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The Annual Report 2002 for the Research Department of Statistics Norway presents the main fields of research in 2002 with complete lists of publications and staff. The Research Department as presented in this report, includes the Social and Demographic Research Unit and the Statistical Methods and Standards Unit which administratively are placed in other departments in Statistics Norway. Other research activities within Statistics Norway are not included in this report.

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

Oslo, June 2003

*Ådne Cappelen
Head of Research Department*

General research objectives

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

Enhanced empirical knowledge

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

Analytical tools for monitoring economic and environmental development

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

Feed-back to the statistics

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

Cumulating competence

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

Per 24 March 2003

Chairman of the Board
Steinar Stokke

Director General (100)

Svein Longva

Staff (101)

International Secretariat (104) Jan Byfuglien

Divisions

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Development Cooperation (140)
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Department of Economic Statistics (200)

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Svein Homstvedt

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Bjørn Bleskestad

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Lasse Sandberg

Public Finance and Credit Market Statistics (250)
Anna Rømo

Labour Market Statistics (260)
Helge Næsheim

External Trade (270)
Leif Korbøl

Department of Social Statistics (300)

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Health Statistics (330)
Ann Lisbet Brathaug

Sample Surveys (340)
Ole Sandvik

Social Welfare Statistics (350)
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Population and Housing Census (370)
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Income and Wage Statistics (420)
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Primary Industry Statistics (430)
Ole O. Moss

Transport and Tourism Statistics (440)
Peder Næs

Construction and Service Statistics (460)
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Research Department (500)

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Staff (501)

Units

Taxation, Inequality and Consumer Behaviour (510)
Thor Olav Thoresen

Energy and Environmental Economics (520)
Annegrete Bruvoll

Macroeconomics (530)
Per Richard Johansen

Labour Market and Firm Behaviour (540)
Torbjørn Hægeland

Fiscal Sustainability (550)
Nils Martin Stølen

Local Public Finance and Regional Economics (560)
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Economic Growth and Efficiency (570)
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Petroleum and Environmental Economics (580)
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IT

¹ The departments are newly established and still in the process of being organized.

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

- 1. Developing and applying the tax-benefit model system LOTTE and other static microsimulation models*
- 2. Understanding and application of methods for consumer behaviour*
- 3. Describing distributional effects of policy interventions*

The tax-benefit model LOTTE is extensively used by the Storting (Parliament) and the Ministry of Finance, calculating effects on revenue and income distribution from changes in the scheme for direct taxation. Recent years this service has also included simulations of effects from changes in the indirect taxes, as the VAT, through the model LOTTE-konsum.

A framework has been developed to identify and evaluate marginal indirect tax reforms in the Norwegian economy, taking into consideration efficiency, distribution, environmental effects and demerit goods [78]. Our analysis shows that the reform passed in Parliament in November 2000 has a clear redistributive profile: a lowering of the VAT rate on food items and the introduction of a VAT on services benefit households in the lowest five deciles while the upper five deciles get worse off. But we also argue that the aggregate demand responses result in an increase in greenhouse gasses. Next, we show that if the 2000 reform had been complemented with tax rates changes on other products, it could have made every decile better off. The empirical basis is taken from a comprehensive system of micro- and macromodels 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 last decade has implied substantial changes in the policy with respect to families with preschool children. For instance ongoing discussions on the size of child care centers fees require qualified measures of effects of changes in the fees system. A microsimulation model is established in order to assess the effects of policy changes with respect to families with married or cohabiting parents. Future work will extend the framework to establish a similar model for lone parents, and to improve the representation of care quality in the model.

In two reports made for government committees we have calculated the importance of owner-occupied housing and examined its impact on the distribution of income. We find that owner-occupied housing is the most important asset in the households' portfolio and that the imputed return to housing contributes positively to income inequality.

A Phd-thesis on tobacco consumption has been defended. The composition of tobacco consumption has potentially implications for public health, tobacco tax revenue, and distribution of household welfare. Insignificant estimated price effects could suggest that there is little price driven substitution between manufactured and hand rolled cigarettes. However, price driven substitution is apparent at the household level. For instance, households with a low income per person are more prone to choosing hand rolled cigarettes than manufactured cigarettes, compared with richer households. This is partially due to the fact that hand rolled cigarettes cost roughly half as much as manufactured cigarettes, but the high Norwegian level of tobacco taxes are likely to increase the substitution effects.

Staff

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This research focuses on studies of the development of energy markets and how national and international external conditions influence the environment, the use of national energy resources, the market structure and economic growth. We study the behavior of firms and households and their adaptation to environmental policy. We develop partial energy market models in combination with more general equilibrium models and conduct policy analyses. The energy markets are dominated by hydropower capacity with stochastic inflow, and a special focus is the domestic and Nordic electricity markets. Effects of capacity limits, strained markets and owner concentration issues are high on the research agenda.

By means of non-parametric frontier analyses, individual plant efficiency relative to a frontier consisting of the most efficient plants has been estimated. Frontier movements, i.e. development of new technology, are more common than movements towards the frontier, i.e. adaptation of existing technology. Adding an environmental dimension does not change the main conclusions.

Documentation: Bruvold, A., T. Bye, J. Larsson and K. Telle (2003): Technological changes in the pulp and paper industry and the role of uniform versus selective environmental policy, forthcoming as Discussion paper, Statistics Norway.

Bruvold, A., T. Bye, J. Larsson and K. Telle (2003): Environmental Sensitive Technical Development- a Comparison of Four Energy Intensive Manufacturing Industries. Statistics Norway, forthcoming.

High dependency upon water-based electricity calls for analyses of the flexibility in the Norwegian electricity market. Power intensive industries in Norway face long-term low contract with low electricity prices. Calculations of the reservation price curves for electricity in the short-term Nordic electricity market show that it is profitable for these industries to sell back some 30 per cent of the electricity under strained market conditions.

Documentation: Bye, T. and J. Larsson (2003): Lønnsomhet ved tilbakesalg av kraft fra kraftintensive industri i et anstrengt marked (The profitability in sell back of electricity from the power intensive industry in a strained market), *Økonomisk Forum* 1, 26-29.

Proportional and non-linear increases in electricity taxation influence households' electricity consumption, and imply distributional and efficiency effects. We find that non-linear tax schemes decrease consumption most, but also imply the highest efficiency losses. The ranking of tax schemes with respect to distributional effects varies with respect to what household group is considered.

Documentation: DP 338.

Earlier studies show that the emission-augmenting effect of scaling up aggregate economic activity may be counteracted by greener composition of produc-

tion and consumption, technological progress, and increased demand for environmental quality and policy. In a policy planning perspective, it is interesting to gain insight into whether these mechanisms persist into future. By means of a CGE model, we forecast significant future effects of all these three counteracting mechanisms. We find that for most local and regional pollutants, these forces may be strong enough to prolong the falling emission trends.

Documentation: Bruvold, A., T. Fæhn and B. Strøm (2003): Quantifying central hypotheses on environmental Kuznets curves for a rich economy: A computable general equilibrium study, *The Scottish Journal of Political Economy* 50 (2), 149-173.

Norwegian recycling systems hinge on households' voluntary contributions to a high degree. Whether this contribution is a cost to the households or not, is disputed. In a theoretical study combined with empirical illustrations, we demonstrate that campaigns aimed at increasing individuals' voluntary contributions to public goods, for example through appeals and advertising in order to increase recycling efforts, may work by increasing the effort individuals perceive as required for maintaining one's self-image as socially responsible. If the government succeeds in increasing voluntary effort via such mechanisms, a social cost is imposed on contributors, even if contributions are voluntary. This cost should be taken into account in cost-benefit analyses. Documentation: DP 316

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

Business cycle analysis

Economic surveys and forecasts are published quarterly in parallel editions in Økonomiske analyser and Economic Survey. They are also available on the Internet. The forecasts are constructed using the quarterly macroeconomic model KVARTS (see below). The Research Department is a member of AIECE (Association d'Institutes Européens de Conjuncture Economic) and of the UN-based Project LINK, linking several national macro models to a global model. To appraise international economic developments the Research Department has access to the NiGEM model of the National Institute of Social and Economic Research in London, UK.

Documentation: ØA 1/2002, 3/2002, 4/2002, 6/2002, ES 1/2002, 2/2002, 3/2002, 4/2002.

Macroeconomic models and econometric analysis

Macroeconomic research is concentrated around the development and use of the two large macroeconomic models - the quarterly model KVARTS and the annual MODAG. Except the difference in data frequency economic content is almost identical. The KVARTS model is used for forecasting and analysis in our business cycles reports. The model is also used to provide alternative scenarios for the Government appointed Expert Committee for Income Settlements in connection with the annual nation wide wage and income negotiations. The MODAG model is mainly used by the Ministry of Finance for forecasting and policy analysis, and by the unit itself in assisting fractions in the Standing Committee on Finance and Economic Affairs in the parliament. Both models have been central tools in various historical/counterfactual studies of the Norwegian economy.

The models comprise at the moment 28 sectors of production and 48 commodities. Although many of the parameters in the models are econometrically estimated, several coefficients, including the input-output structure, are each year calibrated to the most recent final national accounts data. Presently, the final accounts for 2000 are used for this calibration.

For most production sectors (22) a set of factor demand equations are specified based on Cobb-Douglas productions functions. The factors specified are labour, energy (nested CES-elements for electricity and fuel), other material inputs, and three components of fixed capital (machinery, transport/equipment, and structures). To each commodity, the models specify an exogenous world market price, and two endogenous prices (for exports and the domestic market), where price formation is according to the theory of monopolistic competition. Modelling of export volumes and import shares are based on the Armington approach.

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

Based on the input-output structure and the commodity classification, indirect taxes and subsidies are specified in great detail. The same goes for direct personal taxation where the model tax rates are aggregated from a microeconomic model

which links the actual tax structure to the large micro-database of recent tax forms. The Norwegian economy is characterised by a comprehensive public transfers system and the link between labour market variables and parts of the transfers to old age pensioners are treated in a simpler way.

In 2002 the MODAG model was given a comprehensive documentation (in Norwegian only; also available on Internet). In addition work has been centred around the following topics: Formation of price expectations, supply and demand for labour by skill, macroeconomic consequences of wage formation decentralisation, exchange rate and financial sector modelling, and methodological problems related to testing trend brakes in data series.

Documentation: SØS 108, DP 326, Doc 2002/2, 2002/4, 2002/5, 2002/13, 2002/14, ØA 2/2002, ES 2/2002, [20], [27], [49], [62], [63], [64], [65].

Main Findings

Decentralized wage determination would adversely affect macroeconomic performance as measured by GDP growth, international competitiveness and unemployment. This conclusion holds regardless of the model chosen, the "rigid" continental European model or the more "flexible" Anglo-American model.

Skill biased technological change, in particular, but also trade with low-cost countries, explain the last decades' growing demand for higher educated workers relative to those with less education. The technical change and the low price growth on imported goods contributed to keep an egalitarian wage distribution due to special features of the Norwegian system for wage determination.

Modelling the Norwegian exchange rate against a basket of currencies, we find a robust long-term link between the real exchange rate and real interest differential that is consistent with purchasing power parity (PPP) and uncovered interest parity (UIP). However, PPP alone is rejected. These findings are confirmed focusing on the Norwegian bilateral exchange rate with Germany and (possibly) Sweden, but rejected against the UK and the US. The rejection of bilateral relationships may result

from idiosyncratic shocks in the different countries that may be negligible when modelling against a basket of currencies.

Staff

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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 analyzing economic issues. In connection with this work, the unit also contributes to the development of relevant theories, methods and databases.

Our main fields of analysis include

The relation between labour supply and business cycle conditions

Technological change and workers' retirement decisions.

The returns to and choice of education

Education and inequality: Sorting, resources and outcomes

Barriers to increasing female employment

Measurement of innovations

Efficiency, growth and firm exit

Price index methods

Econometric methods

Main findings

A new method for estimating capital stocks from firm level data has been developed. The method has been applied on a unique micro data set which links structural statistics with accounts data for all Norwegian stock companies in the manufacturing sector for 1993-2001. The firms' net capital stocks in current and fixed prices have been estimated. To address the problem that account data are based on historic costs, a method for converting book values into current prices using price indices for capital goods is proposed.

In an analysis of effects of a broad range of transfers to parents of preschool children on income distribution, labor supply and economic efficiency, we find that subsidising kindergartens may en-

hance the efficiency of an economy with preexisting marginal tax rates on labour income. The results indicate that the optimal subsidy level can be quite high, up to 60 or 70% of the gross cost. The main explanation for such a result is that kindergarten expenditures reduces private incentives to work, particularly for mothers. This group of workers or potential workers have relatively high labour supply elasticities. Since a reduction in the net kindergarten price effectively works as a reduction in the marginal tax rate, one may use kindergarten subsidies as an alternative to tax reforms for this elastic work force, and thereby enhance efficiency.

In 2002 a two-sector labour supply model for married women has been developed and estimated on micro data for Norway. The sectors are "Private" and "Public". The modeling framework is an extension of previously developed single sector models, with particular focus on representing complicated and partly unobserved choice - and budget constraints. From the estimated model we have calculated different kinds of sector specific wage elasticities. The elasticities of participation are generally low, while the elasticities with respect to sector specific wage changes are substantial.

Staff

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Rønningen, Dag, Senior Executive Officer

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. Economic consequences of long run fiscal imbalances and policies to reduce these imbalances are a natural part of the analyses.

An important objective for the research is to provide quantitative information. The research activities at the unit may be grouped in two main categories:

1. The analyses of the effects on transfers to households and income distribution as a consequence of demographic development, supply of labour, and pension regulations are mainly based on development and use of a dynamic micro simulation model, MOSART. Specific micro based analyses of behavioural effects and in particular analyses of saving behaviour are currently going on.
2. The interaction between the general economic development and fiscal sustainability is subject to analyses by general equilibrium models. For the time being our most appropriate CGE-model is the MSG-model. Effects of changes in the pension system, taxation and the level of public services are central areas of research. The sustainability in public finances, effects of using petroleum revenues, excess burden of taxation and Dutch disease are also given great attention.

The unit aims at providing analyses at a high scientific level presented in a form that makes national and international periodicals one channel for publication. In addition the research activity must be adjusted to the demand for analyses in order to obtain external financing. As of today, the models and the studies are to a large extent used by the Ministry of Finance and public commissions.

Main findings

Analyses for the Norwegian Pension Commission show that changes in the pension system towards higher proportionality between pension entitlements and former labour income in addition to making the yearly pension benefit dependent on the retirement age, may increase employment and reduce public expenses. A shift in this direction keeping average pensions unaltered, however, favours those with higher incomes and is unfavourable for women.

A shift from today's pay as you go to a funded system gives no "free lunch" because this shift may introduce a double burden on the labour force in the transition period, reducing private consumption and/or leisure.

Pension reforms which are based on a higher degree of prefunding, must be followed up by adjustments of the industry structure. In particular, increased national savings will take place through increased net exports, which warrants an expansion of the traded goods sector.

A separate project has estimated the equilibrium development of the industry structure, given that foreign trade is balanced in the long run, i.e. the net foreign debt does not explode. Continuation of past growth trends imply that the demand for traded goods will grow. The petroleum wealth and the accumulated national financial wealth are so large that output from the traded goods sector can be permanently reduced. On the other hand, normal productivity growth allows an annual reduction of ½ percent in the employment in the traded goods sector. A sustainable future development warrants a growth in the real wage rate that is significantly lower than the actual growth over the recent years.

New micro data on household saving has made it possible to analyze Norwegian saving behavior along three dimensions; age, period and cohort. The main findings are 1) the propensity to save increases steadily with age, most likely due to a combination of precautionary savings and bequest behavior, 2) there are no significant generational differences in saving behavior, and 3) household saving over time responded to credit liberalization with a temporary decline, and responds less to revaluations of real assets than is previously assumed on the basis of macro data.

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The research unit conducts analyses that include a geographic or administrative dimension at the subnational level. The focus is on the behaviour of local governments and their priorities between different service sectors and different recipients. Local public finance is combined with analyses of distribution and efficiency. Moreover, the behaviour of individuals is studied in the setting of migration, labour market mobility and regional competition. Economic models have been developed to provide future scenarios for employment and labour force in different regions, and for local government service production by service sector.

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

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

To measure the value of public services we develop a method that accounts for variation in unit costs and the state of health in each local jurisdiction. Moreover, we utilize client statistics as the basis for imputations of the value of services, which is allocated to each local resident. We find that the contribution from local government services to inequality in the distribution of income is approximately neutral.

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

The regional macroeconomic model REGARD is used to support the analyses and projections of the development in regional labour markets and migration. The present economic part of the model is a simple submodel to the macroeconometric model

MODAG. A demographic model block takes care of internal migration and labour force participation. The model provides projections of labour market imbalances, illuminating the implications for regional employment, labour force and population growth of a given macroeconomic scenario and from changes in economic policy. In 2002 the model was used in the preparation of economic surveys for a Norwegian region. The model was also used in regional analyses for a Norwegian government committee ("Effektutvalget").

Three projects on labour market mobility continued in 2002. A project investigating urban and regional labour market mobility in Norway is included in the Norwegian Research Councils' programme "Urban development - driving forces and planning challenges". Another project investigating local tax policy, competition and mobility across municipalities continued as a cooperation project with NTNU in Trondheim and is included in the Norwegian Research Councils' Tax research programme. Finally a network-project "International comparisons of local labour markets and policies" continued by cooperation with a Nordic project group and researchers from The Netherlands, Spain and United Kingdom.

Main findings

The contribution of in-kind benefits to inequality in the distribution of extended income (cash (after-tax) income plus municipal in-kind benefits) is approximately neutral. This result is due to the fact that elderly people and families with children receive the largest share of the municipal in-kind benefits and moreover are located in the central part of the distribution of extended income.

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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 and environmental policy on macroeconomic efficiency and economic growth processes. Our main tools are general equilibrium models. The most recent model version (MSG-6) has endogenous labour supply, intertemporal consumer and producer behaviour based on perfect foresight, an integrated emissions-to-air module linked to the economic activities, a detailed description of the electricity market and a specified representation of the link between firm and industry behaviour, where heterogeneity between firms and imperfect competition are accounted for.

The relationship between economic growth and emissions and the role of pollution leakages through trade.

Observed Environmental Kuznets Curves (EKC) indicate that growth in rich countries tend to slow-down/decrease their pollution problems. Explanations could be that the emission-augmenting effect of scaling up aggregate economic activity be counteracted by greener composition of production and consumption, technological progress, and increased demand for environmental quality and policy. We have quantified the role of these factors in MSG-6-projections of the Norwegian economic activity the next three decades and the subsequent emissions of several air pollutants and greenhouse gases. The MSG-6 version used accounts for endogenous adjustments of climate policy. Our results suggest significant future effects of all these three counteracting mechanisms. For most local and regional pollutants, they may be strong enough to prolong the falling emission trends. However, we do not find reductions in emissions of climate gases and some transport-related local pollutants. Our results also indicate that pollution leakages abroad are likely to find place.

Documentation: Bruvoll, A., T. Fæhn and B. Strøm (2003): Quantifying Central Hypotheses on the Environmental Kuznets Curve for a Rich Economy. A Computable General Equilibrium Study, Discussion-Papers 341.

Bruvoll, A., T. Fæhn and B. Strøm (2003): Quantifying Central Hypotheses on the Environmental Kuznets Curve for a Rich Economy. A Computable General Equilibrium Study, *Scottish Journal of Political Economy*, 50/2, pp 149-73.

Indirect taxation - efficiency and distribution

We analyse welfare (efficiency) effects of different reforms of the Norwegian indirect taxation system.

The main reform studied is the substitution of a uniform VAT rate on all goods and services for the previous, differentiated system. The actual Norwegian VAT reform of 2001, which included some more services in the VAT tax base, while simultaneously bisecting the VAT on food, is also evaluated. The abolition of the investment tax is also studied. These reforms are analysed by using the dynamic version of MSG-6. Our results indicate that a uniform VAT system gives a welfare gain compared to the differentiated systems of the previous and current non-uniform systems, both through a better allocation of the factors of production on, respectively, manufacturers and services, and through stimulating savings, which gives a more efficient use of resources over the time-horizon. The ongoing part of the project aims at analysing effects on the distribution of welfare between different households. As the MSG-6 model is characterised by one representative consumer, we combine the CGE model with a microsimulation model. This is done in a sequential manner, where percentage changes in consumer prices and nominal income from the CGE model are used as input to the microsimulation model.

Documentation: DP 343 (2003), ØA 6/2002. Bye, Brita, B. Strøm and Turid Åvitsland (2002): Welfare effects of VAT reforms: A general equilibrium analysis, Rapport 68, *Tax Research Programme*, Norwegian Research Council.

Energy Taxation: Balancing Efficiency and Political Feasibility in a Small Open Economy

Efficiency-enhancing energy tax reforms tend to be difficult to implement due to strong political resistance from powerful industries. The major energy- and pollution-intensive industries of Norway are today exempted from paying consumer tax on electricity. This MSG-6 study quantifies the welfare potential of equalizing the tax, and investigates the

social costs of compensating for subsequent equity losses borne by the energy-intensive industries. We find that protecting equity values of these industries will be more costly in the small, open economy case of Norway than found in similar studies of USA, due to limited possibilities of shifting taxes on to product prices. The stronger the openness of the electricity market, the higher the costs of compensating. Compared to the highly differentiated electricity tax system of today, we do however gain, as the taxation of electricity becomes more uniform.

Recalibration of the MSG-6 model

In addition to our research projects, substantial resources in 2002 have been devoted to upgrading and recalibration of the MSG-6 model to 1999 data.

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Åvitsland, Turid, Economist

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

The oil market is very important for Norway, and both the demand and supply side of this market is investigated by e.g. econometric analyses. Moreover, a simulation model for the international energy markets, with special attention to the supply side of the oil market, is under development. The model will be used to analyse the effects of structural changes in the oil market, and to analyse the effects of the Kyoto Protocol.

The European gas market is also important for Norway, and the supply of Russian gas and LNG from distant sources is crucial for the future gas prices in Europe. Both these sources of gas supply are examined in separate studies, and the effects on the gas market is analysed within a simulation model for the European energy market (developed together with the Frisch centre). This model is also used to analyse the effect of liberalization in the European energy market, as well as environmental policies to deal with the Kyoto Protocol.

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

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

Firms' behaviour with respect to the environment is investigated in several projects. First, we study how the risk of environmental policy and the demand

for green or ethical funds affect firms' investments decisions. This question is analysed both theoretically and empirically. We have also investigated how firms act in accordance with their pollution regulations, and how the authorities act in accordance with violations of these regulations. Consumers' behaviour is also investigated through experimental analyses, focusing on how social norms affect consumers' actions.

Main findings

The effects of the U.S. withdrawal from the Kyoto Protocol is analysed, and it turns out that the international quota prices in 2008-12 seem to become very low. Russia is a crucial player in this market, but also in the European gas market, and it is shown that these mixed interests may affect Russia's decision on how much emission quotas to supply. It will be rational for the country to hold back some of their quotas to a later period. (DP 349 2003)

The demand for ethical or green funds give firms increased incentives to invest in environmentally friendly equipment, as does the risk of environmental policy. On the other hand, most Norwegian firms with environmental regulations seem to violate these regulations from time to time, according to empirical evidence. Serious violations, however, are rare. (DP in progress 2003)

Staff

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

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

Nonresponse and imputation

All sample surveys face the problem of nonresponse, resulting in incomplete data. As in many other countries, the response rates in Norway have shown a declining trend. Research is undertaken on developing model-based methods for reducing the bias due to nonresponse, mainly weighting adjustment for unit nonresponse and imputation for item nonresponse. The present imputation routines are not model-based and will therefore necessarily be unsatisfactory in many cases. The model-based imputation approach is based on stochastic models for the response mechanism, typically logistic regression, and a population model. The basic imputation method considered is random draws from the estimated distribution given nonresponse.

Documentation: DP 297 (2001), NOT 2001/50

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 poststratified and calibrated estimators, estimated model variance and estimated method variance. The Division for Statistical Methods and Standards is participating in an EU funded three-year research project, DACSEIS (Data Quality in Complex Surveys within the New

European Information Society) starting in 2001, with contributions on how nonresponse and imputation methods affect variance estimation. The project team consists of University of Tübingen, University of Southampton, Swiss Federal Institute of Technology, Johannes Kepler University Linz, and the national statistical institutes in Finland, the Netherlands, Austria, Switzerland, Germany and Norway.

Documentation: DP 311 (2001), NOT 2002/42, 2002/50.

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.

Current research is connected with the three-year EURAREA project under the 5th Research Framework of EU, where Statistics Norway participates together with the Office for National Statistics (UK), Statistics Finland, Istituto Nazionale de Statistica (ISAT, Italy), Statistics Sweden and Instituto Nacional de Estadística (INE, Spain). These are joined with the academic researchers at the University of Southampton (UK), Jyvaeskylae (Finland), and Poznan (Poland). It has four major themes, namely, use of time series data, use of geo-spatial information, survey data with complex sample design, and small area cross-classifications.

Documentation: [80]

Use of Administrative Registers

Use of administrative registers often improves surveys by reducing the sampling variance, reducing the bias caused by noncoverage and nonresponse, 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 add-ons to make correct adjustments for Norwegian holidays. A program is made to simulate the revision for the seasonally adjusted value of the last observation when the value of next month is observed. The program TRAMO/SEATS will be used to test the series of foreign trade.

Documentation: NOT 2002/45, 2002/67.

Questionnaire Testing and Design

In 2002, the research has focused on studies of response burden, nonresponse and response quality, in the development of new survey instruments and in studies of instrument effects. Statistics Norway participates in the development of a system for electronic reporting of information from businesses to the Government. The Division for Statistical Methods and Standards had a central role in revising an Internet based reporting system for collecting information needed by the Government from primary schools.

Documentation: NOT 2002/23

Nonresponse and Quality of Response in the Census 2001

In 2001 the Norwegian Census was held. Both a paper version and an electronic version of the questionnaire was developed. Since the respondent could choose between a paper version and an electronic version of the questionnaire, the effects of nonresponse, response burden, and quality of response between the two questionnaires can be studied.

Respondent Burden in Internet Surveys

Different qualitative methods have been applied in order to involve future respondents in the development of Internet questionnaires. At present the

focus is on what has been learned about the response burden in questionnaires directed towards institutions and businesses. Most of the tests have been conducted as a mixture of individual usability tests and cognitive interviewing carried out at the respondents' place of work.

Disclosure Control

Disclosure control is relatively new as a research topic in Statistics Norway. Work done so far has been inspired by the disclosure risks in micro-datasets released to researchers and on easily available register variables that are often linked to these datasets in particular. There has also been some work related to tables. Methods for stochastic controlled rounding have been extended to multiple two-way marginals for higher dimensional tables (unpublished). The Web StatBank Norway, launched this year, will pose new research challenges in this field.

Documentation: NOT 2001/28.

Statistical Standards and Metadata

General aspects

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

Classification database

Statistics Norway, in cooperation with Statistics Denmark, is establishing a database for standard classifications (STABAS). STABAS will also be a tool for the production of statistics. In connection with this work, Statistics Norway has participated in the Neuchâtel group (also consisting of Statistics Sweden, Statistics Denmark, Statistics Switzerland and Run-Software from Germany) where the aim has been to establish a common terminology for classification databases.

Metadata

An important part of the standardization work is connected to metadata. Work has started on developing a system where all important/central variables will be documented. This will be used as a tool for standardization of variables, and will improve accessibility to variable information for all users inside (and eventually outside) Statistics Norway. This system is a first step in an effort to coordinate and link the different metadata systems in

Statistics Norway. Statistics Norway is also developing a dissemination database for aggregate data, StatBank Norway. Structured metadata is an important part of the database. In addition, Statistics Norway participates in several metadata projects in EU's 5th framework program.

Main findings

An important research issue is to develop measures of uncertainty that take into account nonresponse (possibly nonignorable) and the imputation method used. A general approach for estimating the sample variance in social surveys when the sampling fraction is small has been developed, based on bootstrapping.

Statistics Norway has developed methods for estimation of small area cross-classifications in the EU funded project EURAREA. The proposed methods will be tested based on the data from Sweden and Italy. Properties of the alternative approaches will be compared based on a large-scale simulation study. Outcomes of the project will include documentation of the related theories, recommendation for practice and software packages for implementation.

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Mevik, Anna-Karin, Senior Executive Officer
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Pham, Dinh Quang, Research Fellow
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The general objective is to analyze demographic development and changes in economic and social living conditions of the population. The research activities combine a microanalytical approach focusing on demographic and socioeconomic processes, with a macro level approach directed at describing changes in social and demographic structure. On-going activities are divided into four areas: (a) Population development, migration and mortality, (b) Fertility, nuptiality and changes in family structures, (c) Immigration and social change and (d) Social research. Research results from demographic analyses also serve as input for revising model structure and parameters of forecasting and simulation models in Statistics Norway. The division is responsible for BEFREG (Statistics Norway's model for national and regional population projections).

Population

Population projections

A new set of national and regional population was published in December 2002 for the period 2002-2050. For this a new model for internal migration, based on gross flows between regions of origin and destination, was developed and implemented. On-going research includes the EU funded project "Changing population of Europe: Uncertain future". This project will be finalized in 2003.

Population development, migration and mortality

The division has a general responsibility for monitoring and analyzing trends in population development, both at the national level and in a comparative context, regionally, as well as at the international level. The division is involved in international cooperation in a number of areas. We are engaged in collaborative work with the other Nordic countries on the projection of mortality in population forecasts. Within Council of Europe, we have participated in a comparative project analyzing demographic characteristics among immigrant populations. We are also participating in international advisory activities on development of population registers (Albania and Uganda). The international work of the group includes also advising on the use of statistics and demography at the war crimes tribunal for the former Yugoslavia and chairing responsibilities for a new working group on the Demography of Conflict and Violence, International Union for the Scientific Study of Population (IUSSP), as well as representing the Ministry of Foreign Affairs at the annual session of the United Nations Commission for Population And Development.

Documentation: REP 2002/22, Reprints 214,218,226,227,SSP1, 2 og 4/2002; ØA 1/2002; Documents 2002/16; NOS C 693; <http://www.ssb.no/folkfram/>, [15], [38], [40], [42]

Fertility, nuptiality and changes in family structures

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

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

With more use of register data, the lack of data about cohabitation has been an increasing problem. Statistics about cohabiting couples having children together have, however, been published since 1987, and this group of cohabitants are also integrated in several register analysis. The majority of cohabiting couples in Norway are, however, childless. Basic survey data on cohabitational unions with and without children are collected on a regular basis through Statistics Norway's Omnibus Surveys, and a large postal survey (The New Family Survey) was started in 2002. The doctoral project "Cohabitation 1970-2000: a silent revolution?" focuses on the growth, types and reactions of cohabitations in the different decades.

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

The division participates in several networks with other research institutions. One collaborative network project is working on register data analyses of fertility and family formation in the Nordic countries and analyze possible effects of family policies. Two others are using interview data about family formation, one comparing Sweden and Norway and one comparing different European countries. We also take part in a network collecting data and analyzing same sex partnerships in Europe.

Documentation: SØS 106, Reprints 222, 228, Documents 2002/18, ØA 3(2002), SSP 1/2002, 3/2002, 6/2002, [18], [41], [43], [57], [70].

Immigration and social change

The living conditions and integration process of immigrants and refugees are focused through several projects. From 1993 to 2000, yearly opinion data on attitudes towards refugees and immigrants was collected and published, and in 2002 a major revision of the original attitude questions was undertaken. We finalized a project on changes in residential patterns of immigrants in Oslo from 1988 to 2000. Another project utilizes register data to study the social integration of old and new refugee cohorts. The project analyses the effects of the year of arrival and the length of the period of living in Norway, as well as periodical effects of business cycles on the transition to ordinary employment, participation in employment programmes, unemployment, ordinary education, and reception of pensions and/or social assistance.

Documentation: SØS 107, Reprints 213, 224, NOT 2002/75, http://www.ssb.no/vis/magasinet/norge_verden/art, <http://www.ssb.no/vis/magasinet/analyse/innvand>, <http://www.ssb.no/vis/magasinet/analyse/art>, [21], [37], [44], [58], [59].

Social research

The activities concerning social research are increasingly focusing on more specialised analyses and research projects and less on general social reporting. Most of the research activities are financed as commissioned research. Generally, it is a challenge to combine commissioned research activities with continued and cumulative research ef-

forts on distribution processes and changes in social and demographic structures. We analyse generational changes in the level of living over the life course, look at differences between various population groups, and examine gender differences in the outcomes of social processes. People's level of living is analysed both in terms of material conditions such as income and housing, in terms of social integration and social isolation, and in terms of time use patterns. Analyses of development of living conditions of particular population groups and analyses of effects of social welfare policies constitute a considerable part of our research activities in this field. We focus both on possible changes over time for different subgroups of the population (in terms of gender, generation, age and family life stage), as well as on more specific groups, for instance single parents, farmers, students and parents with small children. Analyses are based on surveys as well as register data, and we undertake both cross-sectional and longitudinal analyses.

A substantial part of the research in 2002 has focused on various aspects of the living conditions of parents and children. We finalized a project on labour market adjustments during single parenthood compares the labour market participation of single parents to those of married/cohabiting mothers and fathers during the 1980s and 1990s. Several new projects were started: We analyse the level of low income-families with children among children with single parents by means of register data. A new project evaluating the new regulations of alimony contribution for children started with a survey on the situation of families receiving and contributing alimony prior to the new regulation coming into force from the autumn of 2003. Another project focuses various aspects of parents' working time arrangements and changes during the 1990s, with special focus on fathers and combined arrangements at couple level. Parents' time spent on unpaid work has also been analysed, with particular attention paid to time spent on childcare by various groups of mothers with very young children (eligible for "cash for care" benefit).

During 2002 the division also carried out several analyses for the Ministry of Local Government and Regional Development related to the Ministry's work with a government white paper on urban development and political challenges for big cities ("Storbymeldinga). These analyses deal with residential segregation and variation in living conditions within the "big cities urban area" of Norway and will be published when the white paper is presented to the Parliament in 2003.

Documentation: SØS 106, SA 49, REP 2002/3, 2002/5, Reprints 211, 223, 225, Documents 2002/7, NOT 2002/59, 2002/66, NOT 2002/83, SSP 4-5/2002, <http://www.ssb.no/vis/emner/00/02/20/tidsbruk/art>, <http://www.ssb.no/vis/magasinet/slik-lever-vi/art>, <http://www.ssb.no/vis/magasinet/slik-lever-vi/art>, [16], [28], [43], [67], [68], [77].

Main findings

New population projections to 2050 indicate a significantly larger growth in the number of elderly people than previously projected. This is primarily due to an assumed continuation of the increase in the life expectancy at birth, based on the experience during the period 1970-2000.

The proportion of lesbian couples is increasing among those who are entering registered partnerships in Norway. The divorce risk among lesbian couples is, however, higher than in gay partnerships. Another group of registered partnership with a high divorce risk is partnerships where one of the partners is from a third-world country.

Analyses of changes in residential patterns of immigrants over the period 1988 to 2000 show net-flows of non-western immigrants from the inner city east to the new and old suburbs. The analyses indicate that economic factors play a crucial role in the residential concentration processes.

The employment changes of single parents, both mothers and fathers, correlate strongly with changing business cycles and less clearly with the changes in welfare benefits to single parents introduced during the period.

Staff

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Keilman, Nico, Professor **

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Lyngstad, Jan, Research Fellow

Lyngstad, Torkild Hovde, Sociologist

Løwe, Torkil, Sociologist

Noack, Turid, Research Fellow

Nymo, Erik H., Geographer

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Østby, Lars, Senior Research Fellow ***

*) on leave

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Personnel and budget

The total staff in the Research Department in 2002 was 74 in total number of persons. From 2002 the Research Department is organized in 8 thematic groups.

The financial resources of the research activities stem partly from the government budget as allocated within Statistics Norway. About 39 per cent of total expenditures in 2002 are project financed. The bulk of the project revenues comes from research grants from the The Research Council of Norway and from contracts with Ministries, primarily the Ministry of the Environment, the Ministry of Finance, the Ministry of Petroleum and Energy, the Ministry of Local Government and Regional Development and the Ministry of Foreign Affairs.

Staff

Ådne Cappelen, Assistant Director General,
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Salvesson, Sigmund G., Clerical staff*
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Vaagen, Otto Gerhard, Head of Administration*

*Part time

Distribution of operating costs in 2002. 1000 Nok

	Government Budget	Project	Total
Research Department	23 689	15 231	38 920
Social and Demographic Research	2 974	3 335	6 309
Statistical Methods and Standards	7 001	1 535	8 536

Statistics Norway monographs are published in the series *Social and Economic Studies and Statistical Analyses*, other research reports and documentation in the *Report series* or as *Documents/Notater*. The *Discussion Papers series* comprises research papers intended for international journals or books. There is also a *Reprint series of journal articles and book chapters* by staff employees. The Research Department publishes two periodicals: *Økonomiske analyser*, in Norwegian with 6 issues a year, and *Economic Survey*, in English with 4 issues a year.

Social and Economic Studies (SES)

- 106 **Kitterød, Hege, Randi Kjeldstad, Turid Noack og Lars Østby:** *Livsløp i støpeskjeen. Utlagte arbeider av Kari Skrede* (Lifecourses in the melting pot. Selected works by Kari Skrede). (300 sider)
- 107 **Blom, Svein:** *Innvandernes bosettingsmønster i Oslo* (The residential patterns of immigrants in Oslo). (192 sider)
- 108 **Boug, Pål, Yngvar Dyvi, Per Richard Johansen og Bjørn E. Naug:** *MODAG - En makroøkonomisk modell for norsk økonomi* (MODAG - A macro economic model for the Norwegian economy).

Statistical Analysis (SA)

- 49 **Kjeldstad, Randi og Marit Rønsen:** *Enslige foreldre på arbeidsmarkedet 1980-1999. En sammenligning med gifte mødre og fedre* (Single parents in the labour market 1980-1999. A comparison with married mothers and fathers).
- 55 *Naturressurser og miljø 2002* (Natural resources and the environment 2002).

Reports (REP)

- 2002/3 **Lyngstad, Jan og Arne Støttrup Andersen:** *Utvikling i boforhold 1987-1997. Rapport til Boligutvalget* (Housing conditions in Norway 1987-1997).
- 2002/4 **Røed Larsen, Erling:** *Boligutgiftene i Norge på 1990-tallet. Systematiske observasjoner av livsfase, geografi og husholdningstype* (Housing Expenditures in Norway in the 1990s. Studies of life cycle, geography, and type of household).
- 2002/5 **Østby, Lars:** *Demografi, flytting og boligbehov på 1990-tallet* (Demography, migration and housing in the 1990s).
- 2002/6 **Stambøl, Lasse Sigbjørn:** Qualification, mobility and performance in a sample of Norwegian regional labour markets.
- 2002/11 **Bye, Torstein, Ole Jess Olsen og Klaus Skytte:** *Grønne sertifikater - design og funksjon* (Green certificates in the energy market - design and functioning).

- 2002/15 **Langørgen, Audun, Rolf Aaberge og Remy Åserud:** *Kostnadsbesparelser ved sammenslåing av kommuner* (Cost savings from municipality mergers in Norway).
- 2002/18 **Stølen, Nils Martin, Tonje Köber, Dag Rønningen og Inger Texmon:** *Arbeidsmarkedet for helse- og sosialpersonell fram mot år 2020. Modelldokumentasjon og beregninger med HELSEMO*. (Projections of the Norwegian labour market for employees in health and social services towards 2020. Documentation and projections with the model HELSEMOD).
- 2002/22 **Østby, Lars:** *The demographic characteristics of immigrant population in Norway*.
- 2002/27 **Bye, Torstein, Mads Greaker og Knut Einar Rosendahl:** *Grønne sertifikater og læring*. (Green Certificates - Design and operation).
- 2002/29 **Heide, Kim Massey, Erling Holmøy og Lisbeth Lerskau:** *Norsk konkurranseutsatt sektor i et langsiktig perspektiv: Hvor mye industri trenger vi, og hvor mye får vi?* (Long-term projections of the Norwegian tradables' sector: How much Industry do we need and how much will we get).
- 2002/32 **Gundersen, Geir Inge, Ole Rognstad og Leiv Solheim:** *Bruk av plantevernmidler i jordbruket 2001* (Pesticide use in agriculture in 2001).
- 2002/34 **Langørgen, Audun og Dag Rønningen:** *Kapitalkostnader i kommunene*.

Discussion Papers (DP)

- 314 **Rosendahl, Knut Einar:** *Cost-effective environmental policy: Implications of induced technological change*.
- 315 **Kornstad, Tom and Thor O. Thoresen:** *A Discrete Choice Model for Labor Supply and Child Care*.
- 316 **Bruvoll, Annegrete and Karine Nyborg:** *On the value of households' recycling efforts*.
- 317 **Biørn, Erik and Terje Skjerpen:** *Aggregation and Aggregation Biases in Production Functions: A Panel Data Analysis of Translog Models*.
- 318 **Døhl, Øystein:** *Energy Flexibility and Technological Progress with Multioutput Production. Application on Norwegian Pulp and Paper Industries*.
- 319 **Aaberge, Rolf:** *Characterization and Measurement of Duration Dependence in Hazard Rate Models*.
- 320 **Klette, Tor Jakob and Arvid Raknerud:** *How and why do Firms differ?*
- 321 **Aasness, Jørgen and Erling Røed Larsen:** *Distributional and Environmental Effects of Taxes on Transportation*.
- 322 **Røed Larsen, Erling:** *The Political Economy of Global Warming: From Data to Decisions*.
- 323 **Røed Larsen, Erling:** *Searching for Basic Consumption Patterns: Is the Engel Elasticity of Housing Unity?*
- 324 **Røed Larsen, Erling:** *Estimating Latent Total Consumption in a Household*.
- 325 **Røed Larsen, Erling:** *Consumption Inequality in Norway in the 80s and 90s*.

- 326 **Bjørnland, Hilde Christiane and Håvard Hungnes:** *Fundamental determinants of the long run real exchange rate: The case of Norway.*
- 327 **Søberg, Morten:** *A laboratory stress-test of bid, double and offer auctions.*
- 328 **Søberg, Morten:** *Voting rules and endogenous trading institutions: An experimental study.*
- 329 **Søberg, Morten:** *The Duhem-Quine thesis and experimental economics: A reinterpretation.*
- 330 **Raknerud, Arvid:** *Identification, Estimation and Testing in Panel Data Models with Attrition: The Role of the Missing at Random Assumption.*
- 331 **Arneberg, Marie W., John K. Dagsvik and Zhiyang Jia:** *Labor Market Modeling Recognizing Latent Job Attributes and Opportunity Constraints. An Empirical Analysis of Labor Market Behavior of Eritrean Women.*
- 332 **Greaker, Mads:** *Eco-labels, Production Related Externalities and Trade.*
- 333 **Lind, Jo Thori:** *Small continuous surveys and the Kalman filter.*
- 334 **Halvorsen, Bente and Tiril Willumsen:** *Willingness to Pay for Dental Fear Treatment. Is Supplying Treatment Socially Beneficial?*
- 335 **Thoresen, Thor O.:** *Reduced Tax Progressivity in Norway in the Nineties. The Effect from Tax Changes.*
- 336 **Søberg, Morten:** *Price formation in monopolistic markets with endogenous diffusion of trading information: An experimental approach.*
- 337 **Bruvoll, Annegrete and Bodil Merethe Larsen:** *Greenhouse gas emissions in Norway. Do carbon taxes work?*
- 338 **Halvorsen, Bente and Runa Nesbakken:** *A conflict of interests in electricity taxation? A micro econometric analysis of household behaviour.*

Reprints

- 211 **Kitterød, Ragni Hege:** *Does the recording of parallel activities in time use diaries affect the way people report their main activities?*
- 212 **Aaberge, Rolf:** *Axiomatic Characterization of the Gini Coefficient and Lorenz Curve Orderings.*
- 213 **Østby, Lars:** *Why Analyzing Immigrants? Ethical and Empirical Aspects.*
- 214 **Brunborg, Helge:** *Contribution of statistical analysis to the investigation of the international criminal tribunals.*
- 215 **Dagsvik, John K., Tom Wennemo, Dag G. Wetterwald and Rolf Aaberge:** *Potential demand for alternative fuel vehicles.*
- 216 **Bye, Brita:** *Taxation, Unemployment, and Growth: Dynamic Welfare Effects of "Green" Policies.*
- 217 **Dagsvik, John K.:** *Discrete Choice in Continuous Time: Implications of an Intertemporal Version of the IIA Property.*

- 218 **Keilman, Nico, Dinh Quang Pham and Arve Hetland:** *Why population forecasts should be probabilistic - illustrated by the case of Norway.*
- 219 **Edvardsson, Ingi Runar, Elli Heikkilä, Mats Johansson, Lars Olof Persson, Lasse Sigbjørn Stambøl:** *The performance of metropolitan labour markets. A comparison based on gross-stream data.*
- 220 **Aslaksen, Iulie:** *Gender Constructions and the Possibility of a Generous Economic Actor.*
- 221 **Biørn, Erik, Kjersti-Gro Lindquist and Terje Skjerpen:** *Heterogeneity in Returns to Scale: A Random Coefficient Analysis with Unbalanced Panel Data.*
- 222 **Rønsen, Marit and Marianne Sundström:** *Family Policy and After-Birth Employment Among New Mothers - A Comparison of Finland, Norway and Sweden.*
- 223 **Kitterød, Ragni Hege:** *Mothers' Housework and Childcare: Growing Similarities or Stable Inequalities?*
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