



Ökonomische Ressourcen älterer Menschen

Regionalwirtschaftliche und fiskalische Effekte
einer Förderung der Seniorenwirtschaft
in Nordrhein-Westfalen

Economic resources of senior citizens

Regional economic and fiscal effects of
promoting the senior citizens economy
in North Rhine-Westphalia (NRW)

Les ressources économiques des seniors

Aspects économiques régionaux et fiscaux du
développement du marché des seniors en
Rhénanie-du-Nord-Westphalie (NRW)



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Preface

With new products and services, the Senior Citizens Economy Initiative of the State of North Rhine-Westphalia improves the living conditions of older people, strengthens the quality of NRW as a location for business, and creates new jobs.

The present study of the Institut Arbeit und Technik (Institute for Work and Technology) and the RWI shows impressively the opportunities for economic development of the State and the municipalities that could be realized if, besides the present fields of priority for the promotion of the senior citizens economy, additional strategies were adopted to mobilize the potential for economic strength inherent in an ageing society.

The potential strengths of North Rhine-Westphalia include the chance to create additional employment in the form of minijobs for retirees and pensioners, to win new customers from outside NRW for the North Rhine-Westphalian senior citizens economy, to offer older people products made in NRW that meet their requirements, to induce senior citizens to spend a little more on consumption than they have done so far, and to convince more seniors to spend their old age in our state. Making moderate assumptions, the study demonstrates that, if these possibilities became reality, we would have 106,000 more people employed already in 2010 compared to 2004, the state government's tax revenue would increase by a total of +€ 1.2 billion until 2010, local governments would collect an additional € 800 million, and wages and salaries would rise by € 6.5 billion.

Macroeconomic estimates do not necessarily come true in the future as we are able to project them today. Nevertheless, the results of the study clearly set forth the chances of the senior citizens economy, and they demonstrate what opportunities we would miss if we did not make use of this potential.

With this study, which is the only one of its kind in Germany, I would like to encourage a debate in the field of social and economic policy on the measures we should adopt to benefit from the economic potential offered by the senior citizens in the cities and municipalities in North Rhine-Westphalia, and I would be pleased if the study met with a lively and broadly-based interest.

Economic resources of senior citizens *

Regional economic and fiscal effects of promoting the senior citizens economy in North Rhine-Westphalia (NRW)

Abstract

In our ageing society a better integration of senior citizens in economic activities is absolutely necessary from the national economy point of view to counteract the foreseeable lack of younger skilled labour on the one hand, and, on the other, to relieve the overburdened social security system. So far no studies have been made quantifying the economic consequences of potential incentives for the senior citizens economy and thus specifying the cost of ignoring these economic resources. In the present study, the effects of potential stimuli for the senior citizens economy on the economic development in North Rhine-Westphalia as a whole are estimated. The changes compared to the expected development without such interventions are described. For prediction, a regional econometric model was used. On the basis of these calculations, the consequences for employment, the GDP, the population, and the additional tax revenue of the state and local government(s) of NRW are evaluated.

The options for action dealt with in this study relate to the employment behaviour and incomes of senior citizens, the level and distribution of their consumption, and their migration pattern. Based on fundamental economic ratios, seven scenarios were selected to show the effects to be expected in the period from 2006 until 2015 as a results of specific incentives provided to foster the senior citizens economy. The results obtained help assess more accurately the additional contributions senior citizens could make as workers and/or consumers to the economic development of NRW in the next few years. If this potential is turned to good account, the negative consequences anticipated due to a shrinking population and work force basis could at least be mitigated.

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1. Background of the study

In the public debate, the ageing of our society is mainly seen as a burden to the social security and health care systems. What is often overlooked is that older people, as a result of their income and wealth as well as their knowledge and skills, also represent an economic resource. Firstly, with rising life expectancy, the seniors' general health conditions and fitness have much improved, and, secondly, the first generation that has not suffered the turmoil of war is now getting older and has been able to accumulate considerable assets.

In their demographic forecasts, the Federal Statistical Office and the State Statistical Offices assume that life expectancy will continue to rise in the next few decades. Thus, the share of people over sixty in the total population of North Rhine-Westphalia amounting to 24% today will probably rise to 28% until 2020, and to as much as about one third by 2040. Today a 60 year old man can expect to live about another 19 years on average, in the middle of the 21st century a man then 60 can expect to live another 23 years. The remaining life expectancy of a 60 year old woman will even increase from 23 years today to 28 years then, according to present assumptions. In view of these forecasts, it is inevitable from the angle of our national economy to integrate older people more strongly in economic life in order to counteract the foreseeable lack of younger skilled labour and relieve the overburdened social security system.

Starting from the thought that the ageing of our society is not only connected with burdens and risks but also offers considerable opportunities for business and employment, the State of NRW started the "Senior Citizens Economy" Initiative in 1999 which initially was a working group integrated until 2002 in the "NRW Alliance for Jobs, Education and Competitiveness". The basis of the Senior Citizens Economy Initiative is the memorandum "Wirtschaftskraft Alter" (economic power at old age) prepared jointly by the Forschungsgesellschaft für Gerontologie (FFG) (Gerontology Research Society) and the Institut Arbeit und Technik (IAT) (Institute for Work and Technology) (Barkhold et al. 1999). Since 2002 the Senior Citizens Economy Initiative of the State of North Rhine-Westphalia has been continued under the auspices of the State Ministry of Health, Social Affairs, Women and Family (MGSFF). The objective of the initiative is to stimulate the economic development in NRW. The respective measures are to focus on two fields of action (MGSFF NRW 2003):

- social policy: enabling seniors to share in social activities to a greater extent and live a self-determined life, and

- economic policy: mobilizing senior citizens' purchasing power and encouraging economic activities that lead to a richer supply of products and services for older people.

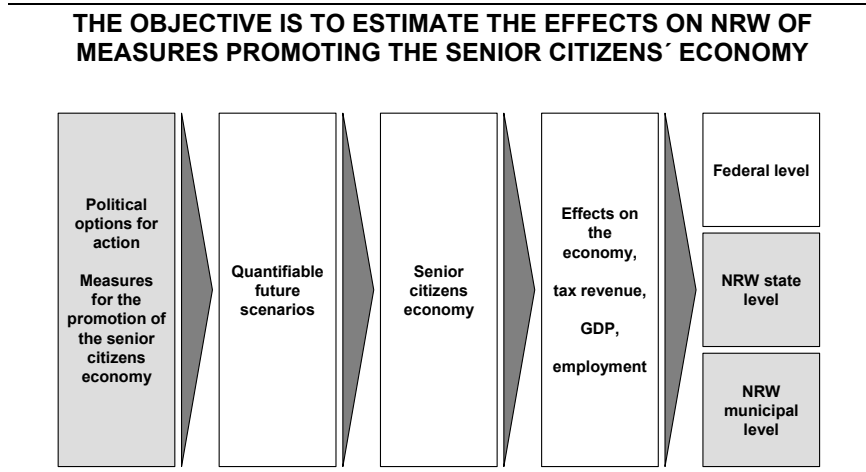
In connection with strategies to cope with an ageing society, an increasingly lively discussion is going on about a greater participation of seniors in gainful employment (Herfurth, Koli and Zimmermann 2003). From the NRW point of view, this would suggest that, in connection with measures stimulating the senior citizens economy, the seniors' own capacity for work has to be considered as an economic resource to a greater extent. Incentives aiming at changing previous trends in senior citizens' participation in the labour force – in the past decades characterized by a decline and an increasingly acute unemployment risk – may be provided by both social and economic policy.

So far there have been no studies quantifying the economic effects of potential incentives promoting the senior citizens economy and thus identifying the costs of ignoring these economic resources. The following analysis therefore undertakes to quantify the consequences of such potential incentives for

- the overall economic development in North Rhine-Westphalia,
- the tax revenue of the state and local government(s),
- the regional labour market,
- the disposable incomes, and
- the demographic development

in various future-related scenarios that reflect the effects of political action in comparison to the foreseeable developments that would occur without such interventions (Chart 1). The proposals for political action are based on the results of existing studies dealing with the development of the senior citizens economy and our own evaluation of various micro data records, the Income and Consumption Sample (EVS), and the socio-economic panel (SOEP).

Chart 1

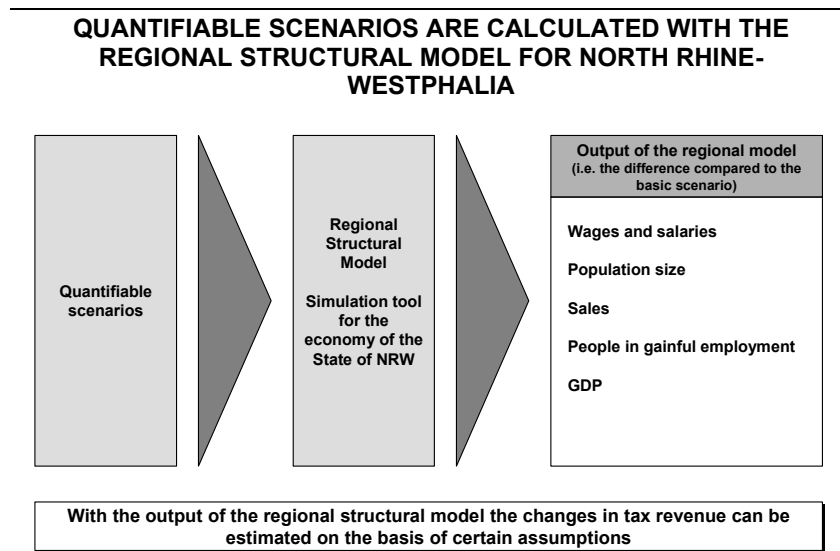


The regional economic impact of various options for political action on NRW have been calculated on the basis of a regional econometric model (Chapter 3). This model was adapted so that it can be used as a regional economy simulation tool for North Rhine-Westphalia (Chart 2).

Based on the regional econometric simulations, the fiscal effects on the state and local government(s) to be expected from the various scenarios have then been estimated. To arrive at a more accurate assessment of the consequences for the financial conditions of the state and local government(s), the different types of taxes (wage and income tax, corporation tax, turnover and trade tax) are dealt with separately. It should be noted in this context that the simulation results are to be interpreted as an order of magnitude of the anticipated effects. As an estimate of the kind made here will never be able to fully cover all economic correlations, a certain degree of inaccuracy has to be assumed.

In the following paragraphs, first the analytical and empirical basis of the study will be explained before the operational consequences of specific options to act according to quantifiable future scenarios are described.

Chart 2



2. Status quo of senior citizens' income and consumption

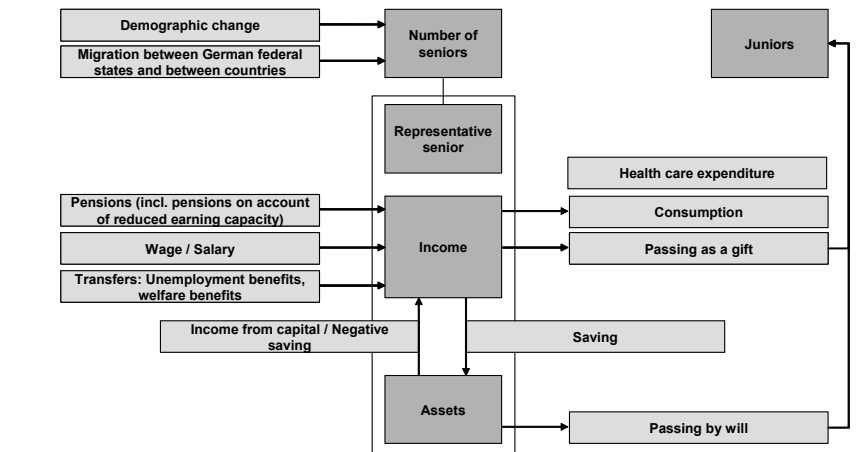
To analyse the operational potential of the sector of senior citizens economy, it must first be decided which group of the population is to be targeted by the economic and social policy initiatives. A clear-cut definition of "senior citizens economy" is not easy, but it is necessary for quantitative modelling. In the following sections people aged 55-plus¹ are defined as "seniors", people under 55 as "juniors". This age limit was also used in the survey on older people's income conditions and uses in North Rhine-Westphalia made within the scope of the State's Senior Economy Initiative (MGSFF NRW 2003a).

As the analytical framework for the subsequent simulation of different scenarios, first the economic integration of senior citizens and the *status quo* of the level and use of their income is explained in greater detail.

¹ i. e. people aged 55 and over

Chart 3

SENIORS ARE STRONGLY INTEGRATED IN ECONOMIC ACTIVITIES



Based on this *status quo analysis*, the potential effects are investigated that economic stimuli specifically aiming at senior citizens would have on the regional economic development as a whole and on the development of the regional demographic and labour market conditions. To keep the interpretation of the following calculations within reasonable limits, the economic integration of a "representative" senior is dealt with here. On the basis of the available data, it is difficult to differentiate seniors according to their types of income and life style, quite apart from the fact that such differentiation would go beyond the scope of the present analysis.

In North Rhine-Westphalia the group of citizens aged 55-plus includes 5.3 million people at present (i.e. 30% of the total population) versus 12.7 million "juniors" (70%). The economic importance of the seniors depends on the level of their income, the way it is used, and the size of their cohort (Chart 3). Incentives for the promotion of the senior citizens economy may target income, expenditure, or the migration pattern.

2.1 Income and savings pattern of senior citizens

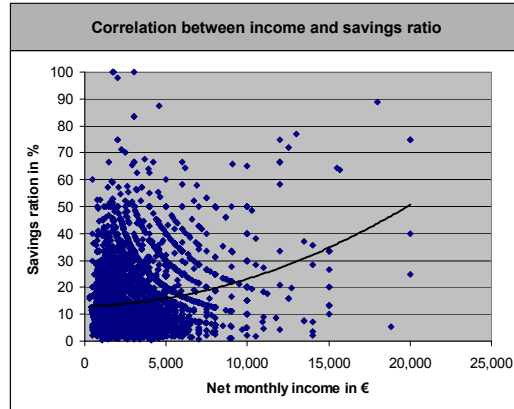
Strategies to influence the savings behaviour of senior citizens can only be developed if the motives leading to savings are known. Empirical studies have shown that the accumulation of savings depending on age cannot be explained solely by the life cycle model (Arnds and Bonin 2003: 173). Such a model would assume that private savings are mainly motivated by the wish to make provisions for the

future, e.g. during the working phase with a higher income for the subsequent retirement phase with a lower income. If making provisions for the future was the only relevant motive, persons in retirement would have a declining or even negative savings ratio. Such a development, however, is not to be observed.

In Germany, the savings ratio, i.e. the percentage of disposable income saved, actually is higher in the group of the over 70 year-olds than it is in the group aged between 65 and 70 (6.2% vs. 4.9% in 1999, Arnds, Bonin 2003: 175). The highest share of savings in the disposable income (14.5%) is to be observed at an advanced adult age when people's income is relatively high, whereas the expenditure on major purchases and raising children is decreasing. Generally speaking, the savings ratio increases with the level of absolute income, independently of age (Chart 4).

Chart 4

**THERE IS A STATISTICALLY SIGNIFICANT CORRELATION
BETWEEN HIGHER INCOME AND HIGHER SAVINGS RATIO**

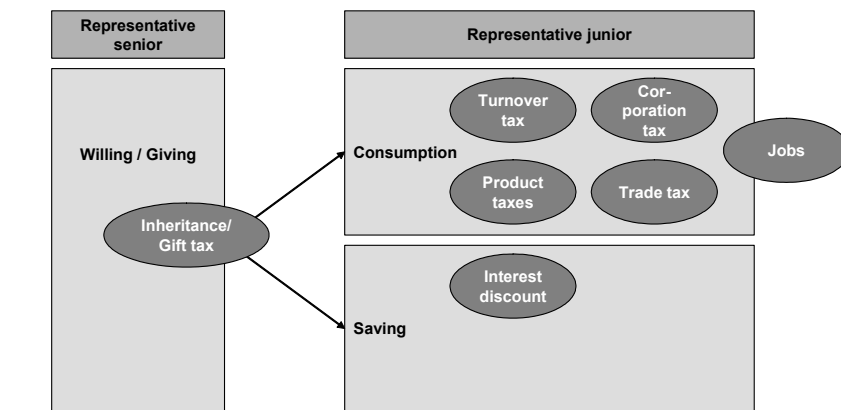


Source: RWI-Analysis, SOEP 2002

An additional explanation for savings at old age is the precaution and inheritance motive. If the savings are not spent on the senior's own needs, they are usually left by will or as a gift. Thus, private savings made by senior citizens do not represent a lasting restraint in investment or consumption, but merely a postponement of consumption. Savings willed or given as a gift will lead to immediate tax income and general economic follow-up effects in the form of inheritance and gift tax, and to delayed effects – depending on the way the estate or gift is used – in the form of a discount on consumption and possibly interest (Chart 5). A decline in the savings ratio of senior citizens will lead to earlier, not necessarily higher, consumption. In this respect further research is needed. Thus, in connection with demographic change, inheritance may create a situation in which a lot of wealth is accumulated in the hands of just a few who, however, as a result of the increase in their assets, have a higher savings ratio than their parents.

Chart 5

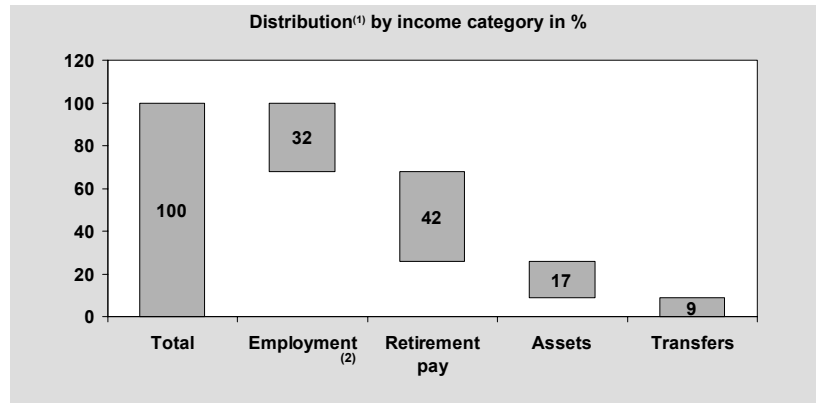
GIVING AND WILLING TO JUNIORS LEAD TO HIGHER TAX INCOME FROM JUNIORS



The households of senior citizens² in North Rhine-Westphalia have a total estimated gross income of approx. € 125 billion in 2004. It is composed of income from employment (32%), retirement benefits and pensions (42%), income from assets (17%) and from other transfer payments (e.g. unemployment benefits, social aid) (9%; Chart 6). A share of about 9%, or some € 9 billion, of the estimated disposable income of senior citizens (totalling approx. € 97 billion in 2004) was saved.

² Definition based on the age of the "head of household"

Chart 6

SENIOR CITIZENS' INCOME IS DERIVED FROM FOUR CATEGORIES

(1) Share in gross household income
 (2) Income from self-employment and dependent employment and from subletting
 Source: RWI Analysis, EVS 1998

2.2 Consumption pattern of senior citizens

The senior citizens economy scenarios start from the current consumption pattern, i.e. the level and sectors of senior citizens' consumption.

The present consumption expenditure of NRW seniors amounts to a total of some € 89 billion per year (Table 1). About three quarters thereof is spent on "NRW products in the narrower sense", i.e. on products/services offered by industries whose products and services are predominantly generated in NRW³. Forty percent of them are made by the "senior citizens economy in the narrower sense", i.e. by industries that offer specific products for seniors and/or that according to the assumptions of the the Senior Citizens Economy Initiative of North Rhine-Westphalia would be expected to offer such products⁴ (MGSFF 2003b) (Chart 7). The following scenarios relating to the consumption behaviour of senior citizens are based on the assumption that new products specifically made for senior citizens are mainly developed by the same industries that can thus contribute to an increase in the consumption expenditure of seniors in NRW.

³ Transport and communications, housing, tourism and catering, health care and social services

⁴ Transport and communications, tourism and catering, health care and social services

Table 1
Consumption expenditure of senior citizens in NRW
 2004

Industry	€ million	in %
Food	7 873	8.9
Luxury foods	3 937	4.4
Clothing	4 698	5.3
Housing and energy	30 600	34.5
Household appliances	6 467	7.3
Health care and social services	4 305	4.9
Transport	9 768	11.0
Communications	2 080	2.3
Tourism, recreation	10 670	12.0
Education	231	0.3
Catering	4 144	4.7
Other products	3 838	4.3
Total	88 610	100

RWI estimate based on the 1998 Income and Consumption Sample (EVS)

Chart 7

A CLOSER LOOK AT SELECTED SECTORS

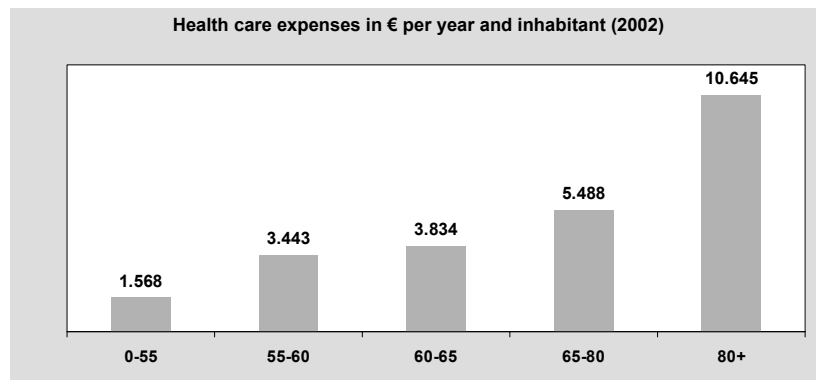
NRW products in the narrower sense	Senior citizens economy in the narrower sense
Transport and communications	Transport and communications
Banking and insurance industry	Banking and insurance industry
Housing sector	Housing sector
Vehicle trade	Vehicle trade
Wholesale and retail trade	Wholesale and retail trade
Hotels & restaurants	Hotels & restaurants
IT services	IT services
Research and development	Research and development
Business services	Business services
Education	Education
Health care and social work	Health care and social work
Other services	Other services

A large part of the health care services used by seniors are not financed by the seniors themselves but by private or statutory health insurance funds. Especially for seniors such expenditure represents an important share (Chart 8). The same applies to nursing care. The regional simulation model used takes these additional flows of expenditure into account. The importance of the health industry to the

regional economy is therefore evaluated mainly on the basis of the health care costs and less on the basis of the consumption expenditure related to it.

Chart 8

**HEALTH CARE EXPENSES RISE SHARPLY WITH AGE ...
... and are mainly borne by statutory and private health insurance funds**



Source: Federal Office of Statistics 2004, Calculation of Health Care Costs

Before presenting an analysis of the regional economic effects various stimulating measures would have on the senior citizens economy, the empirical framework of the study, i.e. the regional econometric model and the basis of calculating the fiscal consequences of the regional effects, will be explained.

3. Empirical framework

3.1 The regional econometric model

A sound standard approach to the empirical analysis of economic interdependence is the so-called input-output analysis. The input-output analysis outlines the exchange of supplies (intermediate input) among the individual economic areas (sectors, industries) and/or regions of a national economy showing the interpenetrations of the individual production areas of a national economy and their contributions to the value added. The input-output analysis, however, neither reflects the effects of additional demand on the way income is spent or on the regional supply of goods and services, nor does it consider the labour market interdependencies.

To be able to take such effects into account in the analysis of economic incentives and interpenetrations, the regional econometric model has been adapted by RWI in cooperation with REMI (Regional Economic Models, Inc.), so that it can be used

for model calculations related to the economy in NRW⁵ (Budde 2003; Charts 9 and 10). The regional econometric model combines different calculation components:

Chart 9

THE REGIONAL MODEL FOR NRW CONSIDERS THE MAJOR DETERMINING FACTORS OF THE REGIONAL ECONOMY ...	
Contents	Methodology
Migration	Input-output production model
Demographic development	Demographic prediction model
Supply and demand pattern	Gravitation theory and econometric pricing and market simulation models
Employment pattern	
Production	
RWI developed the regional structural model for NRW in cooperation with REMI (Regional Economic Models, Inc.)	

- a) in an extended input-output analysis the effects of demand and consumption are shown in addition to the intermediate input conditions,
- b) the behaviour of individual groups of economic players is simulated using equilibrium models mainly based on changes in consumer goods and real estate prices, wages and salaries and cost of production, as the essential factors of influence. Thus, the equilibrium of these factors in the regional markets is determined whereby special conditions, such as agglomeration and diffusion phenomena, are presented based on the assumptions of the New Economic Geography (Fujita et al. 1999). Moreover, gravitation theory methods are used (Eckey et al. 1990) among others.

⁵ Such simulations can also be made for the Ruhr Area alone and/or for NRW without the Ruhr Area.

Chart 10

... AND COVERS 30 ECONOMIC SECTORS	
Agriculture, Mining, and manufacturing industries: 17 sectors	Services: 13 sectors
Agriculture, forestry, fishing Mining Wood and wood products Glass, ceramics, non-metallic minerals Metal production and processing Mechanical engineering Electrical & precision engineering, optical ind. Vehicle construction Other products Food, tobacco Textiles and clothing Leather and leather products Paper, publishing and printing Chemistry, petroleum refining Rubber and plastics Power and water supply Construction	Transport and communications Banking and insurance Real estate Vehicle trade Wholesale and retail trade Hotels & restaurants IT services Research and development Business services Public administration and social insurance Education Health care and social work Other services

This dynamic model is used to generate simulations and forecasts on an annual basis. Even though this complex system includes several thousands of equations, it can be structured in five individual segments:

- production and demand,
- demand for capital and labour,
- population and work force potential (demography),
- income from wages and salaries, prices and production costs, and
- market shares.

The individual segments are connected with each other in many ways and have a mutual influence: In the segment of production, e.g., also the influences resulting from changes in productivity in sectors of intermediate demand are taken into consideration. In the same way, the segment of "population and work force potential" has an influence on the segment of "income from wages and salaries, prices and production costs" because the manpower supply of a region depends, among other things, on the demographic age cohorts and the migration pattern of the population.

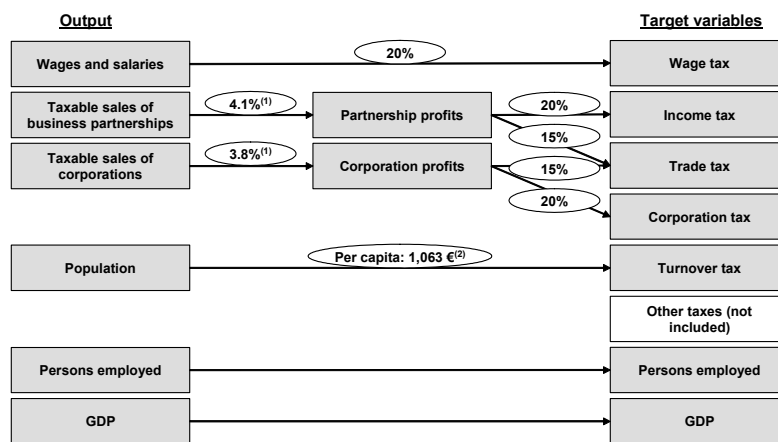
3.2 Fiscal effects of regional economic developments

On certain assumptions, the tax revenue of the State of NRW and the NRW municipalities can be estimated on the basis of the output of the regional economic simulations. The additional tax revenue collected by the State of NRW and the NRW municipalities as a result of regional economic incentives is estimated on the basis of average tax rates and the distribution of tax income to the federal, state and local government(s) (vertical and horizontal tax revenue equalization among German states).

The average and approximate values underlying this estimate are shown in Charts 11 and 12. They are based on data of the Federal Ministry of Finance, the German Central Bank (1999, 2003), and on RWI's own calculations following the Federal Office of Statistics data. To consider the horizontal tax revenue equalization, we have assumed a marginal public-sector share of GDP of 50 %. This means that of every € 1 of additional tax revenue only € 0.50 will remain in NRW. The figure is based on historical values.

Chart 11

WITH THE OUTPUT OF THE STRUCTURAL MODEL THE TARGET VARIABLES OF INTEREST CAN BE CALCULATED



(1) Pretax return on sales, Deutsche Bundesbank, based on 1999 and 2000 figures
 (2) In essence, turnover tax is distributed to the federal states on a per-capita basis, a smaller part on the basis of the states' financial strength

Chart 12

VERTICAL TAX REVENUE EQUALIZATION: THE TAX REVENUE IS DISTRIBUTED TO THE FEDERAL, STATE AND LOCAL GOVERNMENT(S)

		Federal govt.	State govts.	Local govts.
Included in the model	Wage and income tax	42.5%	42.5%	15%
	Corporation tax	50%	50%	0%
	Turnover tax ⁽¹⁾	61%	37%	2%
	Trade tax	0%	0%	100%
Product taxes	Interest discount	44%	44%	12%
	Inheritance & gift tax	0%	100%	0%
	Solidarity surcharge	100%	0%	0%
	Insurance tax	100%	0%	0%
	Tobacco tax	100%	0%	0%
	Mineral oil tax	100%	0%	0%
	Electricity tax	100%	0%	0%
	Land transfer tax	0%	100%	0%
	Motor vehicle tax	0%	100%	0%

(1) After distribution based on the 2004 distribution key

4. Options for alternative action to promote the senior citizens economy in NRW and their effects on regional business and public revenue

To evaluate the economic effects of political options for action using the method shown above, the measures required to implement these options must be represented by economic variables. The more detailed the conversion of political concepts into economic data, the more accurately their effects can be estimated.

As mentioned earlier, this study deals with the question what the effects may be of different senior-oriented measures on the economic development of North Rhine-Westphalia in comparison with each other. For this purpose, first various scenarios have been developed based on assumptions with regard to the initial economic impulses generated by potential political action. A concrete assessment of the economic effects of individual political options for action requires that their effect in each case be described on the assumption that all other basic conditions remain equal. These *ceteris paribus* scenarios are simplified models evaluating the economic development and effects occurring when specific parameters are changed. In view of the explorative purpose of the present study, it appears to be appropriate to first evaluate the potential effects of individual actions separately. Building on these results, it is then tried in a second step to present in greater detail the complex reality of political action by a cumulative scenario, i.e. by an analysis of the effects that would occur if various political approaches were linked with each other.

The options for action discussed below start from the possible political options for the promotion of the senior citizens economy mentioned at the beginning (Chart 3) and are related to

- a. the employment pattern and income of senior citizens,
- b. senior citizens' consumption orientation to certain products or services,
- c. the level of senior citizens' consumption resulting from a change in the savings ratio,
- d. senior citizens' migration pattern.

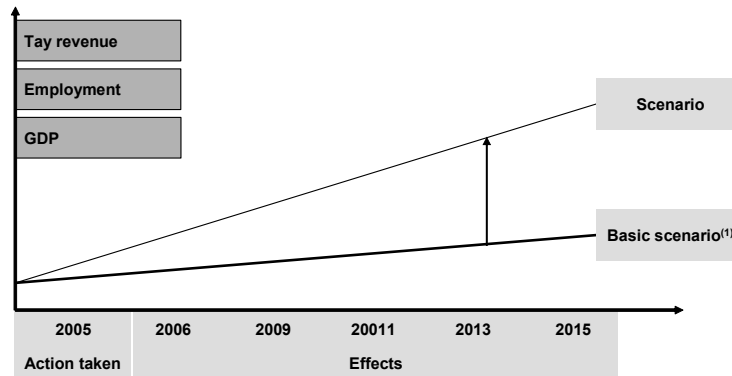
In a total of seven scenarios (Charts 13 and 14) an assessment is made of the differences likely to result from each of the options for action with regard to important economic ratios (employment, income, turnover, GDP and tax revenue) in comparison with the basic scenario in the period from 2006 until 2015⁶. It is assumed that the respective measure is taken in 2005 so that significant effects can be expected to make themselves felt from 2006 onward.

Scenario 1 aims at increasing the senior citizens' income from gainful employment by creating more minijos. Scenario 2 explores the effects of a higher overall rate of employment of the 55 to 65-year old citizens. Scenario 3 assumes that older customers residing outside NRW can be convinced to return to NRW by developing special products for them (e.g. offering them excursions to places in beautiful landscapes or attractive cities in NRW). Scenario 4 deals with the effects of a possible reorientation of senior citizens' consumption to products made in NRW. Scenarios 5 and 6 assume a reduction in the savings ratio of senior citizens by expanding the supply of products and services meeting their specific requirements, in scenario 5 without considering the resulting decrease of the assets they leave by will or as a gift, whereas in scenario 6 such effects have been included. Scenario 7, the "demography and/or migration scenario" shows the consequences of influencing the number of seniors living in NRW, i.e. reducing the migration of seniors (to be observed at present) from NRW. Finally, the cumulative scenario reflects the simultaneous effects of selected scenarios (see below). In the following, the assumptions and estimated consequences of these options for action and the basic development occurring without exerting any such influence will be explained.

Chart 13

⁶ All estimations at constant 2004 prices.

THE CALCULATED EFFECTS OF A SCENARIO ALWAYS SHOW THE DIFFERENCE COMPARED TO THE BASIC DEVELOPMENT
 Action is taken in 2005, the effects occur from 2006 until 2015



(1) Updating past developments and the expected demographic changes

Chart 14

SEVEN SCENARIOS ARE QUANTIFIED

- S1 Increasing senior citizens' income: Minijobs for seniors from age 60
- S2 Increasing the employment rate of the 55 to 65-year olds
- S3 Winning new customers for the senior citizens economy from outside NRW
- S4 Focusing senior citizens' consumption more strongly on products made in NRW
- S5 Reducing senior citizens' savings ratio (without any effect on juniors)
- S6 Reducing senior citizens' savings ratio (with an effect on juniors)
- S7 Reducing the number of seniors leaving NRW: "NRW as the Florida of Germany"

4.1 Basic scenario: Regional economic and demographic development in NRW without taking any measures influencing the senior citizens economy

The basic scenario considers the existing demographic forecasts and the development of the NRW-specific economic interdependencies (e.g. sectoral differentiation, intermediate input, productivity, wages and salaries, gainful employment). Under the present circumstances, a population decrease of about 280,000 and a decline of 180,000 in the number of gainfully employed persons has to be anticipated until 2015. Due to a steadily increasing productivity, however, overall economic performance (+13% until 2010, +21% until 2015), wages and salaries paid out (+15% until 2010, +25% until 2015), and corporate sales (+12% until 2010, +19% until 2015) will continue to rise (Chart 15).

The number of people employed in the health care and social sector will presumably further increase until 2010 (by 2 % or 16,500), but thereafter it will slightly decline (Chart 16). Apparently it is assumed that, in parallel with the general population decline, the number of health care workers must also drop. In view of an ageing society it is conceivable that a stronger focus on senior citizens' economic resources may lead to a change in this scenario (MFJFG 2001: 136).

Chart 15

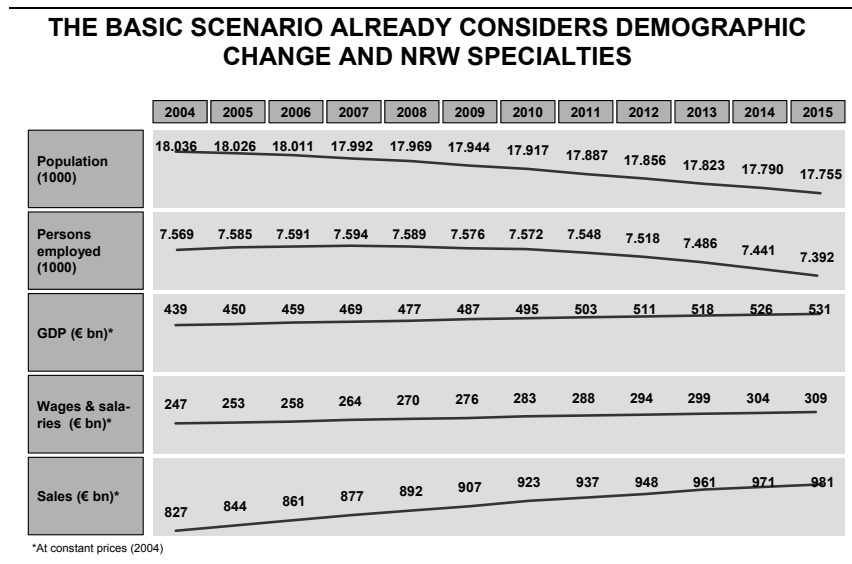
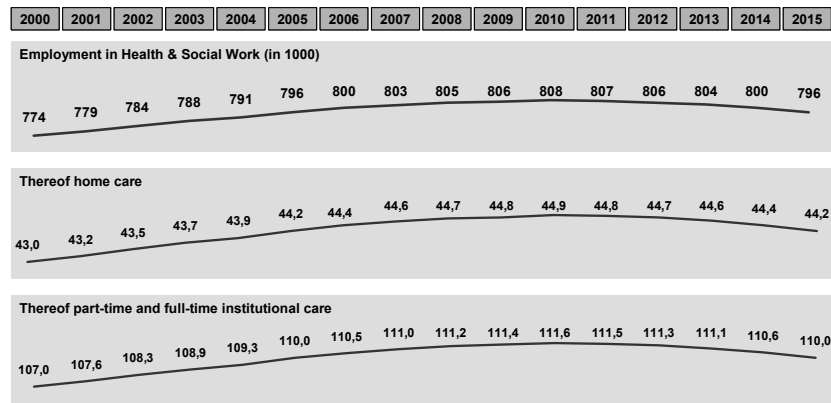


Chart 16

**THE BASIC SCENARIO ALSO REFLECTS THE (NURSING) CARE
SECTOR DEVELOPMENT**



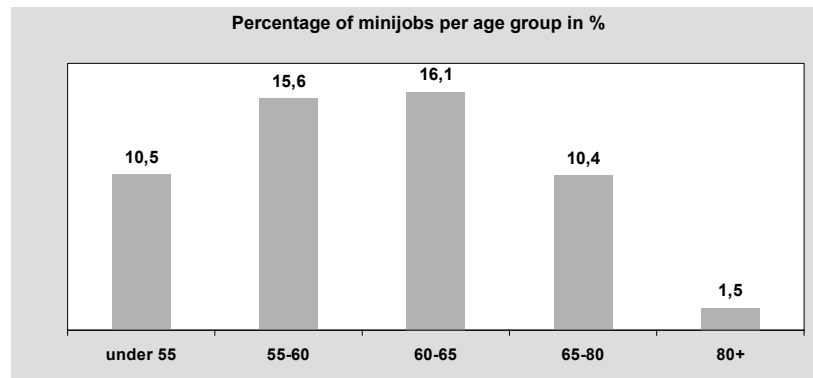
4.2 Opportunities for retirees and pensioners to earn additional income

Based on the current employment of seniors in the minijob sector (Chart 17), it is expected that senior citizens aged between 60 and 75 will increase their minijob activities. Three economic sectors are creating appropriate jobs to be offered to them: wholesale and retail trade, public service, and other services (including services for seniors).

It is assumed that approx. an additional 10% of the inhabitants aged 60 to 75 (a total of 3,042,284 persons in 2002) will increase their income by minijobs. This will lead to a rise in income from gainful employment totalling € 1.46 billion per year. The level of additional income from gainful employment and the number of additional minijobs, compared to the basic scenario, will remain constant throughout the period under observation, i.e. until 2015. As the population as a whole will decline, the share of additional minijobbers in the age group 60 to 75 will slightly increase from 10% (2002) to 10.3% (2010) and 10.5% (2015). Minijobs will partly be financed by a reduction in social security contributions.

Chart 17

S1

PERCENTAGE OF MINIJOBS PER AGE GROUP

Source: RWI's own calculations based on data of the Federal Miners' Insurance Fund (minijob center) and the Federal Office of Statistics (2004)

The simulation shows that this rise in (non-taxable) incomes will generate additional (taxable) wages and salaries which in 2010 will exceed the level of the basic scenario by € 2.248 billion (Chart 18) (+€ 1270 in 2015). Including the non-taxable minijob wages, the income from employment will rise by a total of € 3.012 billion in 2010 and € 2.730 billion in 2015. The level of employment is expected to be markedly higher under these circumstances than it is in the basic scenario. Based on the *ceteris paribus* scenario of "generating minijobs", however, productivity will decline in proportion to the increase in gainful employment. After all, the additional incomes from employment in this scenario will not be created by a higher demand for labour as a result of higher economic performance, but exclusively by a reduction in social security contributions. Declining productivity means lower corporate sales and a lower GDP. Hence, corporation tax will decrease. The additional wage and income tax revenue, however, will more than compensate the decline in corporation tax. Under the circumstances of this scenario, the tax revenue of NRW municipalities would be about € 45 million higher in 2010, but € 0.9 lower in 2015, the State of NRW (after deduction of the contribution to the horizontal tax revenue equalization among German states) could expect an increase in tax revenue of more than € 90 million in 2010 and € 37 million in 2015.

Chart 18

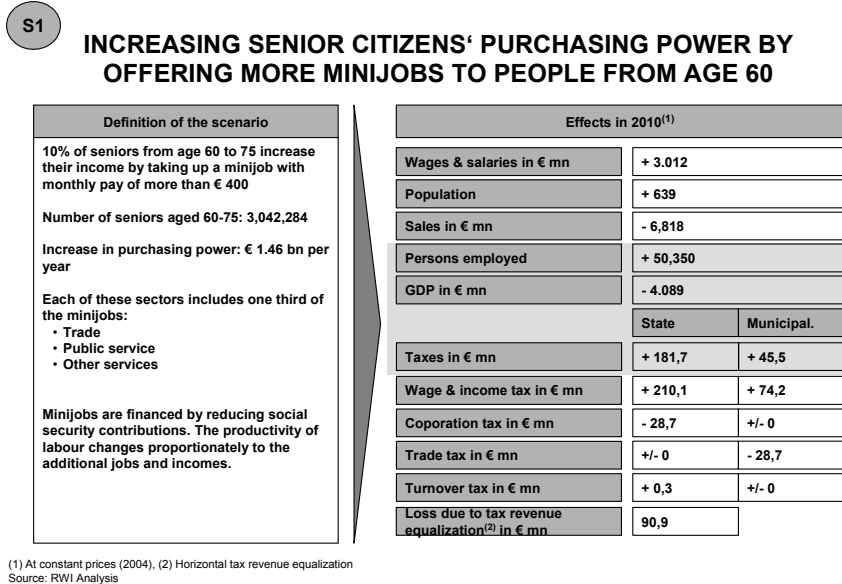
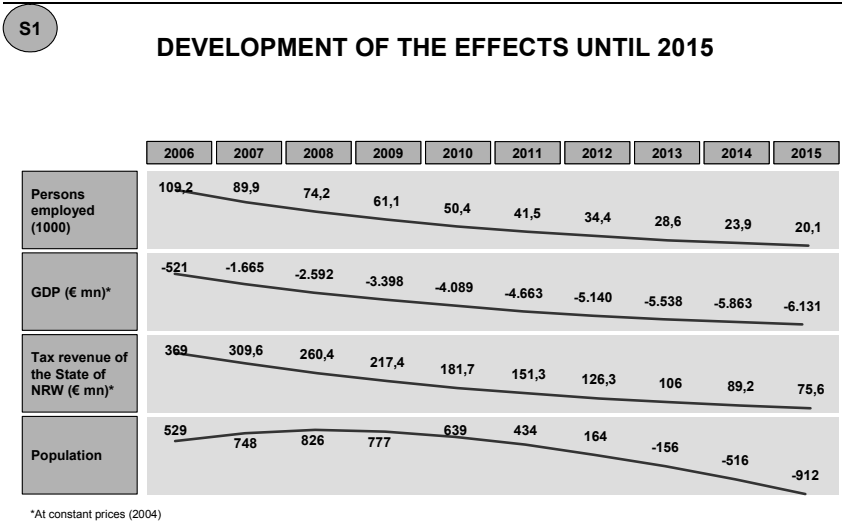


Chart 19



In view of the general decline in regional economic performance capacity, the employment effects, strong initially, will become weaker in the course of time. In 2015, for instance, the level of employment will be higher than it would be in the

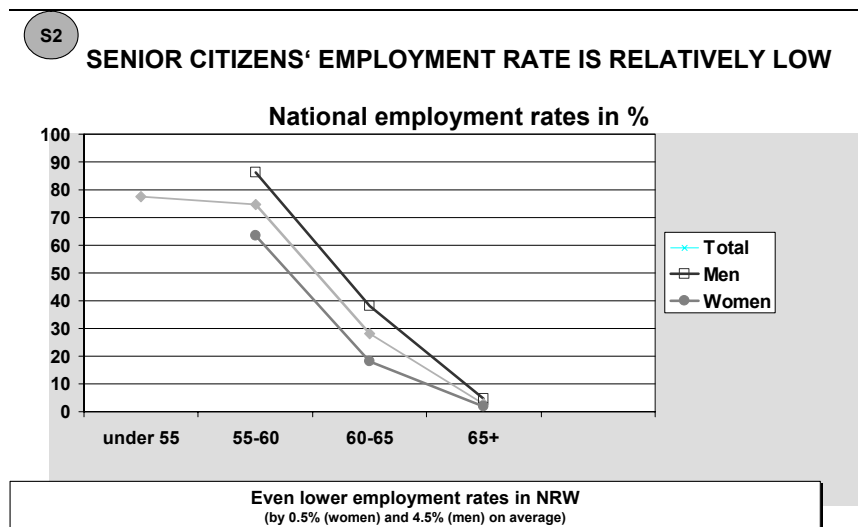
basic scenario, but the gain in employment then amounting to about 20,000 persons will be much below the original effect of more than 100,000 people (2006) and +50,000 (2010). In the regional simulation the additional disposable incomes will be connected with slight population agglomeration effects which, however, will decrease in the course of time and, due to the deteriorating productivity, will even reach negative values from 2013 onward.

In view of the effects identified, generating income from employment by creating minijobs can certainly be no more than one of several strategies in the wider framework of paying greater attention to the resources of senior citizens.

4.3 Increasing the overall employment rate of the 55 to 65-year olds

In the second scenario an overall increase in the employment rate of the 55 to 65-year olds has been assumed. At the same time, we assume that their productivity does not decline and that the overall economic performance

Chart 20



Source: Federal Office of Statistics (2004)

will increase accordingly. At present the average employment rate of people between 55 and 60 amounts to 75%, and for the 60 to 65-year olds it is not more than 28%. Moreover, the values differ between men and women (Chart 20). On the basis of these data, we consider the following increases in the employment rate to be plausible. The level of the additional incomes from employment corresponds to the average income.

Age group	Men	Women
55 to 60	+2 percentage points	+5 percentage points
60 to 65	+5 percentage points	+10 percentage points

Based on these assumptions, the increase in employment rates leads to additional wages and salaries as well as to additional sales, a higher GDP and higher tax revenue of the state and local government(s). The effects achieved as a result of a higher employment rate with productivity not declining (i.e. de facto rising) will even become stronger in the course of time (Charts 21 and 22). Thus, the difference in the GDP vs. the basic scenario will increase from just under € 600 million in 2006 to over € 750 million in 2010 and € 1 billion in 2015. The additional annual tax revenue of the state (before deduction of the tax revenue equalization) will remain around € 140 million over the period 2006 to 2015. In 2010 local governments alone would have additional tax receipts of more than € 50 million and € 60 million in 2015.

Chart 21

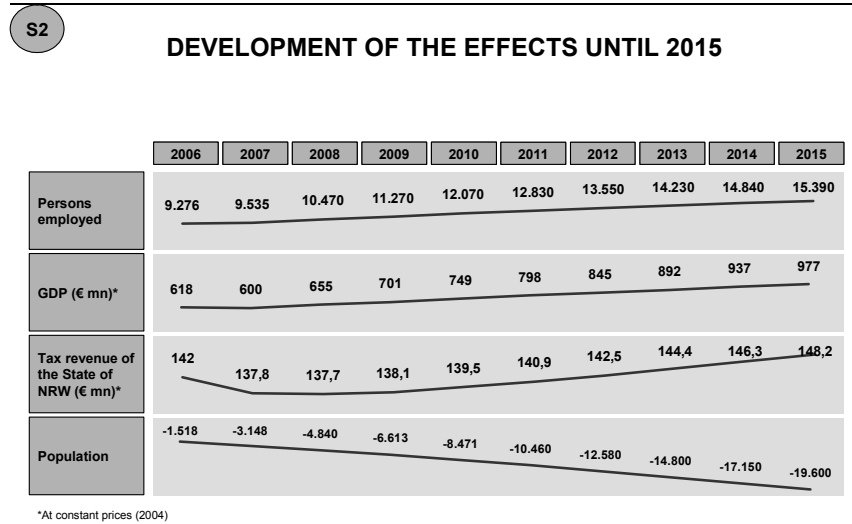
S2

INCREASING THE EMPLOYMENT RATE OF 55 TO 65-YEAR OLDS

Definition of the scenario	Effects in 2010 ⁽¹⁾		
Men • Age group 55-60: + 2 percentage points • Age group 60-65: + 5 percentage points Women • Age group 55-60: + 5 percentage points • Age group 60-65: + 10 percentage points Unchanged labour productivity Additional incomes from employment amounting to the average income	Wages & salaries in € mn	+ 1.465	
	Population	- 8,471	
	Sales in € mn	+ 1.468	
	Persons employed	+ 12,070	
	GDP in € mn	+ 749	
		State	Municipal.
	Taxes in € mn	+ 139,5	+ 54,2
	Wage & income tax in € mn	+ 137,0	+ 48,4
	Corporation tax in € mn	+ 5,9	+/- 0
	Trade tax in € mn	+/- 0	+ 5,9
	Turnover tax in € mn	- 3,3	+/- 0
	Loss due to tax revenue equalization⁽²⁾ in € mn	69,8	

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 22



However, there will be a negative effect on the population development. According to the regional econometric model calculations, the number of migrant workers coming to NRW will be about 1,600 lower every year. Hence, the population will decline by the number of migrant workers and their families not coming to NRW. The scenario of "increase in employment rate" reflects the complexity of the mechanisms acting upon the regional economy. While most of the economic effects of this scenario are positive, the loss of migrant workers is an undesirable side-effect of this option for action. Moreover, the scenario does not yet consider the fiscal treatment of financial provisions made for old age and retirement income under the old-age benefit law becoming effective on 1st January 2005. As a result of the taxation of retirement benefits under this new law, it has to be expected that the taxes payable by senior citizens will increase even if the employment rate continues to be low.

4.4 Winning new customers for the senior citizens economy from outside NRW

When developing impulses promoting the senior citizens economy in NRW, it also is important to create locational advantages for business in NRW over other regions. Thus, it has to be assumed that, as a result of such impulses, products and services especially meeting senior citizens' requirements are offered in North Rhine-Westphalia that are not offered, or not yet offered in the same form, in neighbouring regions. This may lead to winning new customers living outside NRW. Finally, the stronger focus on the senior citizens economy may create a

specific innovation potential in NRW thanks to which the NRW senior citizens economy is able to maintain its locational advantages throughout the period of observation, even if bandwagon effects developed in neighbouring regions during that period.

In this scenario we assume that an additional demand amounting to a total of € 1 billion per year can be generated as a result of new products/services specifically offered to senior citizens. This equals a lasting increase in total consumption of about 1% compared to 2004. This additional demand is concentrated on the "products for seniors" defined above in the economic sectors of health care and social work, tourism and recreation, catering, transport and communications, as well as IT services. The additional consumption will be generated by 250,000 new customers who, on average, will spend € 4,000 each in NRW every year.

Chart 23

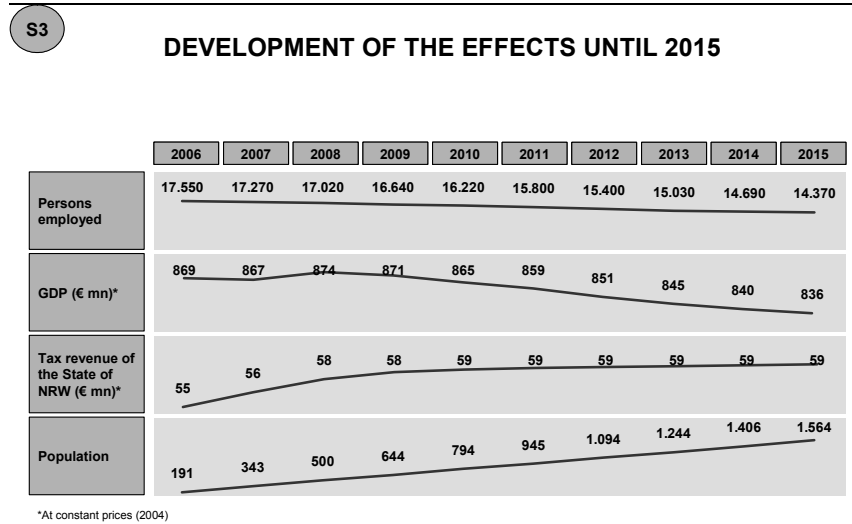
S3

WINNING NEW CUSTOMERS FOR THE SENIOR CITIZENS ECONOMY FROM OUTSIDE NRW

Definition of the scenario	Effects in 2010 ⁽¹⁾		
<p>Rising demand for "goods for seniors", i.e. consumption of goods/services in the sectors of health care, recreation, catering, transport, communication and IT services</p> <p>Increase in the consumption of these goods/services totalling € 1 bn (corresponding to 1% of current consumption) by winning 250,000 new customers each spending about € 4,000 on average per year</p> <p>Thereof € 2,000 are spent on health care and € 400 each on recreation, catering, transport, communication and IT services.</p>	Wages & salaries in € mn	+ 559	
	Population	+ 795	
	Sales in € mn	+ 1.519	
	Persons employed	+ 16,220	
	GDP in € mn	+ 865	
		State	Municipal.
	Taxes in € mn	+ 58,6	+ 24,5
	Wage & income tax in € mn	+ 52,3	+ 18,4
	Corporation tax in € mn	+ 6,1	+/- 0
	Trade tax in € mn	+/- 0	+ 6,1
	Turnover tax in € mn	+ 0,3	+/- 0
	Loss due to tax revenue equalization ⁽²⁾ in € mn	29,3	

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 24



Thereof € 2,000 will, on average, be spent on health care, and € 400 each on tourism and recreation, catering, transport, communication and IT services.

In comparison to scenarios 1 and 2, winning new customers within the scope stated will have a more moderate, albeit, without exception, a positive effect. Especially the increase in corporate sales, expected to amount to more than € 1.5 billion, as well as the increase in employment (over 16,000 more persons employed in 2010, more than 14,000 in 2015) will be a positive effect. It is interesting to note that, in contrast to scenario 2 where displacement effects are to be observed, in scenario 3, *ceteris paribus*, some, though very limited, migration to NRW will take place (Charts 23 und 24). After deduction of the horizontal tax revenue equalization, the state would have a good € 29 million more in tax revenue in 2010 (+€ 30 million in 2015), the NRW municipalities would increase their tax revenue by more than € 24 million (2010 and 2015).

4.5 Stronger focus of senior citizens' consumption on products made in NRW

As an alternative to scenario 3, assuming additional consumption, the assumption here is that, as a result of new products/services offered by the senior citizens economy, seniors will concentrate their consumption more on NRW products/services. In this context the effect of merely a sectoral shift of senior citizens' consumption without adding additional resources will have to be investigated.

This scenario assumes that each of the 4.65 million inhabitants of North Rhine-Westphalia aged 55 to 80 spends € 215 per year more on NRW products and the

same amount less on other products. The additional amount spent on NRW products every year is spent on health care (€ 70 per year), on recreation and catering (€ 40 each), and on transport, communications and IT services (€ 15 each). In all, the NRW seniors thus spend € 1 billion more every year on NRW products and € 1 billion less on other products. Hence, this scenario becomes comparable to the previous one.

As in this scenario total consumption remains unchanged, the regional effects will, of course, be more moderate than they are in the comparable "winning new customers" scenario. Nevertheless, it becomes obvious that greater competitiveness of the NRW economy in the market segment of products/services specifically offered to seniors will, ceteris paribus, have positive effects on the regional economy and the labour market and, as a result, on tax revenue (Charts 25 and 26). If senior citizens focus more on buying NRW products, we may expect a stable growth of the NRW economy amounting to almost € 200 million per year from 2006 until 2015.

Chart 25

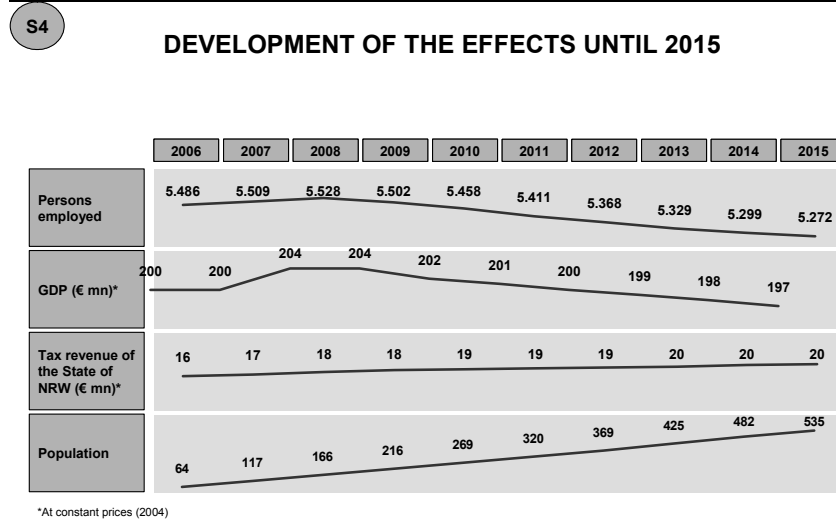
S4

STRONGER FOCUS OF SENIOR CITIZENS' CONSUMPTION ON PRODUCTS MADE IN NRW

Definition of the scenario	Effects in 2010 ⁽¹⁾		
	<p>Rising consumption of NRW products by seniors</p> <p>Each of the 4.65 mn seniors aged 55 to 80 spends € 215 more per year on NRW goods and € 215 less on other goods.</p> <p>Of the additional expenditure on NRW goods € 40 are spent on recreation and catering each, € 70 on health care and € 15 each on transport, communication and IT services.</p> <p>In all, an additional amount of € 1 bn is spent on NRW goods per year.</p> <p>At the same time, the consumption of other goods declines, so that, in absolute terms, total consumption remains unchanged.</p>	Wages & salaries in € mn	+ 186
Population		+ 269	
Sales in € mn		+ 295	
Persons employed		+ 5,458	
GDP in € mn		+ 202	
		State	Municipal
Taxes in € mn		+ 18,7	+ 7,3
Wage & income tax in € mn		+ 17,4	+ 6,1
Corporation tax in € mn		+ 1,2	+/- 0
Trade tax in € mn		+/- 0	+ 1,2
Turnover tax in € mn		+ 0,1	+/- 0
Loss due to tax revenue equalization ⁽²⁾ in € mn		9,4	

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 26



Especially scenarios 3 and 4 clearly show that, when NRW's specific locational advantages of the senior citizens economy are developed, the main drivers are the appropriate impulses and ideas of the respective production and service sectors. The Senior Citizens Economy Initiative of the State of North Rhine-Westphalia can use its influence and contribute to the formation of clusters in NRW, i.e. a better cooperation among companies that will create an innovative lead and thus competitive advantages for themselves in the end.

When this scenario is implemented, the State of NRW, after deduction of the horizontal tax revenue equalization, would collect additional taxes amounting to more than € 9 million in 2010 (+€ 10 million in 2015), municipalities would collect additional taxes of over € 7 million approx. in 2010 and € 8 million in 2015.

4.6 Reducing senior citizens' savings ratio

A possible alternative to reallocating consumption would be to induce seniors to save less, i.e. to spend more on consumption, which, in a way, means to reduce their security needs and/or inclination to transfer their assets by will or as a gift. As the representative survey made in connection with the NRW Senior Citizens Economy Initiative has shown, there is, from the seniors' point of view, quite some potential for growth and improvement in NRW with regard to regional shopping opportunities, the transport system, offers made to seniors in the areas of recreation, education and cultural activities, which allows the conclusion that, if such additional offers were made, they would be used (MGSFF 2003a: 81–86). It is to be expected that this would not only lead to a reallocation of consumption but

also to an increase in consumption expenditure as a whole, i.e. to a lower savings ratio of senior citizens.

Two scenarios are described in the following sections, the first without considering the reduction in savings passed on by will or as a gift due to the measures described above (scenario 5), whereas the second considers such effects (scenario 6). Scenario 5 is of little importance because it only generates short-term effects of reducing the savings ratio. Scenario 6, however, comes much closer to reflecting the regional effects to be expected from a reduction in the savings ratio.

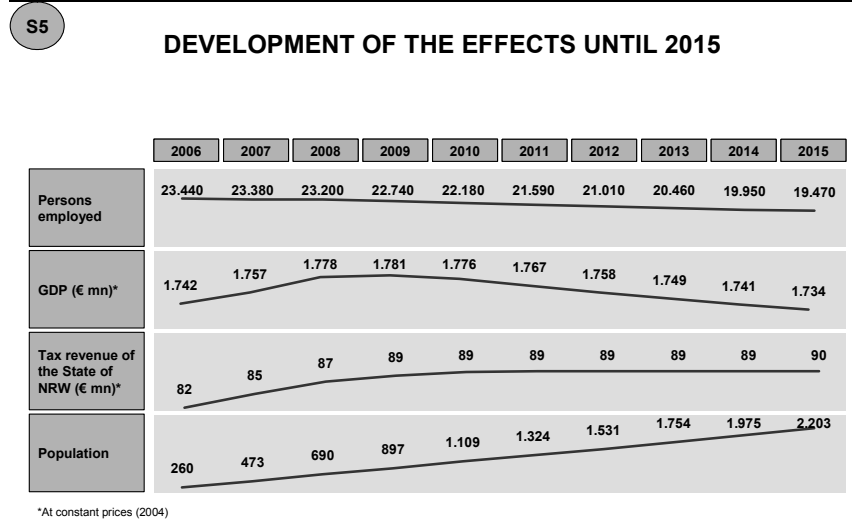
Chart 27

S5 REDUCING SENIOR CITIZENS' SAVINGS RATIO (WITHOUT ANY EFFECTS ON JUNIORS)

Definition of the scenario		Effects in 2010 ⁽¹⁾																																
<p>The savings ratio declines by 25%, i.e. from 9% today to 6.75%, or € 2.19 bn, spent on additional consumption.</p> <p>The additional consumption is spread over all goods according to senior citizens' current pattern of consumption expenditure.</p> <p>The fact that juniors will inherit, and thus consume, less is not taken into account.</p>		<table border="1"> <tr> <td>Wages & salaries in € mn</td> <td>+ 817</td> </tr> <tr> <td>Population</td> <td>+ 1,109</td> </tr> <tr> <td>Sales in € mn</td> <td>+ 3.099</td> </tr> <tr> <td>Persons employed</td> <td>+ 22,180</td> </tr> <tr> <td>GDP in € mn</td> <td>+ 1.776</td> </tr> <tr> <td></td> <td>State</td> <td>Municipal.</td> </tr> <tr> <td>Taxes in € mn</td> <td>+ 89,2</td> <td>+ 39,3</td> </tr> <tr> <td>Wage & income tax in € mn</td> <td>+ 76,3</td> <td>+ 26,9</td> </tr> <tr> <td>Corporation tax in € mn</td> <td>+ 12,4</td> <td>+/- 0</td> </tr> <tr> <td>Trade tax in € mn</td> <td>+/- 0</td> <td>+ 12,4</td> </tr> <tr> <td>Turnover tax in € mn</td> <td>+ 0,4</td> <td>+/- 0</td> </tr> <tr> <td>Loss due to tax revenue equalization⁽²⁾ in € mn</td> <td>44,6</td> <td></td> </tr> </table>		Wages & salaries in € mn	+ 817	Population	+ 1,109	Sales in € mn	+ 3.099	Persons employed	+ 22,180	GDP in € mn	+ 1.776		State	Municipal.	Taxes in € mn	+ 89,2	+ 39,3	Wage & income tax in € mn	+ 76,3	+ 26,9	Corporation tax in € mn	+ 12,4	+/- 0	Trade tax in € mn	+/- 0	+ 12,4	Turnover tax in € mn	+ 0,4	+/- 0	Loss due to tax revenue equalization ⁽²⁾ in € mn	44,6	
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Loss due to tax revenue equalization ⁽²⁾ in € mn	44,6																																	
<p>This scenario is not very important as it does not consider the fact that juniors will consume less in future than they do today if they inherit less. Therefore see S6.</p>																																		

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 28



For both scenarios we assume that the NRW seniors' savings ratio drops by 25%, i.e. from the current 9% to 6.75%. As a result, an additional € 2.19 billion will be available for consumption (scenario 5) every year. In scenario 6, however, we make the additional assumption that only 25% of this reduction in savings will actually be available for consumption in NRW, as, according to the assumption, 75% of the savings would be willed to heirs in NRW whose consumption, due to the curtailment of their inheritance, will now decline proportionately. It has to be noted that, firstly, the effects calculated for this scenario do not consider the postponement effect of inheritance and therefore underestimate the short-term consequences, and, secondly, also disregard possible differences in the savings ratios of seniors and juniors. The additional consumption is distributed to all branches of the economy in proportion to the present allocation of consumption to the various economic sectors (Table 1).

In view of the high level of additional consumption of € 2.19 billion, scenario 5, as expected, leads to stronger regional economic, employment and fiscal effects than the increase in consumption simulated under the other scenarios. State and local governments would derive markedly higher revenues from these effects (Charts 27 and 28). As stated, however, it may be more realistic to start from the more moderate, about 75% lower, effects of scenario 6 according to which only some € 550 million per year will be available for consumption in NRW (Charts 29 and 30).

Although in this scenario consumption increases to about half the level of the additional consumption of scenario 3 (new customers), the estimated effects on

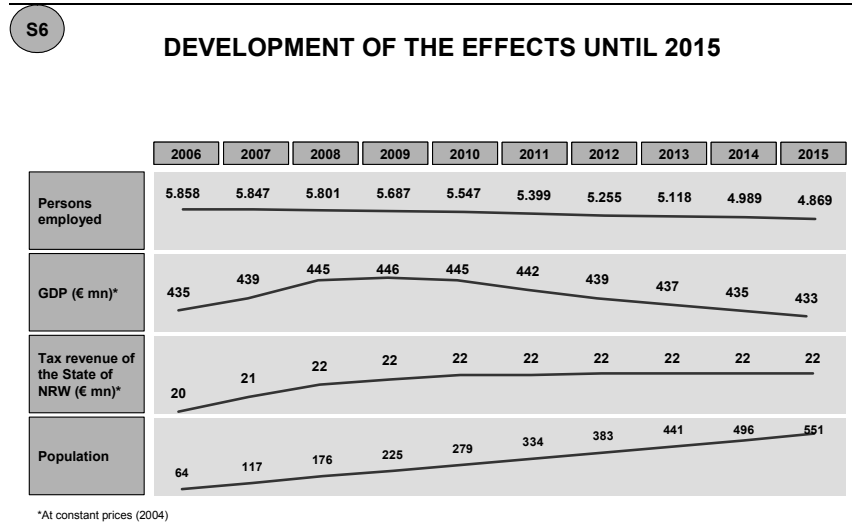
wages and salaries as well as on population and employment in this scenario are far more than 50% lower than they are in scenario 3 in which we assumed that new customers are won for "products for seniors". The reason is that in the "reducing senior citizens' savings ratio" scenario a greater portion of senior citizens' additional consumption is going to places outside NRW. The regional simulations thus confirm that a stronger focus of the senior citizens economy on products made in NRW is connected with a substantial "value added" for the State of NRW, not least for public budgets.

Under the circumstances of scenario 6, the state's additional tax revenue would amount to approx. € 11 million (2010 and 2015), the municipalities would collect about € 10 million (2010 and 2015).

Chart 29

S6 REDUCING SENIOR CITIZENS' SAVINGS RATIO (WITH AN EFFECT ON JUNIORS)																																					
<p>Definition of the scenario</p> <p>The savings ratio declines by 25%, i.e. from 9% today to 6.75%, or € 2.19 bn, spent on additional consumption.</p> <p>The additional consumption is spread over all goods according to senior citizens' current pattern of consumption expenditure.</p> <p>The fact that juniors will inherit, and thus consume, less is taken into account.</p> <ul style="list-style-type: none"> • Assumption: 75% of heirs live in NRW • Effect: The increase in consumption due to the decline in the senior citizens' savings ratio will be markedly lower in the long term. • Note: The calculated effects of the scenario do not consider the postponement effect. 	<p>Effects in 2010⁽¹⁾</p> <table border="1"> <tbody> <tr> <td>Wages and salaries in € mn</td> <td colspan="2">+205</td> </tr> <tr> <td>Population</td> <td colspan="2">+ 279</td> </tr> <tr> <td>Sales in € mn</td> <td colspan="2">+ 775</td> </tr> <tr> <td>Persons employed</td> <td colspan="2">+ 5,547</td> </tr> <tr> <td>GDP in € mn</td> <td colspan="2">+ 445</td> </tr> <tr> <td></td> <td>Land</td> <td>Gemeinden</td> </tr> <tr> <td>Taxes in € mn</td> <td>+ 22,3</td> <td>+ 9,8</td> </tr> <tr> <td>Wage & income tax in € mn</td> <td>+ 19,1</td> <td>+ 6,8</td> </tr> <tr> <td>Corporation tax in € mn</td> <td>+ 3,1</td> <td>+/- 0</td> </tr> <tr> <td>Trade tax in € mn</td> <td>+/- 0</td> <td>+ 3,1</td> </tr> <tr> <td>Turnover tax in € mn</td> <td>+ 0,1</td> <td>+/- 0</td> </tr> <tr> <td>Loss due to tax revenue equalization⁽²⁾ in € mn</td> <td colspan="2">11,2</td> </tr> </tbody> </table>	Wages and salaries in € mn	+205		Population	+ 279		Sales in € mn	+ 775		Persons employed	+ 5,547		GDP in € mn	+ 445			Land	Gemeinden	Taxes in € mn	+ 22,3	+ 9,8	Wage & income tax in € mn	+ 19,1	+ 6,8	Corporation tax in € mn	+ 3,1	+/- 0	Trade tax in € mn	+/- 0	+ 3,1	Turnover tax in € mn	+ 0,1	+/- 0	Loss due to tax revenue equalization ⁽²⁾ in € mn	11,2	
Wages and salaries in € mn	+205																																				
Population	+ 279																																				
Sales in € mn	+ 775																																				
Persons employed	+ 5,547																																				
GDP in € mn	+ 445																																				
	Land	Gemeinden																																			
Taxes in € mn	+ 22,3	+ 9,8																																			
Wage & income tax in € mn	+ 19,1	+ 6,8																																			
Corporation tax in € mn	+ 3,1	+/- 0																																			
Trade tax in € mn	+/- 0	+ 3,1																																			
Turnover tax in € mn	+ 0,1	+/- 0																																			
Loss due to tax revenue equalization ⁽²⁾ in € mn	11,2																																				
<p>(1) At constant prices (2004), (2) Horizontal tax revenue equalization Source: RWI Analysis</p>																																					

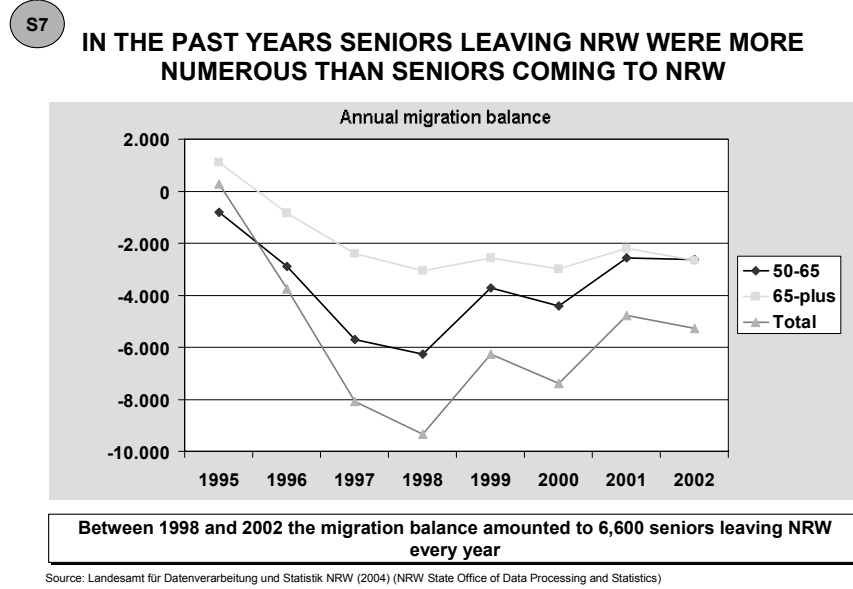
Chart 30



4.7 Reducing senior citizens' migration from NRW

Besides strategies for a more efficient use of senior citizens' economic resources by influencing their income and expenditure, another possibility consists of changing the number of seniors by influencing their migration pattern. Although the number of older people will continue to increase in the next years as strong age groups will enter senior age, for some years now senior citizens in NRW have had a negative migration balance (approximately –6,000 in 2002, Chart 31). Hence, incentives for the senior citizens economy should be provided with the objective of enhancing NRW's attractiveness as a residence for seniors.

Chart 31



On the assumption that the number of seniors giving up their NRW residence every year (evenly spread over all senior age groups corresponding to their respective current share in the population) is 5,000 lower than it is in the basic scenario, the increase in the number of inhabitants will, as a result of agglomeration effects, be much higher than the total of 50,000 seniors who did not leave NRW during the whole period of observation (+ 70,000 in 2010, more than + 200,000 in 2015) with significant effects on the regional economy, the labour market and public income (Charts 32 and 33).

Chart 32

S7

REDUCING THE NUMBER OF SENIORS LEAVING NRW, "NRW AS THE FLORIDA OF GERMANY"

Definition of the scenario	Effects in 2010 ⁽¹⁾		
<p>At present, seniors leaving NRW are far more numerous than seniors coming to NRW.</p> <p>The migration balance amounted to an annual balance of -6,600 persons between 1998 and 2002.</p> <p>Assumption: The annual number of seniors leaving NRW will be 5,000 lower (distributed evenly over all senior age groups).</p>	Wages & salaries in € mn	+ 1.059	
	Population	+ 71,130	
	Sales in € mn	+ 3.369	
	Persons employed	+ 27,990	
	GDP in € mn	+ 1.917	
		State	Municipal.
	Taxes in € mn	+ 140,4	+ 48,4
	Wage & income tax in € mn	+ 99,0	+ 34,9
	Corporation tax in € mn	+ 13,5	+/- 0
	Trade tax in € mn	+/- 0	+ 13,5
	Turnover tax in € mn	+ 28,0	+/- 0
	Loss due to tax revenue equalization ⁽²⁾ in € mn	70,2	

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 33

S7

DEVELOPMENT OF THE EFFECTS UNTIL 2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Persons employed	2.037	5.945	11.630	18.950	27.990	38.340	49.800	62.230	75.260	88.840
GDP (€ mn)*	135	393	777	1.280	1.917	2.663	3.508	4.446	5.454	6.529
Tax revenue of the State of NRW (€ mn)*	9	28	56	93	140	197	261	334	414	500
Population	4.949	14.700	29.100	47.960	71.130	98.400	129.600	164.400	202.700	244.200

*At constant prices (2004)

In comparison to the other scenarios, a far greater increase in the GDP (more than € 1.9 billion in 2010, over € 6,5 billion in 2015) and in corporate sales (more than € 3 billion in 2010, over € 10 billion in 2015) as well as a considerable rise in wages and salaries (more than € 1 billion in 2010, € 4 billion in 2015) is to be expected from this scenario. What is particularly striking, and has only been observed in this scenario, is the consistently positive effect on all parameters studied. Thus, in a comparison of different scenarios, influencing the migration pattern seems to have special and lasting effects on regional conditions. It would be desirable if this development occurred as a "side effect" of promoting the senior citizens economy. Under these circumstances, the State of NRW could expect an increase of almost € 70 million in tax revenue in 2010 (in 2015 additional taxes would amount to as much as € 250 million), the municipalities would collect over € 50 million more in 2010 and € 170 million more in 2015.

4.8 Combining options for action and developing a comprehensive promotion strategy

The estimated effects of the individual options for action resulting from the simulations in the present study apply on the assumption that all other conditions remain equal. However, within the scope of a comprehensive promotion strategy, it would be logical to aim at doing both, i.e. increase the income and the consumption expenditure of senior citizens, and, by creating special offers for senior citizens, thus upgrading the locational advantages of the State of NRW as a state where seniors want to live. In the following chapter a cumulative scenario is described with an estimate of the overall economic and fiscal effects on the state and the municipalities to be expected from a linkage of different options for action.

Scenario 1 is selected from the two scenarios 1 and 2, which cannot be combined, as it is easier to implement. Scenario 2 appears to be less plausible because it assumes substantial increases in productivity and a rising demand for labour at the same time. Of the two scenarios showing the effects of reducing the savings ratio we have selected scenario 6 which, as explained, is more likely than scenario 5 to produce the regional effects to be expected from a decreasing savings ratio. The cumulative scenario thus combines the following options:

- creating additional employment opportunities, i.e. minijobs, for retirees and pensioners,
- winning new customers from outside NRW for the senior citizens economy,
- focusing senior citizens' consumption more strongly on products made in NRW,

- reducing senior citizens' savings ratio (and the savings passed by will or as a gift to juniors), and
- reducing the number of seniors migrating from NRW.

The combination of these scenarios shows that significant effects on the regional economy, public income and employment, can be obtained by extensively promoting the senior citizens economy (Charts 34 and 35). If the selected options for action are implemented, a € 4.7 billion, or about 1.6%, increase in gross wages/salaries is to be expected for the year 2010 (+€ 7.6 billion or another 2.5% in 2015) compared to the basic scenario of not taking any action. As the productivity of labour will decline due to the employment of additional labour, economic growth will initially be lower compared to the basic scenario. However, if new offers lead to a rising demand for products/services of the senior citizens economy, it may well be that the assumed employment effects can also be obtained without any change in productivity. As the tax revenue of the state and municipalities mainly depends on the wages and salaries of the working population, the productivity losses assumed here and the temporary decline in economic growth resulting from it would only have a limited effect on the tax revenue of the state and local government(s). Thus, after the deduction of the horizontal tax revenue equalization, NRW would probably have an additional tax income of about € 210 million or +1.1% in 2010. Until 2015 the additional public income would even rise to a level far above € 300 million (+ 1.7%).

In all, the State of NRW, by implementing the scenarios presented here, could collect additional taxes of almost € 2.5 billion (+1.3%) in the period from 2006 until 2015 compared to the basic scenario (after deduction of the horizontal tax revenue equalization). After 2010 the more favourable demographic development compared to the basic scenario would compensate the negative effects of the decline in productivity, so that, from 2013, the economic growth rates would increase.

Chart 34

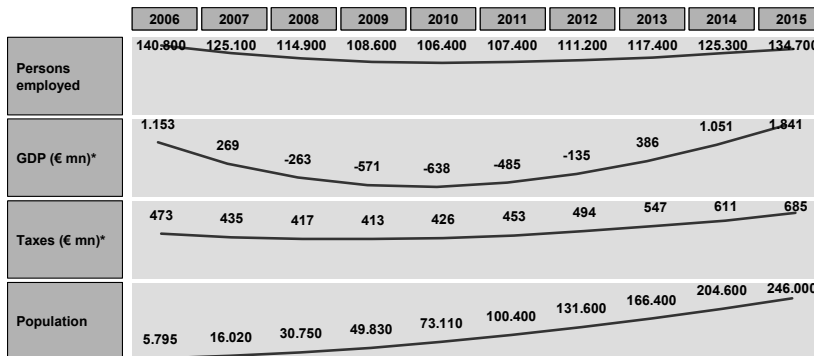
STRONG OVERALL EFFECT OF A CUMULATIVE SCENARIO

Definition of the scenario	Effects in 2010 ⁽¹⁾		
Realization of the scenarios 1 Creating minijobs 3 Winning new customers 4 Focusing on products made in NRW 6 Reducing the savings ratio 7 Reducing migration from NRW	Wages & salaries in € mn	+ 4.779	
	Population	+ 73,110	
	Sales in € mn	- 1.171	
	Persons employed	+ 106,400	
	GDP in € mn	- 638	
		State	Municipal.
	Taxes in € mn	+ 426,0	+ 137,2
	Wage & income tax in € mn	+ 402,0	+ 141,9
	Corporation tax in € mn	- 4,7	+/- 0
	Trade tax in € mn	+/- 0	+ -4,7
	Turnover tax in € mn	+ 28,8	+/- 0
	Loss due to tax revenue equalization ⁽²⁾ in € mn	213,0	

(1) At constant prices (2004), (2) Horizontal tax revenue equalization
Source: RWI Analysis

Chart 35

CUMULATIVE SCENARIO: DEVELOPMENT OF THE EFFECTS UNTIL 2015



*At constant prices (2004)

The implementation of a comprehensive strategy for the promotion of the senior citizens economy in NRW would lead to higher tax revenue not only for the state but also for local government(s). What applies to the state also applies to the mu-

municipalities, i.e. that income taxes account for the biggest share of public income. Thus, the municipalities, for instance, could increase their tax revenue by some € 130 million (+1%) in 2010 (+€ 200 million or 1.5% in 2015). The recovery of the economic growth would lead to additional trade tax collected by the municipalities after 2010. The total volume of the municipal tax gains obtainable by measures promoting the senior citizens economy is likely to amount to some € 1.5 billion (+1.2%) in the period from 2006 until 2015 compared to the basic scenario.

The positive effects of the cumulative scenario on the tax revenue of the state and local government(s), on wages and salaries and the number of gainfully employed people are slightly higher individually than the sum of the effects of the respective scenarios, whereas the negative effects on GDP and sales are slightly lower. Hence, when linking the various options for action to develop a comprehensive promotion strategy, additional agglomeration effects with positive consequences for the economic and fiscal development of the State of NRW will occur.

As a result of the horizontal tax revenue equalization, the other German states would also benefit from a flourishing senior citizens economy in NRW. Such benefits would amount to a total of about € 1 billion until 2010 and to about € 2.5 billion until 2015.

5. Results and conclusions

The present study confirms the assumption that the promotion of the senior citizens economy can generate positive effects on the performance of the regional economy, the regional labour market, the population development and the financial conditions of the State of North Rhine-Westphalia. These effects are quantified by regional econometric simulation and can thus be related to each other. Nevertheless, it has to be pointed out explicitly that these results represent estimated and approximated values. Table 2 shows the effects to be expected from the various scenarios in 2010, including the cumulative scenario reflecting the simultaneous effects of scenarios 1, 3, 4, 6 and 7. Another 50% of the additional NRW tax revenue will approximately be "lost" due to the horizontal tax revenue equalization, after the distribution of taxes among the federal, state and local government(s) has already been considered in Table 2 (vertical tax revenue equalization).

A comparison of the simulated scenarios shows that additional tax revenue can mainly be generated by measures leading to an increase in the earned income of senior citizens (scenarios 1 and 2). However, a strategy relying only on the creation of minijobs to increase earned incomes, without responding to the corresponding demand for labour, would be inadequate. The supply of labour without the demand for it will indeed lead to an increase in earned incomes and tax revenue. However, the productivity will decline in this scenario so that corporate profits and economic growth will develop less favourably than they would in the basic

scenario. A general rise in the senior citizens' rate of employment may have an adverse effect on the population level, because fewer workers will migrate to NRW with the demand for labour remaining unchanged.

Scenarios 3-6 show the effects of various impulses to stimulate the consumption of seniors. If a better supply of specific products and services for senior citizens could

- win new customers from outside NRW, and/or
- focus the consumption expenditure of senior citizens in NRW more on regional products, and/or
- stimulate senior citizens' propensity to consume in general,

considerable increases in GDP, employment and incomes can be achieved. Particularly successful would be impulses for the senior citizens economy that also enhance NRW's attractiveness as a place for seniors to live. If the senior citizens economy is more successful in NRW than in other regions, it may be assumed that more seniors will develop a preference for NRW as a place to live than has been the case so far – provided that the housing industry meets their specific requirements. The demographic effects simulated in scenario 7 show clearly that, as far as NRW is concerned, it must be one of the objectives of location policy to counteract the migration of seniors from NRW, despite the foreseeable demographic ageing process.

Enhancing NRW's quality as a place for seniors will, of course, only be successful if the options for action simulated in the various scenarios are linked with each other within the framework of a comprehensive strategy for the promotion of the senior citizens economy. The State Initiative can help companies in NRW develop advantages in the competition for senior customers, e.g. by cooperation and exchange of experience. It must be remembered that the effects simulated in this study can only be realized if the increases in income and expenditure and the changes in senior citizens' migration patterns, assumed in the study, actually occur. To make this happen, further specific incentives will be required in the next few years to support innovation in the senior citizens economy and to strengthen the public's awareness of "old age as an economic resource".

The problems caused by an ageing society and inadequate utilization of senior citizens' economic potential concern the Federal Republic of Germany as a whole and many other member countries of the European Union. From the perspective of many industries it will hardly be reasonable to focus on one single region when developing new products/services specifically for seniors. Strategies for the stimulation of the senior citizens economy could certainly be particularly successful if

they were implemented effectively at the European level. Initiatives taken by the EU Commission in this field would therefore be very desirable.

Table 2
Options for alternative action to promote the senior citizens economy in NRW and their effects on regional business and public revenue in 2010
Simulation results at a glance

	Abs. Base Value 2004	Effects in 2010							Cumulative Scenario
		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Scenario 7	
Output REMI									
Wages and salaries (€ mm)*	246.549	3.012	1.465	559	186	817	205	1.059	4.779
Taxable wages and salaries (€ mm)*	246.549	2.248	1.465	559	186	817	205	1.059	4.299
Population	18.035.803	639	-8.471	795	269	1.109	279	71.130	73.110
Sales (€ mm)*	827.022	-7.166	1.468	1.519	295	3.099	775	3.369	-1.171
Employment	7.568.829	50.350	12.070	16.220	5.458	22.180	5.547	27.990	106.400
GDP (€ mm)*	439.816	-4.089	749	865	202	1.776	445	1.917	-638
Corporate profits (€ mm)*		-266,6	58,7	60,8	11,8	123,9	31,0	134,7	-46,8
State of NRW in € million									
Income tax	23052,3	210,1	137,0	52,3	17,4	76,3	19,1	99,0	402,0
Corporation tax	3308,1	-28,7	5,9	6,1	1,2	12,4	3,1	13,5	-4,7
Trade tax	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Turnover tax	7093,7	0,3	-3,3	0,3	0,1	0,4	0,1	28,0	28,8
Total	33454,1	181,7	139,5	58,6	18,7	89,2	22,3	140,4	426,0
Municipalities in NRW in € million									
Income tax	8136,1	74,2	48,4	18,4	6,1	26,9	6,8	34,9	141,9
Corporation tax	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Trade tax	3308,1	-28,7	5,9	6,1	1,2	12,4	3,1	13,5	-4,7
Turnover tax	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Total	11444,2	45,5	54,2	24,5	7,3	39,3	9,8	48,4	137,2
Assumptions									
Average income tax	22%	Share of State NRW		Share of Municipalities		Source: RWI			
Average corporation tax	20%	42,5%	15,0%	50,0%	0,0%	50,0%	0,0%	Source: RWI	
Average trade tax	10%	0,0%	100,0%	0,0%	100,0%	0,0%	100,0%	Source: RWI	
Average turnover tax	1063	37,0%	2,1%	37,0%	2,1%	37,0%	2,1%	Source: RWI	
Average pretax return on sales	4,00%	Quelle: IW Köln							

* at constant 2004 prices
 **assuming stable tax rates and an unchanged allocation formula of the vertical tax revenue equalization, at constant 2004 prices

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