

Research Department - Annual Report 2009
Statistics Norway

Plans and Reports In this series, documents of an institutional nature and notes with a certain official character are published.

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Preface

The Annual Report 2009 for the research activities of Statistics Norway presents the main fields of research with a complete listing of publications and staff. Research activities reported here takes place in the Research Department and the Division for Statistical Methods and Standards, which is part of the Department of IT and Statistical Methods 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 individuals and institutions. All in-house publications are freely available free at our website www.ssb.no (English site: www.ssb.no/en). Our research website (<http://www.ssb.no/english/research/>) is also updated with other information about research activities at Statistics Norway.

Oslo, April 2010
Torbjørn Hægeland
Director of Research [from Jan. 1st 2010]

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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. The research unit is also involved in other applied fiscal policy analyses, based on micro data. Important research areas 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

In DP 573 (Statistics Norway) we analyze the effects on consumption pattern and tax revenue of changes in indirect taxes for Norway. We take into account the possibility of cross-border shopping. In particular we are interested in the following question. Is there, for certain goods, a tax revenue maximizing tax rate, such that the tax revenue increases monotonically with the tax rate, reaches a maximum, and declines thereafter monotonically with the tax rate? We find such maximizing tax rates for spirits and wine. Furthermore, we find that the actual tax rates in the base year (1999) are below the maximizing tax rates, i.e., decreasing the tax rates will lower the tax revenue.

Documentation DP 573

Documentation In DP 592 (Statistics Norway) we consider commodity tax competition in the Scandinavian countries. A simulation model consisting of a representative consumer for each Scandinavian country is constructed and calibrated, in which consumers consume two goods: spirits and 'other goods'. Spirits is exposed to cross-border shopping, and the countries engage in tax competition. The equilibrium tax rates show large price differentials on spirits in Scandinavia. The findings also suggest that Norway and Denmark pay more attention to cross-border shopping and tax competition when setting the tax rates compared to Sweden. Furthermore, the equilibrium tax rates are rather robust with respect to the type of game that we consider, due to the fact that the utility maximizing tax rate for each country is rather insensitive with respect to other countries' tax rates. Nevertheless, the sequential game equilibrium consists of somewhat higher taxes and utility levels for each country compared to the simultaneous game equilibrium, meaning that the former equilibrium Pareto-dominates the latter.

Documentation DP 592

People respond to incentives. We show how different taxes on tobacco and alcohol affect purchasing behavior by demonstrating that Norwegian households close to the border appear to shop across the border in Sweden with higher frequency than others. Households close to the border seem to consume more of the goods at the same time they shop less for them in Norwegian chain stores, indicating cross-border shopping. In fact, we are able to establish a close relationship between travel distance to the border and shopping behavior.

Documentation [8]

It is often assumed that owner-occupied housing and tenancy are close substitutes. We show, on the contrary, that while the interaction between buyers and sellers in the owner's market is a one-time shot of price negotiation, the interaction between tenants and landlords in the renter's market is a complex and continuous bargaining function of landlord-tenant interaction. In fact, while variation in hedonic and spatial attributes may account for 12% and 17% of the variation in rents, variation in landlord-tenant interaction may account for as much as 15%. We quantify the monetary effects of different aspects of landlord-tenant interaction.

Documentation [36]

The main purpose of this chapter is to discuss labour supply and childcare modelling in a microsimulation context, and to report the results from this type of behavioural microsimulation with regard to female labour supply effects, the distributional effects and costs to the government. Our interest is in changing transfer schemes to improve parents' labour supply. We show the effects of a move towards lower fees for care in childcare centres in Norway and Australia. We present two behavioural microsimulation models, developed in Australia and Norway respectively, to analyse such policy changes. The Norwegian model is based on a structural joint labour supply and childcare choice model whereas the Australian model is based on a two-step labour supply and childcare choice model, in which a reduced-form bivariate tobit model for formal and informal care is used to impute care costs into a structural labour supply model. These models are compared to other models developed in the literature

Documentation [75]

The paper compares the positional stability of owners of small businesses with that of wage earners, arguing that describing the relative position of different occupations faces definitional challenges. For instance, the Norwegian dual income tax system encourages owners of small businesses to establish widely held firms, with themselves as employees. Descriptions of income distribution mobility of different occupations are therefore in danger of being misleading if not careful attention is given to occupational definitions. I address this measurement problem by estimating income transition models for different definitions of occupational status. As expected, the wider definition of owners of small businesses, including owners who appear as wage earners in data, is shown to enhance correlations between business ownership and both upward mobility and maintaining positions at the top of the income distribution scale. However, owners of small businesses are in general more mobile than wage earners, generating overrepresentation both at the lower and higher ends of the income distribution ranking, irrespective of definitions.

Documentation [143]

The analysis contrasts results of two recently expounded micro-level data approaches to derive robust intertemporal characterizations of redistributive effects of income tax schedules; the fixed-income procedure of Kasten, Sammartino and Toder (1994) and the transplant-and-compare method of Dardanoni and Lambert (2002). Our study is normative in that the Blackorby and Donaldson (1984) index of tax progressivity is employed. This enables contributions from vertical redistribution and horizontal inequity also to be assessed, using for the latter one classical measure and one no reranking measure. When the competing methodologies are applied to Norwegian data for 1992–2004, their respective strengths and weaknesses are revealed. The transplant-and-compare procedure is found to have a number of advantages.

Documentation [29]

We find strong timing effects in dividend payments around the implementation of a dividend tax in Norway in 2006. In the two or three years prior to the reform, corporations paid extraordinary dividends that were reinvested into the firms as "new" equity. Immediately after the reform dividends declined to around 10 percent of the level prior to the reform. Our findings document that anticipated changes in tax rates can bring along intertemporal income shifting.

Documentation [4]

This paper analyzes a tax system where personal share income in excess of the risk-free return on equity (the equity premium) is taxed. The paper focuses on the effects on the investment and financing decisions of closely held firms. Such firms typically have limited access to capital markets, but a high degree of financial flexibility that allows them to participate in tax planning. We show that even if this tax system reduces distortions compared to traditional dividend taxation, the tax system is not neutral if the shareowners' discount rate exceeds the risk-free interest rate used in the computation of the equity premium. We find empirical support to the view that a tax on shareholder income without sufficient allowance for the opportunity cost of capital discourages investment in corporate equity. This finding is particularly relevant for entrepreneurship and investment in closely held firms.

Documentation DP 594

This article demonstrates how to estimate latent total consumption expenditure or material standard of living in households by inverting estimated Engel curves. While the conventional estimator, total purchase expenditure, is unbiased for latent total household consumption expenditure, it is not variance minimizing since it is an unweighted sum. This article derives a variance-minimizing unbiased estimator by first estimating and inverting Engel curves, then combining the estimators from the inverted Engel curves. The suggested method may help improve the accuracy in studies of consumption inequality and tax evasion.

Documentation [35]

Staff 2009

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Climate and Energy Economics

The Climate and energy research group focuses on how national, international and natural external conditions influence the value of national energy resources, the efficiency in the energy markets and development of climate policy instruments. The research covers studies of the behaviour of firms and households and their adaptation to energy and environmental policy, the integrated energy market and general equilibrium models, and the interaction between efficient policy instrument formulation to curb greenhouse gas emissions, reduce environmental consequences and to achieve other policy goals.

Main findings

The developed countries can meet part of their Kyoto commitments by investing in emission-reducing projects in developing countries (the Clean Development Mechanism, CDM). We argue that the CDM is not an efficient tool for achieving deep cuts in global emissions and conclude that maintaining the CDM as an option for developing countries may in itself be a serious obstacle to more binding participation by these countries.

As an alternative to the clean development mechanism regime, developing countries may accept a (generous) cap on their own emissions, allow domestic producers to invest in new efficient technologies, and sell the excess emission permits on the international permit market. We show how the gains from investment, and hence the incentive to invest in new technology in developing countries, differ between the two alternative regimes.

It is a well known result that distributional constraints can lead to an imperfectly competitive permit market. Hence, the emission target is no longer met at least cost. We suggest an allocation rule for tradable permits which can handle this problem. If the permit allocation is dependent on the market price for permits, this allocation rule can achieve both cost effectiveness and meet specific requirements for cost distribution across agents.

Recent contributions show that climate agreements with broad participation can be implemented as weakly renegotiation-proof equilibria in simple models of greenhouse gas abatement where each country has a binary choice between cooperating (i.e., abate emissions) or defecting (no abatement). Here we show that this result carries over to a model where countries have a continuum of emission choices. Indeed, a Pareto-efficient climate agreement can always be implemented as a weakly renegotiation-proof equilibrium, for a sufficiently high discount factor. This means that one need not trade-off a "narrow but deep" treaty with a "broad but shallow" treaty.

Documentation: DP 577, [6], [22], [23]

From economic theory we know that there is a possible conflicts of interests between the political aims of reduced emissions from energy consumption, redistribution of welfare and efficient policy-making. This article calculates consumption reductions, compensating variations and excess tax burdens of three different tax schemes: one linear and two non-linear. We find that unless the tax scheme is optimally designed to correct for externalities, there is a conflict of interests between the aims of reduced consumption and efficient policy-making. When ranking different tax schemes, there is a conflict between the aims of redistributing welfare and reduced consumption if we are concerned with the well-being of individual households, but not if we are concerned only with the mean household in different parts of the income distribution.

Documentation: [24]

To achieve environmental goals, most governments aim to reduce consumption of the most polluting energy goods by taxation. Often, the authorities not only aim to change the consumption of the regulated good by the taxation, but also to change the consumption of close substitutes (hereafter referred to as win-win effects). The size of the win-win effects depend not only on how close substitutes the goods are, but also on the price sensitivity of the taxed good and on the budget effects of the regulation. We use a conditional demand model to decompose the cross-price effect to discuss which criteria that must be fulfilled in order for substantial win-win effects to occur, using Norwegian stationary energy consumption as an empirical example.

Documentation: [25]

Electricity consumption related to different end uses, e.g. space heating, lighting and services from household appliances, are often not metered. Information about total electricity consumption for a sample of households, along with information from energy surveys may be applied within an econometric conditional demand model to estimate the end-uses. By using the same method on data for several years it is possible to compare results over time and detect possible trends. In this paper we study explanatory variables for end-use energy consumption in Norway for 1990, 2001 and 2006. We find that energy consumption for heating is stable over the period, while more luxury electricity consumption increases.

Documentation: ØA 5/2009, Report 34/2009

The consumption of storable goods does not necessarily equal purchases during a period because of changes in stock. In many cases, we have information about expenditures only, not consumption. A method is developed to obtain an estimate of consumption and changes in stock when only expenditure data are available. Household energy consumption is used as an illustration, applying data from the Norwegian survey of consumer expenditure.

Documentation: DP 575.

Productivity measures ignoring environmental effects may give misleading information on total productivity growth. Further, business cycles in the form of capacity utilization may significantly influence productivity measures. We develop an overall Malmquist productivity index and decompose changing efficiency rates into a contribution from environmental factors, capital and capacity utilization. Our new combined capacity utilization element contributes to the literature in that it also takes into account the restriction for producing negative externalities. Empirical applications illustrate that the choice of inputs influences the overall productivity measure and its decomposition into efficiency changes and technical changes, and the capacity utilization element.

Documentation: [12]

In rich economies, emissions of many pollutants show a decoupling from economic growth. One possible mechanism is that emission intensive products are increasingly imported or decreasingly exported. This implies pollution leakages to other countries. We hypothesize that decoupling in a rich and open economy, Norway, is associated with such leakages. We find little evidence in support of this. Rather, the decoupling of emissions from economic growth observed over the past twenty years was associated with falling pollution leakages, and while forecasts indicate a weaker decoupling than in the past, leakages increase in the future.

Documentation: [19]

The purpose of environmental taxes is to correct the market when it fails to take environmental damages into account, i.e. to internalize the Pigouvian element. In

addition, fiscal taxes are levied on both polluting and clean goods, which may follow the Ramsey principle. In practical policy, environmental and fiscal taxes are conceptually intertwined. This mixture complicates the calculation of the extent and the evaluation of the effects of environmental taxes. Eurostat, OECD and IEA include all taxes related to energy, transport and pollution, and most resource taxes in their international measurement of environmentally related taxes. Consequently, numerous fiscal taxes are added together with the environmental taxes. We discuss the distinctions between the Pigouvian and the fiscal taxes in light of tax theory. The revenues following the Eurostat et al. statistical basis deviate significantly from the revenues from the environmental taxes defined on the basis of theory. Steps should be taken to harmonize the international statistics of environmental taxes with economic tax theory.

Documentation: DP 599.

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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 macroeconomic 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 1/2009, 3/2009, 4/2009, 6/2009, ES 1/2009, 2/2009, 3/2009, 4/2009, [52], [119], [120], [129] and [130].

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 2009 both models were rebased to the revised national accounts data for 2007 published in 2009. The econometric equations in KVARTS are in general under continuous revision. Lately the work has been centred around the following topics: Household consumption and housing prices.

Documentation: SØS 111. REP 2008/18, 2008/21, 2008/29 and 2009/38. DP 556.

Main Findings

A new consumption function – where consumption in the long run is determined by households’ disposable income, wealth and after-tax real interest rates – was implemented in MODAG and KVARTS. The function encompasses rival models and it is estimated over a period that covers the years of financial deregulation in the mid 1980s and also both the banking crisis around 1990 following the deregulation and the current international financial crisis. A change in the correlation pattern between real interest rates and wealth, which is related to a change in the monetary policy regime, is the reason why both variables need to be included in the long run relationship in order to explain the development over the past four years.

Documentation: [57]

In an analysis of how household debt is affected by the property value and income growth affects, we found that when the growth in house prices exceeds the interest rate by 4.5 percentage points, the household debt may continue to grow although it exceeds what is consistent with income level. This happened in the period from early 2004 until mid 2007. In this period growth in household debt increased even though the debt-income ratio already was at an all-time high. Banks seem to seek profits by granting credits to households with limited equity if housing prices is expected to grow sufficiently strong. Hence, the increase in credit growth near the

end of this last housing price boom may be explained by a change in the banks risk analysis with an increased emphasis on collateral security and de-emphasis on debt burden.

Documentation: [48]

KVARTS has been used to shed light on the effectiveness of monetary and fiscal policy in dampening the sharp economic contraction following the credit crises. What to assume about the effects on the exchange rate in a situation with international financial turmoil was somewhat important for the results. Nevertheless, the most efficient tool to fight rising unemployment is higher governmental employment. Increased public demand for intermediate goods and investments and monetary easing are the most effective measures to stimulate the economic activity in the private sector. Reducing taxes is ineffective for increasing the activity. However, if the aim was purely to increase profitability in the manufacturing sector, reducing pay roll taxes would be the best action.

Documentation: [52]

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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 firm's 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

- Labour supply effects of tax reforms
- The relationship between technological change and workers' retirement decisions
- The effects on firms' investment behaviour of tax reforms
- Measurement of human capital and innovations
- Effects of fiscal incentives to R&D
- The choice of and returns to education
- Indicators for the performance of schools
- Education and inequality: Sorting, resources and outcomes
- Soci-economic determinants of labor market participation, crime and health status
- Development of econometric methods

Main projects in 2009

Indirect inference methods for stochastic volatility models based on non-Gaussian Ornstein-Uhlenbeck processes

This project develops new methods for statistical inference in a class of stochastic volatility models for financial data based on non-Gaussian Ornstein-Uhlenbeck (OU) processes using indirect inference methods: First, a quasi-likelihood for the actual data is estimated. This quasi-likelihood is based on an approximative Gaussian state space representation of the OU-based model. Next, simulations are made from the data generating OU-model for given parameter values. The indirect inference estimator is the parameter value in the OU-model which gives the best "match" between the quasi-likelihood estimator for the actual data and the quasi-likelihood estimator for the simulated data. The method is applied to Euro/NOK and US Dollar/NOK daily exchange rates for the period 1.7.1989 until 15.12.2008. Accompanying R-package, that interfaces C++ code is documented and can be downloaded.

Documentation: DP 601

Life after prison: The relationship between employment and re-incarceration

The relationship between formal employment and recidivism is explored using a dataset that follows every Norwegian resident released from prison in 2003 for several years. By the end of 2006, 27 percent are re-incarcerated. Using a Cox proportional hazard model that controls for a host of individual characteristics, it is found that the hazard of re-incarceration is 63 percent lower for those getting employed compared to those not getting employed. While some of the moderating association between employment and re-incarceration is accounted for by observable individual characteristics, the substantially lower hazard for those getting employed indicates a possibility of a considerable benign effect of employment on recidivism. The analysis thus provides further indication that provision of employment opportunities can facilitate the return to society after release from prison.

Documentation: DP 597

The investment and financing decisions of closely held firms when there is a tax on the equity premium

A tax system is analyzed where personal share income in excess of the risk-free return on equity (the equity premium) is taxed. The rate of return allowance (RRA) in the Norwegian shareholder income tax system is the first attempt of implementing such taxation in practice, and represents an innovation. This paper analyzes the effects of this form of taxation on the investment and financing decisions of closely held firms. Such firms typically have limited access to capital markets, but a high degree of financial flexibility that allows them to participate in tax planning. We show that even if the RRA reduces distortions compared to traditional dividend taxation, the tax system is not neutral if the shareowners' discount rate exceeds the risk-free interest rate used in the computation of the RRA. We find empirical support to the view that a tax on shareholder income without sufficient allowance for the opportunity cost of capital discourages investment in corporate equity. This finding is particularly relevant for entrepreneurship and investment in closely held firms.

Documentation: DP 594

The effect of plant closure on crime

The effect of exposure to plant closure on crime is estimated using an individual-level panel data set containing criminal charges for all unmarried and employed Norwegian men below the age of 40. Men originally employed in plants that subsequently closed are 14 percent more likely to be charged of a crime than comparable men in stable plants. There is no difference in charge rates prior to closure, supporting a causal interpretation of the result. Within crime categories, no effect of plant closure on property crime is found, perhaps because closure has a small and insignificant effect on subsequent earnings. An effect of plant closure on categories of non-acquisitive crime is estimated, suggesting a role for mental distress or idleness. A role for idleness is supported by evidence that the effects of plant closure on crime tend to be more pronounced for crimes committed during the week than on weekends.

Documentation: DP 593

Health Status After Cancer. Does It Matter Which Hospital You Belong To?

Survival rates are widely used to compare quality of health care. In this paper we introduce post-illness employment as a supplemental indicator of successful treatment of serious diseases. Utilizing rich register based data on cancer patients we document substantial differences across Norwegian hospital catchment areas with respect to employment five years after diagnosis. Conventional quality indicators based on survival rates indicate smaller differences. The two sets of indicators are only weakly correlated, suggesting that they capture different parts of the quality distribution, and that using only one of them may be insufficient.

Documentation: DP 590

Staff 2009

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Public Economics

Main research issues include tax and benefit effects on labour supply incentives, social efficiency, income distribution and efficiency and distributional effects of reforms in the tax and benefit system, as well as evaluation of the successfulness of different kinds of social policy. An important objective for the research activity is to provide quantitative information.

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

1. Microeconomic studies of individual and aggregate labour supply behaviour, especially how labour supply responds to changes in the tax system and several welfare schemes.
2. Theoretical and empirical studies on income distribution. Specifically, the distributional effects of various welfare schemes are taken into account.
3. Detailed analyses on the forces driving government consumption expenditures, including demography, service standards, relative prices and efficiency in local government service production. The empirical model used is KOMMODE, which provide endogenous allocation of expenditures to various service sectors.
4. 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 2009 the unit, represented by at least 1 co-author, has published 3 articles in international journals with referee and 10 Discussion papers

Selected findings 2009

Why Educated Mothers don't make Educated Children? A Statistical Study in the Intergenerational Transmission of Schooling

More educated parents are observed to have better educated children. From a policy point of view, however, it is important to distinguish between causation and selection. Researchers trying to control for unobserved ability have found conflicting results: in most cases, they have found a strong positive paternal effect but a negligible maternal effect. In this paper, I evaluate the impact on the robustness of the estimates of the characteristics of the samples commonly used in this strand of research: samples of small size, with low variability in parental education, not randomly selected from the population. The part of the educational distribution involved in any identification strategy seems to be a key aspect to take into account to reconcile previous results from the literature.

Documentation: DP 563

No Child Left Behind: Universal Child Care and Children's Long-Run Outcomes

There is a heated debate in the US and Canada, as well as in many European countries, about a move towards subsidized, universally accessible child care. At the same time, studies on universal child care and child development are scarce, limited to short-run outcomes, and the findings are mixed. We analyze the introduction of subsidized, universally accessible child care in Norway, addressing the impact on the *long-run* outcomes of children. Our precise difference-in-difference estimates show that child care had strong positive effects on children's educational attainment and labor market participation, and also reduced welfare dependency. 17,500 new child care places produces around 6,200 additional years of education. In line with these results, we find that children exposed to child care delay child bearing and family formation as adults. Subsample estimations by child's sex and mother's education suggest that good access to subsidized child care levels the playing field. A battery of specification checks support our empirical strategy.

Documentation: DP 582

Divorced Fathers' Proximity and Children's Long Run Outcomes: Evidence from Norwegian Registry Data

This study examines the link between divorced nonresident fathers' proximity and children's long-run outcomes using high-quality data from Norwegian population registers. We follow (from birth to young adulthood) 15,992 children born into married households in Norway in the years 1975-1979 whose parents divorce during his or her childhood. We observe the proximity of the child to his or her father in each year following the divorce and link proximity to children's educational and economic outcomes in young adulthood, controlling for a wide range of observable characteristics of the parents and the child. Our results show that closer proximity to the father following a divorce has, on average, a modest negative association with offspring's young-adult outcomes. The negative associations are stronger among children of highly-educated fathers.

Complementary Norwegian survey data show that highly-educated fathers report more post-divorce conflict with their ex-wives as well as more contact with their children (measured in terms of the number of nights that the child spends at the fathers' house). Consequently, the father's relocation to a more distant location following the divorce may shelter the child from disruptions in the structure of the child's life as they split time between households and/or from post-divorce interparental conflict.

Documentation: DP 590

Older or Wealthier? The Impact of Age Adjustments on the Wealth Inequality Ranking of Countries

Differences in individual wealth holdings are widely viewed as a driving force of economic inequality. However, as this finding relies on cross-section data, we may confuse older with wealthier. We propose a new method to adjust for age effects in cross-sections, which eliminates transitory wealth inequality due to age, yet preserves inequality arising from other factors. This new method is superior to existing methods, like the much used Paglin-Gini, which is shown to have several problems. A new cross-country comparable database reveals that the choice of method is empirically important: Existing methods yield erroneous wealth inequality rankings of countries.

Documentation: [118]

Non-parametric identification of the mixed proportional hazards model with interval-censored durations

This note presents identification results for the mixed proportional hazards model when duration data are interval-censored. Earlier positive results on identification under interval-censoring require both parametric specification on how covariates enter the hazard functions and assumptions of unbounded support for covariates. New results provided here show how one can dispense with both of these assumptions. The mixed proportional hazards model is non-parametrically identified with interval-censored duration data, provided covariates have support on an open set and the hazard function is a non-constant continuous function of covariates.

Documentation: DP 600

The effect of benefits on disability uptake

I study the effects of the level of disability benefits on disability uptake. Estimation of such effects is difficult because individual levels of disability pension benefits are closely related to individual characteristics that may also affect disability uptake through other mechanisms. I exploit variation in disability benefits related to individual characteristics only through birth cohort, due to special rules of the phasing in of the Norwegian National insurance scheme. These rules imply a

nonlinear relationship between birth cohort and disability benefit level, which allows me to estimate the effects of benefits based on between-cohort differences, while controlling for age and year effects and hence implicitly linear trends in birth cohorts. The results show a statistically significant and strong positive effect of benefits on transitions to disability. The robustness of the results is studied in a number of tests based on sample partitions and other groups that are not exposed to the nonlinear relationship between birth cohort and disability benefit level.

Documentation: DP 576

Ranking Intersecting Lorenz Curves

This paper is concerned with the problem of ranking Lorenz curves in situations where the Lorenz curves intersect and no unambiguous ranking can be attained without introducing weaker ranking criteria than first-degree Lorenz dominance. To deal with such situations two alternative sequences of nested dominance criteria between Lorenz curves are introduced. At the limit the systems of dominance criteria appear to depend solely on the income share of either the worst-off or the best-off income recipient. This result suggests two alternative strategies for increasing the number of Lorenz curves that can be strictly ordered; one that places more emphasis on changes that occur in the lower part of the income distribution and the other that places more emphasis on changes that occur in the upper part of the income distribution. Both strategies turn out to depart from the Gini coefficient; one requires higher degree of downside and the other higher degree of upside inequality aversion than what is exhibited by the Gini coefficient. Furthermore, it is demonstrated that the sequences of dominance criteria characterize two separate systems of nested subfamilies of inequality measures and thus provide a method for identifying the least restrictive social preferences required to reach an unambiguous ranking of a given set of Lorenz curves. Moreover, it is demonstrated that the introduction of successively more general transfer principles than the Pigou-Dalton principle of transfers forms a helpful basis for judging the normative significance of higher degrees of Lorenz dominance. The dominance results for Lorenz curves do also apply to generalized Lorenz curves and thus provide convenient characterizations of the corresponding social welfare orderings.

Documentation: [2]

Evaluating Alternative Representations of the Choice Sets in Models of Labour Supply

During the last two decades, the discrete-choice modelling of labour supply decisions has become increasingly popular, starting with Aaberge et al. (1995) and van Soest (1995). Within the literature adopting this approach there are however two potentially important issues 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 van Soest (1995) chooses (not probabilistically) a set of fixed points identical for every individual. This is by far the most widely adopted method. By contrast, Aaberge et al. (1995) adopt a sampling procedure suggested by McFadden (1978) 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 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. By contrast, Aaberge et al. (1995) account for the fact that not all the hour opportunities are equally available to everyone specifying a probability density function of opportunities for each individual. 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: (i) the procedure used to build the choice set (fixed alternatives *versus* sampled alternatives); (ii) accounting or not accounting for a different availability of alternatives. The results of the evaluation performed in this paper show that the

way the choice set is represented has little impact on the fitting of observed values, but a more significant and important impact on the out-of-sample prediction performance. Thus, the treatment of the choice sets might have a crucial effect on the result of policy evaluations.

Documentation: [21]

Using survey data to study capitalization of local public services

We use surveys in which respondents evaluate local amenities in Norway to compute proxy variables for the quality of local public services as well as other local amenities relevant to location decisions. Average satisfaction reported by the respondents is computed for each amenity and each municipality, adjusted for sample variation in personal characteristics and included as explanatory variables in a cross-section study of house prices. We find that house prices are increasing in satisfaction with cultural activities, health care, care for the elderly and public transportation.

Documentation: [13]

Migration trends and effects on migration of regional labour market changes - Some Norwegian research examples

This analysis focuses on some recent migration trends in Norway and to what extent changes in the regional labour markets have an effect on inter-regional migration: especially as it concerns the communities of Northern Norway. The first part of the chapter presents a short overview of the recent and current internal and international migration trends in Norway, with special focus on the capital region and North Norway. We then briefly describe the use of a regional migration sub-model as part of a regional-economic model for Norway, featuring some empirical findings and one recent application with the model, analysing the migration effects of increased economic transfer to the Norwegian municipalities. Finally, we present some results of regional labour mobility and job growth. The results indicate a clear centralisation in the migration processes in Norway, where North Norway show the highest net out-migration. The immediate effect of immigration indicates a more regional balanced distribution, although this effect seems to be temporary. There are observed significant positive relationship between gross in-migration and job growth and negative relationship to out-migration. An increase of economic transfers to Norwegian municipalities seems, however, to have a positive effect on migration to regions outside the capital area, and especially then for the migration balances in the northern part of Norway:

Documentation: [77]

Maintenance of and Exits from Self-Employment in Norway - Measured by Regional Labour Market Mobility in a Longitudinal Analysis

The main focus of this analysis is to investigate the success of self-employment by rates of self-employment survival in the regional labour markets and to estimate how the maintenance of versus exits from self-employment are connected to some central regional economic characteristics. In this longitudinal analyses the data give opportunities to follow each person through several years, thus effectively constituting a complete panel. The success and failure of self-employment in the regional labour markets is measured by annual and accumulated rates of maintenance of and exits from self-employment by socio-demographic groups and by their previous statuses at the regional labour markets. There are reasons to expect different success of self-employment whether the self-employed have previous statuses as self-employed, wage earners, in education, unemployed or stayed outside the labour force. It is also important to analyse the further success of self-employed whether they have experiences as self-employed or newly attended

the self-employment. An important question to answer is thus to what extent new self-employed succeed to continue their new established enterprises.

In the last part of the analysis we examine the maintenance of versus exits from self-employment by specific regional characteristics, especially focusing on the regional level of unemployment and labour market participation as well as regional changes of employment.

The results indicate high exits and low maintenance of self-employment and especially then amongst new established self-employed. The maintenance of self-employment is somewhat higher in more peripheral regions than in the most central regions and somewhat higher among men than among women. Previous experiences from self-employment increase the probability to continue as self-employed, while previous background from education, unemployment and outside labour force increase the probability of leaving self-employment at an early stage. Regions with relatively higher unemployment do experience higher exits from and lower maintenance of self-employment than other regions.

Documentation: REP 2009/40

Higher Immigration – Empirical Analyses of Demographic and Economic Effects for Norway

An analysis of demographic and economic effects from higher immigration was published in Zaidi, Harding and Williamson (Eds.), (2009): *New Frontiers in Microsimulation Modelling*, Ashgate. The effects are analysed by a combined use of Statistics Norway's demographic and economic models. The analyses show that immigration is quite important for the number of inhabitants and the size of the labour force. Immigrants to Norway are rather young relative to the Norwegian population, and participation rates seem to be rather high for typical labour market immigrants from the other Nordic countries, other countries in Western Europe and new EU countries in Eastern Europe. Higher immigration seems to improve public finances, especially in the short run but also somewhat in the longer run. The effects diminish in the long run because immigrants grow old and become entitled to pensions and public services.

Ettersom det ikke var noe publisert arbeid eller DP i tilknytning til arbeidet med selve MOSART-modellen og pensjonsanalysene i 2009, kan muligens følgende innarbeides i den generelle teksten:

Statistics Norway's dynamic microsimulation model MOSART is used to project demographic development, educational performance, labour supply and pension expenditures. During the past decade the model has been extensively used in evaluating the design of the Norwegian pension reform that is going to be implemented in 2011. In 2009 a lot of work was made in merging relevant information from different administrative registers to update the data basis for the model including the entire Norwegian population.

Documentation: [78]

Staff 2009

Holmøy, Erling – Head of Research Unit
 Brinch, Christian N. – Researcher
 Colombino, Ugo – Professor*
 Fredriksen, Dennis – Senior Adviser
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Stambøl, Lasse S. – Senior Researcher
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Wennemo, Tom – Senior Adviser
Wisswall, Matthew J. – Professor*
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* Associate staff

Economic Growth and Environmental Economics

The Research Unit for Economic Growth and Environmental Economics at Statistics Norway aims to provide the government with state-of-the-art, long term, economic forecasting models for the Norwegian economy. Moreover, we seek to publish research at the frontier of economics on some chosen topics within the natural resource economics, environmental economics and the economics of economic growth. For the upcoming years we will in particular focus on:

- *The economics of climate change*, in which we especially study the functioning of emission permit markets and the relationship between climate policy and technological change.
- *Further development of our long term general equilibrium models of the Norwegian economy*, for which we in particular will study various domestic energy and climate policy impacts.
- *The international markets for oil and gas*, in particular analysing market structure at the supply side of the markets and the effects of international energy and climate policies.
- *Sustainable development*, for which we focus on how to include the precautionary principle in sustainable development indicators and our calculation of national wealth.

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, and a detailed description of the electricity market. The latest version is calibrated to the 2004 National Accounts. In 2009 the model was updated with a revised consumer system, and new climate technologies were introduced into the model, as options to reduce emissions in some important sectors. The model has inter alia been used in relation to the "Klimakur 2020" project, to study the effects of domestic climate policy.

Main findings

Introducing renewable energy support will not affect total CO₂-emissions if these are already regulated by a cap-and-trade system. Instead, emissions will shift around, due to price changes in the electricity and the CO₂ market. Changes in market shares have been analyzed in theoretical and numerical models of the electricity market. In another study, using a model for the European energy markets, the impacts of carbon capture and storage (CCS) has been investigated under different climate policy scenarios in 2030. One finding is that coal power with CCS will be more important than gas power with CCS, whereas conventional gas power plants probably will co-exist with CCS-plants under reasonable (but ambitious) emissions targets for Europe.

Several studies of the relationship between climate policies and technology policies have been performed. Using the CGE model with induced technological change, we have studied public revenue neutral policy alternatives targeted towards general R&D and R&D into CCS. Support to general R&D is the welfare superior, but the welfare gap between the two R&D policy alternatives is reduced if the CO₂ price increases. One finding from the "Klimakur 2020" project is that introducing new climate technologies into the CGE model significantly reduces the estimated costs of domestic climate policy.

Both CO₂ taxation and cap-and-trade systems will stimulate implementation of cleaner technologies. Based on theoretical analyses we have found that the relative merits of these two instruments in this regard depend highly on whether there is perfect or imperfect competition in the cap-and-trade market. One alternative to

domestic emissions reductions is to buy quotas through the Clean Development Mechanism (CDM). In a theoretical and numerical study it is shown that CDM-projects typically lead to carbon leakage, meaning that global emissions will increase when domestic reductions are replaced by reductions through CDM-projects.

An international research project led by Statistics Norway on economic activity of the circumpolar Arctic was completed in 2009 with the report *The Economy of the North 2008*. The report gives an overview of the Arctic economy in a global perspective, with focus on petroleum activities and resource management in the Arctic, as well as of the Arctic economy in a regional and local perspective, taking into account the subsistence economy of indigenous and other local people. In a new project, we have established an interdisciplinary research platform, in particular in cooperation with the Nature Index project, to improve sustainable development indicators by taking into account precautionary perspectives and establishing “early warnings”.

Staff 2009

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Birger Strøm, Senior Adviser
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Tom R. Heggedal, Researcher

* Associate staff

Social and Demographic Research

The general objective of the unit 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 unit is responsible for making population projections, including 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 unit 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, including the production of population projections. We are also involved in the design of life expectancy adjustments in the new Norwegian pension system. We are cooperating with Eurostat about population forecasts and advice the Ministry of Foreign Affairs in the United Nations Commission for Population and Development. A senior researcher is currently chairing the Panel on the Demography of Armed Conflict of the International Union for the Scientific Study of Population.

Documentation: ØA 1/2009, ØA 4/2009, ØA 6/2009, SSP 1/2009, Rapport 2009/9, Notater 2009/14, Press Releases (DS) 11.6.2009, Valgaktuelt 2009, [27], [70], [71], [72], [78], [115].

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. One 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. We have coordinated the working group on administrative records, planned and implemented the Norwegian Gender and Generation Survey in 2007-2008 (LOGG), and entered Norwegian data into the contextual database. The division also participates in several collaborative networks with other research institutions. We participate in a network using interview data to compare family formation in Sweden and Norway. We also take part in two consortia that have been given research grants by the European Commission (FP 7), REPRO and INFRA.

Documentation: SSP 1/2009, 3/2009 [3], [5], [28], [42], [43], [123], [127]

Social research

The activities concerning social research are based on both cross-sectional and longitudinal analyses of 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, social isolation and crime, and as time use patterns, often with a focus on the effects of social welfare policies on particular population groups. Most of this research is financed as commissioned research.

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 factors promoting the integration of immigrants in the labour market, an analysis of immigrants' health, and an analysis of employment and non-employment among young people with immigrant background from Pakistan, Turkey, and Vietnam. More general analyses of immigrants' living conditions and social participation have also been undertaken.

Documentation: REP 2009/2, REP 2009/44, SSP 4/2009, SA 104, [122], [133]

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 the division of domestic labour and paid work between parents. We also investigate women's part-time work and employment interruptions, women's working hour preferences and satisfaction with full-time work, and what characterises women and men in couples who practice untraditional division of labour and family responsibilities. Furthermore, we have been engaged in a project evaluating the new regulations of child maintenance implemented in 2003 by analysing the parents' involvement with their children as well as their economic well being. We have also carried out a project evaluating an activation programme targeted at social security recipients, a project looking at the association between criminal careers and various circumstances of life, a project exploring the living conditions among farmers, a project looking at the participation in kindergartens among children from various socioeconomic groups as well as broader analyses of peoples' living conditions and social integration and isolation.

Documentation: SSP 1/2009, SSP 2/2009, SSP 3/2009, SSP 4/2009, DP 579, DP 587, DP 588, DP 593, DP 597, DP 602, NOT 2009/21, NOT 2009/42, SA 108, [17], [32], [37], [38], [39], [40], [58], [59], [60], [83], [85], [86].

Main findings

- For the new population projections, published in June 2009, we estimated the effects on net immigration of unemployment level and income level in Norway compared to other OECD countries, and used this as background information for the forecast of net immigration, which was assumed to start declining from a record level in 2009 or 2010.
- The centralisation of the population distribution in Norway continues.
- Analysis of the cohorts 1900-1939 who retired after the age of 60 show that mortality is higher for those retiring early
- The first publications based on LOGG appeared in Samfunnsspeilet 1/2009.
- Childlessness is higher among men than among women, and this gender gap has increased in younger cohorts. Men with short education have higher childlessness than men with long education, whereas the opposite is true for women. The rise in childlessness has been more rapid among men than among women and encompasses men at all educational levels.

- There are large fertility differentials between persons educated for jobs in different segments of the labour market. Women educated for female-dominated jobs in the public sector contribute with significantly higher fertility than women educated for more gender-mixed or male-dominated sectors, and this gap has not diminished across cohorts. Men educated in humanities and art, and social science and journalism have especially high childlessness levels.
- Norwegian and Swedish cohabitators are less serious and less satisfied with their relationships and are more likely to consider ending their current unions than are married respondents. Cohabitators who report that they intend to marry their current partners within 2 years, however, differ much less from married respondents than cohabitators with no marriage plans.
- A substantial proportion of persons released from prison are weakly linked to the labour market both prior to and after imprisonment, but getting a job after release is strongly associated with lower reincarceration rates. This is so regardless of type of crime as well as previous employment history.
- Family life has long been regarded as having a crime-preventive effect. However, reduction in crime is detectable up to several years *prior* to marriage and child births, reflecting that family life should also be regarded as an outcome of a changing life style.
- Nearly seven out of ten agree that labour market immigration from non-Nordic countries makes a mainly positive contribution to the Norwegian economy. Data on public attitudes for the years 2005 to 2009 show that support for labour immigration decreases with growing unemployment and vice versa.
- Among immigrants, those who are oriented towards their country of origin are more prone to be employed (in Norway) than those who lack this trait. However, immigrants who base their social lives on close ties with other immigrant compatriots are less inclined to be employed than others.
- The labour reserve constituted by the unemployed and the underemployed, has varied significantly since 1996. This is attributed more to changes in labour demand than to changes in work hour preferences. The labour reserve is comprised of women and men alike, the significance of underemployment and unemployment differs however, between the sexes.
- The full-time rate among Norwegian female employees is relatively low, less than 60 per cent, but most full-time workers are content with their present working hours. Women who are younger, unmarried, highly educated, or with no young children in the household are more often satisfied with full-time work than other women. Contentment is also higher within jobs in public administration than within jobs in typical male industries and in the health and social sector.
- Equal sharing of paid work in couples is now increasing in Norway, but women seldom work more than their partner. Still, about half of all women spend less time than their partner on paid labour. When the woman works more than her partner, the partner often has health problems, is unemployed or retired. Women with an untraditional arrangement are often well-educated, have no young children, live in the Northern part of the country, are self-employed or leaders.

Staff 2009

Kjeldstad, Randi, Senior Researcher, Head of Research Unit

Barstad, Anders, Researcher

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Lyngstad, Jan, Researcher
Lyngstad, Torkild Hovde, Researcher (part time)
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Nymoene, Erik H., Adviser
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Skardhamar, Torbjørn, Researcher
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Skrede, Kari, Senior Researcher
Texmon, Inger, Senior Adviser
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Aassve, Arnstein, Professor*

* Associate staff

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
- 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. Useful insights are gained when combining data collected in a survey with auxiliary information that exists in the administrative registers. It is important to differentiate between the bias that is due to nonresponse and that which may be caused by other non-sampling errors such as misclassification. The EU 7th framework project RISQ on representativity indicators is in its closing stage. But we plan to continue joint research on this subject with researchers from Netherlands and UK.

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.

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 will participate in the ESSnet project on Small Area Estimation, together with colleagues from Italy, UK, Germany, Poland, Spain, France and Switzerland.

Use of Administrative Registers and combination of sources

Use of administrative registers as auxiliary information 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. This is one way of combining information available in different data sources. Another possibility is to construct a statistical register based on which statistics can be produced by direct tabulation. This is an important field of our current research.

We have initiated a research program for statistical methods for register-based statistics. The topics that are currently being studied include unit errors and their effects, uncertainty in detailed statistics based on statistical registers, multi-purpose

prediction and imputation of statistical registers. It is intended that the methods shall be applicable in the coming register-based census 2011.

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 add-ons to make correct adjustments for Norwegian holidays. Another area of research is population forecasting.

Documentation: NOT 2008/58

Disclosure Control

Disclosure control is relatively new as a research topic in Statistics Norway. Methods for rounding in high dimensional frequency count tables have been developed. These methods were in the 2001 census and are being used in the Web StatBank Norway. There has also been work on blurring of register data in surveys by rank matching. The works have been presented at joint Eurostat/ECE meetings on confidentiality. In 2008 and 2009 Statistics Norway participated in the ESSnet for confidentiality under EU 7th framework.

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.

Statistics Norway has developed a system Norsamu for coordinating business surveys. Survey participation will be transparent, fair and predictable. Norsamu has put in place the necessary instrument for achieving the right balance between total response burden and accuracy of statistical production.

Statistics Norway has got the responsibility for developing a standardized sampling design framework for European Health Examination Surveys (EHES).

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.

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 shall work together as one comprehensive system. To achieve this goal, different metadata systems have been developed and linked.

Our metadata web-page (<http://www.ssb.no/english/metadata>) makes Statistics Norway's metadata, e.g. our systems for documentation of variables and standard

classifications, more accessible and easier to use. New metadata(systems) will be included when relevant.

Main findings in statistical methods

A paper on a double mixed-modeling approach to estimates of small area compositions subject to informative missing data was published in Survey Methodology.

A paper on the effect of auxiliary information on the variance of cluster sampling was published in Journal of Official Statistics.

Staff 2009

Bjørnstad, Jan F., Professor, Head of Research
Abrahamsen, Anne Sofie, Statistics Adviser
Badina, Svetlana, Senior Executive Officer
Cooper, Susie, Senior Executive Officer
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Foss, Aslaug Hurlen, Statistics Adviser
Hagesæther, Nina, Senior Executive Officer
Heldal, Johan, Senior Statistical Adviser
Hustoft, Anne Gro, Senior Statistical Adviser
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Lillegård, Magnar, Researcher
Lillehammer, Marie, Researcher
Mevik, Anna-Karin, Statistical Adviser
Pham, Dinh Quang, Researcher
Seierstad, Ane, Statistical Adviser
Vedø, Anne, Statistical Adviser
Zhang, Li-Chun, Senior Researcher

Administration

Personnel and budget

In 2009 the total staff in the Research Department was 92. From 2008 on the department has been organized in 7 thematic groups, the Social and Demographic Research included.

The basic financial resources stem from the governmental budget as allocated within Statistics Norway. In addition research activities are financed with grants from The Research Council of Norway and with contracts given by Ministries, primarily the Ministry of Finance, Ministry of Labour, Ministry of Local Government and Regional Development, and Ministry of Petroleum and Energy. Research activities outside the governmental allocation amounts to 45 % of total activities.

The research activities also includes a Unit for Statistical Methods and Standards.

Distribution of operating costs in 2009, in 1000 NOK

		Basic	Projects		
Research Department	Wages	31 231	23 539		
	Goods and services	1 024	8 018		
	In-house infrastructure	20 300*	12 231		
		52 555	43 788	96 343	
Statistics Methods and Standards	Wages	5 978	1 553		
	Goods and services	449	52		
	In-house infrastructure	3 386*	557		
		9 813	2 162	11 975	108 318

* Estimated

Staff 2009

Ådne Cappelen, Director of Research [until Dec. 31st 2009]

Skoglund, Anne, Executive Officer – part time

Vaagen, Otto Gerhard, Head of Administration – part time

External publications

- Articles in international journals
- [1] **Aaberge, R., U. Colombino and T. Wennemo:** Evaluating Alternative Representations of the Choice Sets in Models of Labour Supply. *Journal of Economic Surveys* **3**, 2009, 586-612. DOI: 10.1111/j.1467-6419.2008.00573, 2009.
 - [2] **Aaberge, R.:** Ranking Intersecting Lorenz Curves. *Social Choice and Welfare* **33**, 2009, 235-259.
 - [3] **Aassve, A. and T. Lappegård:** Childcare cash benefit and fertility timing in Norway. *European Journal of Population* **25**, 2009, 67-88.
 - [4] **Alstadsæter, A. and E. Fjærli:** Neutral taxation of shareholder income? Corporate responses to an announced dividend tax. *International Tax and Public Finance* **16** (4), 2009, 571-604.
 - [5] **Andersson, G., M. Rønsen, L.B. Knudsen, T. Lappegård, G. Neyer, K. Skrede, K. Teschner and A. Vikat:** Cohort fertility patterns in the Nordic countries. *Demographic Research* **20** (14), 2009, 313-352. DOI: 10.4054/DemRes.2009.20.14.
 - [6] **Asheim, G.B. and B. Holtmark:** Renegotiation-Proof Climate Agreements with Full Participation: Conditions for Pareto-Efficiency. *Environmental and Resource Economics* **43**, 2009, 519-533.
 - [7] **Aune, F.R., K.E. Rosendahl and E. Sagen:** Globalisation of natural gas markets – effects on prices and trade patterns. *The Energy Journal* **30** (Special issue “World Natural Gas Markets and Trade: A Multi-Modeling Perspective”), 2009, 39-54.
 - [8] **Beatty, T.K.M., E. Røed Larsen and D.E. Sommervoll:** Driven to Drink? Sin Taxes near A Border. *Journal of Health Economics* **28** (6), 2009, 1175-1184.
 - [9] **Bjerkholt, O.:** The making of the Leif Johansen multi-sectoral model. *History of Economic Ideas* **17** (3), 2009, 103-126.
 - [10] **Böhringer, C. and K.E. Rosendahl:** Strategic Partitioning of Emissions Allowances Under the EU Emission Trading Scheme, *Resource and Energy Economics* **31**, 2009, 182-197. doi:10.1016/j.reseneeco.2009.04.001.
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