the foreign emissions embodied in import, implying reduced leakages. In future projections, we find a lower degree of decoupling than in the past, but no corresponding reductions in leakages. Instead, leakages increase. This conclusion is fairly invariant to assumptions about future climate policy.

Documentation: DP 477

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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).

Main areas of research

Economic surveys and forecasts are published quarterly in parallel editions in Økonomiske analyser (ØA) and Economic Survey (ES). The latter 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 1/2006, 3/2006, 4/2006, 6/2006, ES 1/2006, 2/2006, 3/2006, 4/2006, SSP 4/2006 [91], [92], [93], [94], [95] and [100]

The unit develops and uses two large macro-econometric models - the quarterly model KVARTS and the annual model MODAG. Except for the difference in data frequency, the economic content of 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 parties 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.

In 2006 both models were rebased to the revised national accounts data for 2004 published in 2006. The econometric equations in KVARTS are in general under continuous revision. Lately the work has been centred around the following topics: Exchange rate and financial sector market, the housing market, export performance, factor demand and economic behaviour of local authorities.

Documentation: REP 2006/6, REP 2006/40, DP 466, DP 468, DP 469, ØA 6/2006 and [9]

Main findings

The New Keynesian Phillips Curve (NKPC) has become the benchmark model for understanding inflation in modern monetary economics. One reason for the popularity is the microfoundation of the model, which decomposes agents' behaviour into price adjustments and deviations of the price level from its target. Findings indicate, however, that the forward-looking part of the NKPC is most likely at odds with both Norwegian data and in other OECD-countries using a panel of 20 OECD-countries. By contrast, a dynamic model interpreted as a standard backward-looking mark-up price equation fits the data well. Interestingly, in the Norwegian case the dynamic mark-up model forecasts well post-sample and during a major change in the monetary policy regime, which certainly is strong evidence in favour of this model. Consequently, taking account of forward-looking behaviour when modelling consumer price inflation in Norway seems unnecessary to arrive at a well-specified model by econometric criteria.

Documentation: DP 460 and DP 463

Existing literature have focused on the influence of institutional factors on wage determination when explaining the prolonged cross-country differences in unemployment. Although coordination of wage bargaining probably affects entry barriers and competition in product markets as well, research on price determination has typically not considered such factors. In a panel of 15 OECD-countries, coordination was found to affect the price mark-up explicitly. The estimates show that when we correct for the effect of coordination on wages, consumer prices may be as much as 21 percent higher in countries like Italy, the Netherlands, Ireland, Austria and Norway as compared to Canada, the US and the UK, due to this effect alone. Since coordination probably has a dampening effect on wages, this may explain why many researchers have been unable to find any clear effect of coordination on unemployment in reduced form analysis.

Documentation: DP 470

The relationship determining the nominal exchange rate between Norwegian kroner and the euro has been a topic of further research in 2006. In the long run (steady state) the nominal exchange rate is determined by a linear combination of a PPP (Purchasing Power Parity) condition and a UIP (Uncovered Interest Parity) condition, with a small, but significant, strengthening effect from a high oil price. In the shorter term we find an interesting change in the causal ordering between changes in the nominal exchange rate and changes in the interest rate after Norway adopted an interest rate target in March 2001. When the central bank targets the exchange rate, interest rates are rarely used and only to counteract large movements in the exchange rate. With inflation targeting the interest rate is used to stabilise the domestic economy and the exchange rate responds strongly to interest rate changes with the expected sign. This is an example of the Lucas-critique, a change in policy, may change econometric equations in a dynamic model.

Documentation: ØA 6/2006

Investments in houses are highly correlated with price of houses relatively to the construction price index. This is consistent with a q theory for investments. An empirical relationship explaining housing investments based on q-theory is therefore developed. This model explains housing investments very accurate, and it also seems to yield good forecasts. Combined with the housing investment relation, an empirical equation for house prices is estimated. The price equation is based on an inverted demand equation.

Because Norway is a large exporter of crude oil Norway’s disposable income will increase by supply driven higher oil prices. The short and medium term activity effects might how ever be negative. The fiscal rule adopted in 2001 delays spending when petroleum income increases and the marginal prosperity to consume is only 4 per cent. Simulation on the KVARTS-model indicates that reduced demand from Norway trading partners and tighter monetary policy internationally, together with the contractive effects of higher consumer prices will dominate for several years. This result rest on a crucial assumption; that investments in the petroleum sector are not being significantly increased as a result of higher oil prices when the price initially is around 50 USD/barrel.

Documentation: [37]

Hungnes defended his PhD thesis at the University of Oslo. The thesis titled "Trends and Breaks in Cointegrated VAR Models" consists of three papers plus an appendix documenting an estimation program - GRaM - developed by Hungnes to estimate the systems in the thesis. The main contribution in the thesis is to formulate a cointegrated vector autoregressive (VAR) model such not only cointegrating relationships can be identified but also the underlying trends and possible level- and trend-shifts for the different variables in the system. In the first paper he shows how one can estimate cointegrated VAR models where some variables trend and some do not. In the second paper it is shown how the suggested formulation makes it possible to identify different kinds of structural breaks both in the cointegrating vectors and in the growth of the variables. The third paper shows that the model formulation can be used to estimate a factor demand system when there are technological changes in the production technology.

Documentation: [66]

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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.

Main areas of research

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

Main findings

We have revised and upgraded our analysis of the impact of business cycle conditions on labour supply (discouraged worker effect). We find such effects to be higher than previously estimated. For example, in 1991 the unemployment rate of married women between 25 to 60 years where about 2.8 %. The corresponding fraction of women in this age group that were discouraged was about 4.4%. This means that the fraction in the labour force in this group would have been 88.4% that year, instead of the actual figure of 84%, if the women were not discouraged from searching for work.

Documentation: DP 453, ØA 3/2006.

We have focused on developing methods for computing quality adjusted price indexes when the commodities are differentiated products, such as different brands of automobiles and refrigerators. A key result obtained is that the evolution of quality adjusted price indexes depends crucially on the fraction of consumers that does not purchase any variant of the product through a particular formula. The method obtained is applied to data on the demand for new automobiles in Norway from 1994 to 2002.

Documentation: DP 490

The expected utility theory is extended to deal with choice settings with uncertain outcomes when preferences are represented by random utility functions. Specifically, stochastic versions of the von Neumann-Morgenstern axioms are proposed and their consequences are derived. This yields important restrictions on the functional form of the choice model.

Documentation: DP 465

In 2006 we have established a model for simulating behavioural labour supply responses from policy reforms, such as the effect of wage changes and changes in the tax system. The model has been estimated for three population groups, namely for married couples, single females and single males. All individuals in the sample are between 26 and 62 years of age. The model has been linked to a representative population of Norwegian households (LOTTE population), and it can therefore readily be applied to carry out policy simulation experiments. The resulting micro-simulation model (LOTTE-arbeid) has already been applied to study selected reforms. The wage elastisities implied by this model show that the responses are relatively moderate/small. For example, the own wage elasticity for married females is on average about 0.61.

Documentation: DP 481

This project studies the conversion of sick leave to disability based on data covering the Norwegian population from 1992 to 1999. A logit model is used to study how this conversion is affected by demographic factors, income, expected disability pension and firm-related variables. The length of time on sick leave and medical prognosis are also included. The analysis finds that while demographic and medical factors are very important, incentives also play a major role in determining the conversion of sick leave to disability. Finally, we find that even after taking the above variables into consideration, we are still left with a significant unexplained increase over time in the conversion of sick leave to disability.

Documentation: [33]

As an element in a larger project, using employer-employee data, firm level panel data have been constructed for the years 1995-2004 on hourly wages and worked man-hours for two different skill-groups, i.e., high-skilled and low-skilled employees. In order to classify the employees as high- or low-skilled predictions from wage-equations estimated on panel data have been utilized. For each combination of year and labour market region a threshold value has been identified such that if the employee's wage exceeds this value he is classified as high-skilled, otherwise as low-skilled. The constructed heterogeneous labour panel data will later be utilized to estimate labour-labour substitution elasticities for different industries.

We have established a framework for calculating indicators adjusting observed performance differences between Norwegian upper secondary schools for differences in pupil composition. We have previously calculated school performance indicators based on diplomas from lower secondary schools. For upper secondary schools, results from lower secondary schools constitute an important additional data source for characterizing pupil composition. Our calculations show that differences in results from lower secondary school explain a large part of the individual variation in marks in upper secondary school, even within fields and given the choice of subjects, which are often highly correlated with grades from lower secondary school. Differences in family background are also important for explaining individual differences in performance, but the relationships are weaker than in lower secondary school. This may partly reflect systematic selection into fields and subjects. Concerning differences in performance between schools, the results show the importance of adjusting for pupil composition, preferably with respect to results from lower secondary schools

Documentation: REP 2006/16

A preliminary analysis of the input additionality effect of the Norwegian tax incentive scheme for R&D investments, SkatteFUNN. Our findings indicate that firms using the scheme have a larger increase in R&D-investments than other firms. Firms who historically have invested less in R&D than the maximum amount that can be the basis for tax exemption, have a larger increase in R&D-investments than firms whose investments have been above this level, such that the SkatteFUNN scheme does not give them an extra incentive to increase their R&D investments. The results are in line with the international literature.

Documentation: REP 2006/12

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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.

Main areas of research

- Microeconometric studies of individual and aggregate labour supply behaviour, especially how labour supply responds to changes in the tax system and several welfare schemes.
- Theoretical and empirical studies on income distribution. Specifically, the distributional effects of various welfare schemes are taken into account.
- 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 intensively by the government in current work on the specifications of the new public pension system.
- 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.
- 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 Generational Accounts and a new Overlapping Generation (OLG) model in order to improve the analyses within this field.
- 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.

Main findings

The purpose of this paper is to justify the use of the Gini coefficient and two close relatives for summarizing the basic information of inequality in distributions of income. To this end we employ a specific transformation of the Lorenz curve, the scaled conditional mean curve, rather than the Lorenz curve as the basic formal representation of inequality in distributions of income. The scaled conditional mean curve is shown to possess several attractive properties as an alternative interpretation of the information content of the Lorenz curve and furthermore proves to yield essential information on polarization in the population. The paper also provides asymptotic distribution results for the empirical scaled conditional mean curve and the related family of empirical measures of inequality.

Documentation: DP 491

The paper analyses the fiscal effects of productivity shifts in the private sector. Within a stylized model with inelastic labour supply, it shows that productivity shifts in sectors producing non-traded goods (N-sector) are irrelevant for the tax rates necessary to meet the government budget constraint. Also productivity shifts in the traded goods sector (T-sector) have a neutral fiscal effect, provided that the wage dependency of the tax bases and government expenditures are equal. If the wage dependency of expenditures exceeds that of revenues, tax rates must be increased in order to restore the government budget constraint. Simulations on a CGE model of the Norwegian economy confirm the theoretical results, and demonstrate that productivity growth on balance has an adverse fiscal effect. Moreover, the necessary increase in the tax rates of a productivity improvement in the T-sector is three times as high as the corresponding effect of a comparable productivity shift in the N-sector.

Documentation: DP 487

In light of the riots and unrest among immigrants in France during the fall of 2005, the question of how immigrants are faring with respect to a certain minimum in society is both a timely and pertinent question for a number of European countries. In Norway, the prevalence of poverty is alarmingly high among immigrants and stands in stark contrast to the very low poverty rates for the native Norwegian population. Thus, unless the high poverty rates in the immigrant population are just a temporary feature of the immigrants' initial period of adjustment in the host country, poverty among immigrants is a cause for concern in Norway, too. This paper wishes to serve as a complement or extension of previous studies of immigrant adjustment; the study also aims to provide insights on the substantial heterogeneity -- observed, unobserved and unobservable -- in the immigrant population in Norway.

Documentation: DP 482

The purpose of this study is to identify optimal income tax rules under the constraint of fixed tax revenue. To this end, we estimate a microeconomic model with 78 parameters that capture heterogeneity in consumption-leisure preferences for singles and couples as well as in job opportunities across individuals based on Norwegian household data for 1994. The estimated model is used to simulate the choices made by single individuals and couples. Those choices are therefore generated by preferences and opportunities that vary across the decision units. Differently from what is common in the literature, we do not rely on a priori theoretical optimal taxation results, but instead we identify optimal tax rules – within a class of 6-parameter piece-wise linear rules - by iteratively running the model until a given social welfare function attains its maximum under the constraint of keeping constant the total net tax revenue. We explore a variety of social welfare functions with differing degree of inequality aversion and also two alternative social welfare principles, namely equality of outcome and equality of opportunity. All the social welfare functions turn out to imply an average tax rate lower than the current 1994 one. Moreover, all the optimal rules imply – with respect to the current rule – lower marginal rates on low and/or average income levels and higher marginal rates on sufficiently high income levels. These results are partially at odds with the tax reforms that took place in many countries during the last decades. While those reforms embodied the idea of lowering average tax rates, the way to implement it has typically consisted in reducing the top marginal rates. Our results instead suggest to lower average tax rates by reducing marginal rates on low and average income levels and increasing marginal rates on very high income levels.

Documentation: DP 475

The paper analyses how equilibrium adjustments of the wage rate affect the scope for tax rate reductions when the government experiences an exogenous increase in non-tax revenues. It shows within a stylized model that increased revenue in the form of a tradable will increase the wage rate, which diminishes the scope for tax rate reduction, provided that the initial wage dependent government net expenditures are positive. In this case the wage rate adjustment represents an automatic channel for redistributing increased non-tax government revenues. When the revenue increases in the form a non-tradable, the wage rate adjustment reinforces the scope for tax rate reduction. Simulations on a CGE model of the Norwegian economy confirm the theoretical results, and demonstrate that the fiscal wage effect can be strikingly large.

Documentation: DP 471

Large petroleum revenues make Norway an enviable fiscal loner. The fiscal policy rule adopted from 2001 transforms petroleum wealth into foreign assets, and only the real return on the financial fund should be spent annually. Despite this ambitious saving of the petroleum wealth, we find it unlikely that present tax rates and welfare schemes are sustainable in a long run perspective. Rather, the results from combining detailed models of demography and government expenditures with a detailed CGE model, suggest that Norway is exceptional also with respect to strong growth in government expenditures. In our baseline scenario the payroll tax rate must be increased continuously when ageing sets in after 2020, passing twice the present level about 2045. This is required even if the pension fund reaches 1.4 times GDP, commanding an unprecedented degree of fiscal discipline.

Documentation: DP 464

National and international expansion of transmission networks and diminishing returns to scale in hydropower capacity expansion has raised the opportunity cost of electricity. The resulting changes in comparative advantage between industries have in many countries been counteracted by government assistance to energy intensive industries. A good example is the implicit electricity price subsidies offered to energy intensive manufacturing in Norway through the state owned power company Statkraft. We use firm data to assess the share of firms that will survive in the long run when these subsidies are removed, highlighting that large cost heterogeneity within the industries may imply diminishing returns to scale at the industry level. This feature is incorporated in a multisectoral CGE model, which is used to estimate the equilibrium adjustments of the industry structure and relative prices of removing the subsidies. Such a policy will lead to a less specialised industry structure and reduces gross trade. The positive public budget effect allows the government to cut other taxes, which fuels the real exchange rate depreciation necessary to meet the national budget constraint.

Documentation: DP 462

During the last two decades, the discrete-choice modelling of labour supply decisions has become increasingly popular. Within the literature adopting this approach there are however two potentially important issues that are worthwhile analyzing in their implications and that so far have not been given the attention they might deserve. A first issue concerns the procedure by which the discrete alternatives are selected to enter the choice set. For example one may choose (non probabilistically) a set of fixed points identical for every individual. This is by far the most widely adopted method. An alternative is to adopt a sampling procedure suggested by McFadden and also assume that the choice set may differ across the households. A second issue concerns the availability of the alternatives. Most authors assume all the values of hours-of-work within some range [0, H] are equally available. At the other extreme, some authors assume only two or three alternatives (e.g. non-participation, part-time and full-time) are available for everyone. Another approach assumes instead that not all the hour opportunities are equally available to everyone; they specify a probability density function of opportunities for each individual and the discrete choice set used in the estimation is built by sampling from that individual-specific density function. In this paper we explore by simulation the implications of - the procedure used to build the choice set (fixed alternatives vs sampled alternatives) - accounting or not accounting for a different availability of alternatives. The way the choice set is represented seems to have little impact on the fitting of observed values, but a more significant and important impact on the out-of-sample prediction performance.

Documentation: DP 449

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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.

Main areas of research

The numerical general equilibrium model (MSG-6) is our most applied tool. The recent version 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 among firms and imperfect competition are accounted for. Recent technical developments include a re-modelling of the public revenues and expenses, an improvement and extension of the emission module, and a recalibration of the household consumption. Several studies of tax policy, environmental issues and economic projections have been performed by means of MSG-6 in 2006. The contributions include an analysis of reforms in the electricity tax system and computations of effects on the Norwegian economy of reducing greenhouse gas emissions, based on input from the Norwegian Low Emission Commission (NOU 2006:18).

The unit's other main CGE model is designed to improve our understanding of the growth mechanisms in a small, open, oil- and gas producing economy as the Norwegian. A CGE model with induced technological change is developed and has been applied in a study of innovation-promoting policy alternatives. Technological change is modelled as results of R&D activities performed by optimising agents. The output of general R&D activity is new patents that are purchased by producers of capital in order to supply new varieties of capital equipments. There is monopolistic competition in the capital market and love of capital variety in demand, so that productivity in the final goods industries increases with R&D activity and the number of patents and varieties. There are positive external effects of this innovation process, both because knowledge from R&D accumulates and enhances the productivity of current R&D activities, and because of the productivity effects of increased variety. In 2006, the modelling activity has been directed towards adding another innovation process taking place within environmentally benign energy technology. The aim is to analyse interactions between innovation policies and abatement policies in an economy where different R&D sectors compete for resources.

Main findings

In an analysis within the project on technological change, we explore how innovation incentives in a small open economy like Norway should be designed in order to achieve the highest welfare and growth. We study policy alternatives targeted towards R&D, towards capital formation, and towards domestic investments. We use the computable general equilibrium model that includes endogenous technological change to calculate the welfare and growth effects. We find that unilaterally subsidising the production of capital varieties generates slightly more welfare than directing the support to R&D activities. The latter generates a higher number of patents and capital varieties, increases economic growth and gives a higher share of R&D in total production. However, the stimulation of more capital-producing firms comes at the expense of the production within each firm. Since there is imperfect competition in the domestic capital market, this contributes to slightly dampen the welfare increase resulting from stronger spillover effects from R&D and productivity improvements of capital. We also examine the effects when market shares in the international capital markets are not altered due to similar policies abroad. In this case all effects are considerably dampened.

Documentation: DOC 2006/11, and Bye, B., T. Fæhn, and T.-R. Heggedal (2007): Innovation policies and welfare in a small, open economy: a CGE analysis of induced technological change, (forthcoming as Discussion Paper).

Another analysis within the project looks at technological lock-in. By lock-in we are referring to a market situation in which there exist a priori two likely market outcomes with respect to choice of technological solution, and where the realised market equilibrium is inferior in terms of welfare to the other, non-realised, equilibrium. The analysis examines whether a lock-in can characterise the private transport sector. In a formal model of the market for private transport, we model two competing technologies: today's internal combustion engine based on fossil fuels, and an alternative based on hydrogen cars. Private transport is complimentary in consumption to fuel filling stations and repair workshops. The density at which these services are provided influences consumers' utility of private transport. Thus, the more consumers who buy today's fossil fuel-based technology, the lower will the costs of choosing that technology be for other consumers. This so-called network externality may lead to a possible technological lock-in situation, implying that subsidies that shift the equilibrium to dispersion of the other, less emitting technology may be welfare-enhancing. The analysis suggests that we are not in a lock-in situation today. The hydrogen technology seems to be too poorly developed, and hence, infrastructure subsidies or subsidies to hydrogen car buyers do not look especially desirable as long as the rationale behind the subsidies is that we are in a lock-in situation due to network externalities.

Documentation: M. Greaker and T.-R. Heggedal (2007): Lock-in and the hydrogen economy (forthcoming as Discussion Paper).

In another project we calculate welfare costs of mark-up pricing. We find that market power of firms in intermediate good markets contributes substantially to the welfare cost of distortions in supply of resources, in particular related to supply of labour. Market power in product markets generates a wedge between the price of consumer goods and marginal costs and hence widens the wedge between the social marginal product of labour and the net of tax real wage received by workers. Such distortions are known to be costly due to the substantial tax wedge in the labour market. When accounting for the flow of intermediate goods between intermediate good firms, a sequence of intermediate good firms have added a mark-up factor to the price of an intermediate good that is purchased by a final good-producing firm. The welfare cost of distortions in the supply of labour created by market power of firms is found to be more than 40 times larger than the welfare cost of distortions in the allocation of consumer goods created by differences in market power of firms. While a series of previous studies have found but modest welfare cost of market power, accounting for this cascade effect, thus, results in a substantial welfare cost..

Documentation: Bjertnæs, G. (2007): The Welfare Cost of Market Power; Accounting for Intermediate Good firms (forthcoming as Discussion Paper).

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Petroleum and Environment Economics

Our research aims at improving environmental and natural resource policy making in Norway and worldwide through economic research of the highest standards. We study the oil and gas markets, climate change, sustainable development and natural resource management.

Main areas of research

The oil and gas markets are very important for Norway, and is one of our three focuses of research. A simulation model for the international energy markets, with special attention to the supply side of the oil and gas markets, 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 particularly 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).

The second focus of research is climate change. 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 effects of different allocation rules in national quota markets are also examined. Among others we show that carbon quota allocation rules based on updated historical emissions easily turns into a very complex system that could yield too little abatement. Economic activity in the Arctic, and impacts of climate change, has also been analysed in a new project.

Sustainable development is our third focus of research. For instance, Norwegian natural resource management has 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. In another contribution, we discuss interpretations of the precautionary principle in relation to environmental risks and sustainable development. Furthermore, firms' behaviour with respect to sustainable development is investigated in several projects.

Main findings

Gazprom, the dominant gas company in Russia, is widely believed to be the key supplier of gas to Europe in the foreseeable future. However, there are numerous uncertainties and challenges within the Russian and European gas industry that may alter the allocation of Gazprom´s gas sales between domestic and export markets. In this paper we use both theoretical and numerical models to study potential effects on Russian gas exports from changes in Russian domestic gas prices and the production capacities in 2015. We also investigate whether the liberalization of the European gas markets may provide incentives for Gazprom to induce monopoly power in its export markets. We find that both increased domestic gas prices and sufficient production capacities are vital to maintain Gazprom´s market share in Europe over the next decade. At low domestic prices, Gazprom may even have difficulties to carry out its long-term export commitments. However, if export possibilities are ample due to both lower domestic demand at higher prices and high overall production capacities, a large share of spot trades in Europe may encourage Gazprom to exercise market power in its export markets.

Documentation: DP 445

While other contributions have analysed environmental innovations with point of departure in the polluting firm, we introduce an up-stream market for environmenttal innovations. A strong environmental policy may then benefit industry competitiveness through its effect on entry into the up-stream market. In our analysis we hope to draw attention to an often-overlooked issue. Innovation of new pollution abatement techniques requires a new market to develop. If policy is lax, few firms enter and are forced to charge a high mark-up in order to cover development costs. On the other hand, a stringent environmental policy induces higher demand and allows a lower mark-up. Consequently, even if the polluting industry in question is export oriented, an especially stringent policy may be welfare enhancing.

Documentation: [17]

How much is a wildflower worth? We use the value of a wildflower as symbol of the complexity of evaluating environmental qualities and risks. We critically discuss the application of cost-benefit analysis in evaluating environmental impacts of adoption of genetically modified organisms (GMOs). We argue that cost-benefit analysis should be supplemented with other methods, such as processes for assessing uncertainty, accommodation of scientific disagreements, and integration of stakeholders' interests and perspectives. A more inclusive perspective is to develop precautionary approaches that recognize the multidimensional nature of environmental qualities and risks, such as irreplaceability, irreversibility, uncertainty and complexity. Precautionary approaches can contribute to develop a stronger environmental responsibility within the framework of rational self-interest.

Documentation: DP 476

According to environmental interests groups governments should use their climate policy strategically in order to provide for a faster introduction of new, cleaner technologies. Strategic use of climate policy could also induce the development of a successful upstream abatement technology industry like the Danish windmill industry. This latter question has not been analysed theoretically before. Our point of departure is a three-stage game between a government in a small country with a climate restriction, and a limited number of firms supplying carbon abatement technology. The government moves first, and may use its climate policy strategically to influence the behaviour of the upstream technology firms. An especially stringent climate policy towards the polluting downstream sector may then in fact be well founded. It will increase the competition between the technology suppliers, and lead to lower domestic abatement costs. However, to our surprise, a strict environmental policy is not a particularly good industrial policy with respect to developing new successful export sectors.

Documentation: DP 448

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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.

Main areas of research

- 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

Nonresponse and imputation

Research in the area of statistical adjustment to reduce nonresponse bias is a continuing activity. The emphasis is mainly on model-based methods using weighting adjustment for unit nonresponse and imputation for item nonresponse. In 2006, a recommended practice manual (RPM) for reducing the effect of nonresponse has been published. The purpose of this RPM is to describe experiences in Statistics Norway regarding nonresponse and its effect on the quality of official statistics. The survey forms the basis for recommending methods to reduce nonresponse and/or its effect on the resulting statistic. The emphasis is on describing the process of nonresponse during the data collection phase.

The imputation method used for underemployment in the Labour Force Survey has been studied, leading to recommendations for alternative imputation methods.

Documentation REP 2006/29, NOT 2006/70, REP 305
Outlining a Simple Model for Studying the Effects of Proxi Interviewing. Presented at the 17. annual Workshop on Household Survey Nonresponse, Omaha, Nebraska, US, August 20-30 2006

Variance estimation

Statistics Norway is increasing its efforts in giving estimates of uncertainty in official statistics, taking into consideration sampling design, nonresponse 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. A new method for variance estimation based on multiple imputation has been developed.

Documentation DP 421 (2005)

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. Another area of research is population forecasting.

Documentation: [4]

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: [102]

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 nonresponse 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

Documentation: DP 456

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 standard classifications. 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

A database for statistical standard classifications is available on the Internet (http://www3.ssb.no/stabas/MainFrames.asp?Language=nb).The work with documenting classifications still proceeds.

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 central variables. This system is used as a tool for standardization of variables, and improves accessibility to variables information. In 2006 we also started disseminating variables information on the Internet via other Statistics Norway systems (e.g. a web-page for researchers).

In connection with the variables documentation system, Statistics Norway has participated in the Neuchâtel group (also consisting of Statistics Sweden, Statistics Switzerland, Statistics Netherlands, US Bureau of Labour Statistics and Run Software-Werkstatt, a German company). The aim of the group was to establish a terminology model for variables, and version 1.0 of the terminology paper was published in December 2006.

A statistical metadata web-page is also being developed. The overall aim of this web-page is to make Statistics Norway's metadata systems more accessible and easier to use. Both internal and external users will get easier access to the metadata by displaying the contents of these systems in a common web page.

Main findings

A double-mixed modeling approach has been developed for the estimation of small area compositions that are subjected to informative missingness. The associated approximate MSE has been derived, which takes into account the variance increment due to the missing data. The methodology has been applied to evaluate the register-based small area household statistics.

Research on nonresponse effects has clarified our understanding of adjustment methods at the estimation stage. This provides theoretical support to our previous expierences with the matter, which e.g. has been summarized in the recommended practice manual "Coping with decreasing response rates in Statistics Norway".

Interesting results have been obtained on the variance of the Labour Force Survey (LFS) estimators. In particular, the lost effeciency of single-stage cluster sampling (compared to direct sampling of elements) can be regained at the estimation stage by using auxiliary information at the element level. The choice of the sampling design, e.g. in terms of the sampling units or the use of deeper stratification than what is customary, is less critical than previously thought. A simple linearization technique has been developed and tested for the LFS estimators based on multiply adjusted weights.

A stochastic approach has been developed for the so-called fixed-weights price indices. In particular, the theory allows us to assess meaningfully the uncertainty in the calculated indices. The methodology has been implemented in a general SAS-application. We aim to extend the approach to chained price indices in the next stage.

The imputation method for underemployment in the Labour Force Survey has been studied from a model-based point of view showing a need for alternative imputation methods. There is a continuing research on model-based methods for imputation.

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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) and LOGG, The Generations and Gender Programme in Norway.

Demographic research

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 internationally. We are cooperating with Eurostat on population forecasts and advice the Ministry of Foreign Affairs in the United Nations Commission for Population and Development. A senior research fellow is currently chairing the Panel on the Demography of Armed Conflict of the International Union for the Scientific Study of Population.

Documentation: ØA 1/2006, SSP3/2006, 4/2006, [97]

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. The dynamics between gender equality and fertility are being analysed. 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). One project relates family dynamics to divorce determinants. Another project studies 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, including the coordination of the programme and the working group on administrative records. We are coordinating the planning of the Norwegian Gender and Generation Survey in 2007-2008 (LOGG), and the contextual database of GGP. 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: SSP 2/2006, Reprints 312, [5], [6], [23], [24], [58], [60], [67], [108], [110], [111], [112]

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, an analysis of changes in residential patterns of immigrants in Oslo from 1998 to 2003 and a comparative analysis of immigrants' residential patterns in Denmark and Norway. A larger survey on the level of living of 10 different non-western immigrant nationalities is also being conducted. The fieldwork started in 2005 and was continued in 2006. A supplementary survey of young people with immigrant background from Pakistan, Turkey and Vietnam was launched in 2006.

Documentation: REP 2006/33, SSP 4/2006, NOT 2006/52, 2006/77, SA 83, [49], [53], [59], [61], [62], [63], [64], http://www.ssb.no/emner/00/01/30/innvhold/, http://www.ssb.no/vis/magasinet/analyse/art-2006-09-18-01.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 changes in mother's and fathers' employment rates and working hours at the individual level as well as at the group level. We also investigate couples' working hours. Furthermore, we are engaged in a project evaluating the new regulations of child maintenance, a project exploring the living conditions among farmers, a project looking at students' living conditions and changes in these since the late 1990s, as well as a project assessing and comparing criminal careers among non-western immigrant youth and Norwegian youth. We have also been involved in a project investigating changes in the living conditions in the inner city of Oslo from 1997 to 2003/2004, compared to the living conditions in other parts of the city. The changes are discussed in relation to a government-sponsored action program with the aim of improving the living conditions in the inner city.

Documentation: REP 2006/15, 2006/35, 2006/41, NOT 2006/33, 2006/56, ØA 2/2006, SSP 1/2006, 2/2006, 3/2006, 4/2006, 5-6/2006, Reprints 311, [21], [35], [41], [42], [43], [44], [104], http://www.ssb.no/magasinet/slik_lever_vi/art-2006-04-24-01.html

Main findings

- Recent fertility trends of the Nordic countries indicate converging fertility patterns among the four Nordic countries with regard to the development of second birth rates after 2000, and with regard to completed cohort fertility for the cohorts born in the 1950s. The level of childlessness and the development of the third birth rates vary considerably between the countries.
- A new register analysis shows that the higher divorce risk for couples with highly educated parents can neither be attributed to the parents' marital history, to their economic resources, nor to an urban environment.
- For many years the Eastern part of Oslo's inner city has been characterized by multiple welfare problems. It is found that living conditions became better after

1997, when a 10-year long, government-sponsored action program was implemented. However, the improvements are to a large extent caused by the influx of young people with high education and income. Still, parts of the area have the highest mortality rate in the country and high rates of unemployment and economic problems.

- From 1997 to 2003 there was a strong tendency for non-western immigrants in Oslo to move from the inner city east to the outer eastern suburbs. Hence, the previously steady growth in the number of non-western immigrants in the inner city east has been strongly curbed. There is no evidence that non-western immigrants leave the inner city east involuntarily due to rising housing prices.
- Only one out of ten Norwegian farmers are women. Female farmers express that farm work is too physically strenuous more often than their male colleagues, and hand much farm work over to their husbands.
- An evaluation of a government rehabilitation programme for social welfare recipients including immigrants, single parents and young people indicates that the programme entails increased chances of getting a job, but only if employment is defined fairly widely. If employment is defined more strictly, there is no effect for the whole group, but a positive impact can still be traced among long-term social welfare recipients.
- Comparing the housework and childcare efforts of fathers whose partners have various working hours, we find no clear relationship between the mother's working hours and the fathers' family work. The father makes up for the mother's absence only when she works short hours and only concerning certain chores. Full-time employment of mothers does not increase the contribution at home of fathers. This suggests that dual-earner parents rely mostly on external childcare to substitute for the mother's absence.

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Administration

Personnel and budget

The total staff in the Research Department in 2006 was 83 employees. 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 2006 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	23 585	29 919	53 504
Social and Demograpich Reserch	3 217	8 795	12 012
Statistics Methods and Standards	5 748	2 226	7 974

[1] Infrastructure not included.
[2] Infrastructure included.

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*Part time

Statistics Norway publications

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