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Unemployment and Inactivity Traps in the Czech Republic: Incentive Effects of Policies

Kamil Galuščák and Jan Pavel [*]

Abstract

We investigate to what extent high net replacement rates between non-work and work household income may distort work incentives. Using a microsimulation model, we find that net replacement rates are particularly high for households with a working partner and children. While net replacement rates decreased moderately between 1996 and 2006 as wages rose faster than social benefits, the incidence of unemployment traps remains high. In particular, about a third of all employed individuals have a low incentive to avoid short spells of unemployment with the unemployment benefits provided, while unemployment traps are also widespread among the unemployed. The incidence of unemployment traps increased further in 2007 despite a reform of benefits. In particular, housing benefit, which was overhauled to reflect housing costs, increases net replacement rates, distorting work incentives particularly among households with children. In addition, the rise in parental allowance may lock eligible individuals in non-employment, increasing the loss of human capital among non-working parents. This is particularly important for single parents, who face the highest specific unemployment rate, and also long unemployment spells among all household types. While the link between net replacement rates and labour market stocks and flows is not straightforward across household types, further research should focus on the labour market behaviour of particular household types.

JEL Codes: C15, H31, H53, J22.
Keywords: Labour supply, microsimulation models, net replacement rate, survey data, tax-benefit reform, unemployment trap.

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Nontechnical Summary

We investigate to what extent Czech taxes and benefits affect employment and unemployment and labour market flows through work incentives. We derive tax-benefit equations for 1996 and 2006 and, using these equations, we analyse for specific household types the net replacement rates between the net household income when a person stays at home and the net household income when the person works.

We find high net replacement rates in 1996 for households with children and a working partner, particularly for transitions between employment and short-term unemployment. In general, the replacement rates decreased moderately until 2006 primarily because wages rose faster than social benefits, but the incidence of high replacement rates remains high. In particular, about a third of all employed individuals have a low incentive to avoid short spells of unemployment with the unemployment benefits provided, while unemployment traps are also widespread among the unemployed.

The incidence of unemployment traps increased further in 2007 despite a reform of benefits. The comparison of budget constraints reveals that the net household income increased for some household types in 2007 relative to 2006. In particular, while social assistance is in general less generous, the reform gives preferential treatment to households with some work income by increasing the amount of social assistance benefits. This further increases the incidence of unemployment traps among less well-off households with a working partner. We also find that the housing benefit scheme, which was overhauled to reflect housing costs, increases net replacement rates, distorting work incentives, particularly among households with children. Finally, parental allowance was substantially increased in 2007. As this benefit is not means-tested, it raises the income of all households with at least one child younger than 4, but less well off households lose other means-tested benefits. The upsurge in household income may lock eligible individuals into non-employment, increasing the loss of human capital among non-working parents. This is particularly important for single parents, who face the highest specific unemployment rate, and also long unemployment spells among all household types.

Further changes to taxes and benefits are desirable in order to diminish the distortions of non-work income on work incentives and to ensure fiscal sustainability. Reform proposals should be ‘ex-ante’ examined with regard to how they may affect the labour market behaviour of particular population groups and also with regard to their budgetary impact. Further research should analyse particularly how housing benefit distorts work incentives in regions, as the benefit is linked to local costs of living.

1. Introduction

Labour market institutions, particularly welfare benefits, have been identified as contributing to unemployment dynamics in market economies. For example, Nickell, Nunziata and Ochel (2005) find that more than half of the rise in Western European unemployment from the 1960s to the first half of the 1990s is explained by changes in institutions, particularly welfare benefits, labour taxes, unions and employment protection. Blanchard and Wolfers (2000) argue on the other hand that the rise in unemployment is explained not by institutions themselves, but rather by interactions between institutions and shocks.

The importance of financial disincentives for employed and unemployed workers is analysed, for example, in Pedersen and Smith (2002). Based on a panel survey merged with administrative registers, they measure the financial incentives for Danish labour participants between employment and being on unemployment benefits, while they also account for fixed costs of work such as commuting and child care costs. The results show that in 1996, 6% of men and 13% of women had effective replacement rates higher than 100%, which they associate with substantial work disincentives (unemployment traps). While they also include several attitude measures into the regressions, the main conclusion is that financial measures have the strongest influence on the risk of being in an unemployment trap.

The evidence on the role of institutions in explaining unemployment paths is less straightforward for the transition economies of Central and Eastern Europe (CEE). Boeri and Terrell (2002) find that relatively generous non-employment benefits in CEE economies established a wage floor in the 1990s that increased the pace of restructuring by shedding less productive labour. Their evidence, however, does not say whether welfare benefits are responsible for high unemployment rates. Focusing on the role of welfare benefits, Jurajda and Münich (2002) explore the mechanism of the rise in long-term unemployment in the economies of CEE using the case of the Czech Republic. They provide evidence on the importance of observable worker characteristics in driving Czech long-term unemployment and find a significant effect of welfare generosity on families with more than three children and low-educated parents. On the other hand, Commander and Heitmueller (2007) find little evidence that institutions, primarily unemployment benefits, can explain differences in unemployment rates or flows in the Czech Republic, Hungary and Poland. They use OECD net replacement rates for specific family types and merge the rates with the individual level Labour Force Survey data, controlling for the number of children, marital status and the length of unemployment.[1]

The Czech labour market provides a unique opportunity to investigate the effect of welfare benefits on labour market dynamics. While the unemployment rate was extraordinarily low in international comparison in the 1990s, it increased substantially at the end of the last decade and remained high until 2005. The tax-benefit system may be blamed for contributing to the rise in unemployment, as it was overhauled in 1996. In particular, providing relatively high welfare income increases the reservation wages of the unemployed, attenuating job search incentives. Furthermore, if welfare benefits affect labour market dynamics, decreasing the package of welfare benefits would alleviate high unemployment. Tax-benefit reform is also recommended by

[1] The OECD net replacement rates are calculated using tax-benefit equations for particular wage levels and types of households in order to investigate the prevalence of high net replacement rates, indicating the presence of unemployment traps (OECD, 2004; OECD, 2007; or Carone et al., 2004).

international institutions with the aim of reducing persistent fiscal deficits and ensuring fiscal sustainability (OECD, 2006).

While the Czech tax system is comprehensively described, for example, in Bronchi and Burns (2000), there is only scant evidence on the interactions between taxes and benefits. Průša (2001) describes the social security system and displays distributions of households receiving particular benefits. His evidence is based on data from the Ministry of Labour. Using income surveys (Mikrocenzus), Večerník (2002, 2006) analyses the joint effect of taxes and benefits on the distribution of household income. Based on household budget survey data, Schneider and Jelínek (2001) and Schneider (2004) examine in more detail the effects of the Czech social security system on household income distribution. Although some of these studies rely on individual-level data, their results concern aggregate measures. Jurajda and Zubricky (2005) calculate net replacement rates and marginal effective tax rates for a wide range of family types and earnings levels and assess how they affect work incentives. They also compare the tax-benefit system with recent government proposals for reform.

In this paper we ask to what extent Czech taxes and benefits affect employment and unemployment and labour market flows through work incentives. We derive tax-benefit equations for 1996 and 2006 and, using these equations, we analyse for specific household types' net replacement rates between the net household income when a person stays at home and the net household income when the person works. We compare the net replacement rates for specific household types with the evidence on labour market flows. We also investigate which instruments particularly affect net household income, increasing net replacement rates. We match tax-benefit equations with the individual-level income survey Mikrocenzus 2002, creating a microsimulation model, and analyse the incidence of high net replacement rates and the extent of unemployment and inactivity traps in 2006 stemming from the combined effect of taxes and benefits.[2] We analyse the recent changes to benefits introduced in 2007 and their effect on work incentives and also assess the budgetary impact of the reform. In the paper we concentrate on the pure effects of the combination of taxes and benefits on labour market behaviour, and neglect, for example, redistributive effects or the incidence of poverty rates.

The paper is organised as follows. Section 2 outlines some stylised facts on the Czech labour market based on information from the Czech Labour Force Survey (LFS). Section 3 then describes the system of taxes and benefits in the Czech Republic, using 2006 as the reference year, while we also describe the changes introduced in 2007. We focus on those taxes and benefits which we use in the microsimulations or which are available in the dataset. Section 4 outlines the available dataset, while Section 5 describes the model. We particularly identify the variables required in order to implement the simulations. Section 5 also discusses data ageing and describes the model and other modelling issues, such as coverage, the informal economy and the non-take-up of benefits. In Section 6 we discuss the results, while Section 7 concludes. Additional tables and figures are provided in the Appendix.

[2] In a similar way, Immervoll (2002) examines the distribution of effective tax rates in EU member states using the EUROMOD model, a microsimulation model for the EU15 countries.

2. Stylised Facts

In this section[3] we present a few stylised facts on the Czech labour market based on information from the Czech Labour Force Survey (LFS).[4] The previous literature provides inconclusive results on the demographic factors of labour market flows. For example, Sorm and Terrell (2000) explore demographic factors of labour market flows in 1994–1998 using the Czech LFS. They find that married people are more likely to be employed than single people, while age and education are also highly significant determinants of the labour market flows. They focus, however, on individual demographic characteristics such as gender, marital status, education and age, neglecting household composition. In what follows, we therefore focus on the presence of children and a partner in the household, including information on the partner's labour supply, in explaining patterns of labour market stocks and flows.

The unemployment rate was very low in the Czech Republic until the mid-1990s, but has increased dramatically since then. While the average rate of unemployment was 4.0% in 1995, it increased to as much as 7.3% in 2002 (the last column in Table 1).[5] The upsurge in the unemployment rate after the mid-1990s was due to a recession in that period and was associated with considerable changes in labour market flows. In particular, the inflow rate into unemployment almost doubled in the second half of the 1990s, while the outflow rate from unemployment decreased in that period, increasing the incidence of long-term unemployment (Galuščák and Münich, 2007).

Table 1 and Figure 1 show specific unemployment rates for selected household types. Six household types are defined, namely, without or with children, and also without a partner or with a partner (a second adult household member), either non-working or working. The results suggest that the unemployment rate increased for all household types at the end of the 1990s, and particularly by as much as 6 percentage points between 1995 and 2002 for single adults living with children. For that household type, the unemployment rate is the highest, reaching 13.7% in 2002. On the other hand, the unemployment rate is the lowest for persons from households with a working partner, either with or without children (4.6% and 4.1% respectively in 2002); it increased by only about 2 percentage points between 1995 and 2002.

[3] We thank Martin Guzi from CERGE-EI for calculating the aggregate stocks and flows which we use in this section.

[4] The unemployment analysed in this section complies with the ILO definition, i.e. an unemployed individual does not have a job, is actively seeking a job, and is ready to start working within two weeks. In the simulations presented in Section 6, the unemployed are either recipients of unemployment benefits (labelled as short-term unemployed, as unemployment benefits expire after 6 months) or not (long-term unemployed). In both cases, registration with a district labour office is assumed. For the long-term unemployed, registration and active job search is required in order to be eligible for social assistance benefits. The unemployment used in the simulations thus complies with the registry unemployment. In 2006, the ILO unemployment rate was 7.1%, while the registry unemployment rate was 8.6%. Both unemployment rates follow the same trends. In addition, the registry unemployment may be considered "voluntary" due to rather poor monitoring of job search activity by labour offices. While the net replacement rates analysed in Section 6 are indicators of work decisions made by individuals, the unemployment rates and flows investigated in this section describe involuntary unemployment.

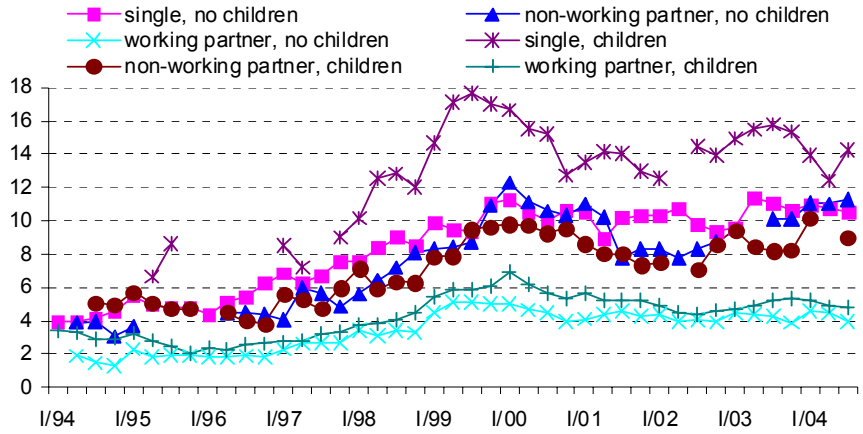
[5] In this section we compare stocks and flows in 1995 and 2002 in order to capture the major changes on the labour market observed at the end of the 1990s. The available dataset ends in the second quarter of 2004.

Table 1: Unemployment Rate by Household Types (%, p.p.)

	Single, no children	Non-working partner, no children	Working partner, no children	Single, children	Non-working partner, children	Working partner, children	Total
1995	5.0	3.7	2.0	7.6	5.1	2.7	4.0
2002	10.1	8.3	4.1	13.7	7.7	4.6	7.3
2002–1995	5.1	4.6	2.1	6.0	2.6	2.0	3.3

Source: Labour Force Survey.

Figure 1: Unemployment Rate by Household Types (%)



Source: Labour Force Survey.

Table 2 displays transition rates from unemployment into employment and out of the labour force. The overall flows shown in the last column indicate that for an unemployed person, the risk of being unemployed a year later increased substantially between 1995 and 2002, while the probability of the job seeker finding a job decreased by almost the same amount. The transition rates from unemployment exhibit the same pattern for all household types as for the overall sample. The risk of being unemployed is the highest for single adults with children (0.91 in 2002), while it is the lowest for individuals with a working partner (0.80 with and 0.85 without children in 2002). On the other hand, the probability of an unemployed single adult individual living with children finding a job was the lowest among all the household types (0.07 in 2002), while it was the highest in 2002 for unemployed persons from households with a working partner (0.17 with children, 0.11 without children).

The results suggest that household composition, and particularly the presence of another adult person in the household and her or his labour supply, significantly affects the unemployment rate and the risk of being unemployed. In particular, the unemployment rate as well as the risk for unemployed persons of being unemployed a year later are the highest for single adults living with children. On the other hand, the unemployment rate and the probability of remaining unemployed are the lowest for households where there is a working partner. This suggests that labour supply is often a joint decision within couples. On the other hand, less labour market experience and low attachment to the labour market may to some extent explain the high unemployment rate of single parents. These are important factors to incorporate into the analysis of the link between net replacement rates and labour market flows, as the unemployment analysed in this section is involuntary.

Table 2: Labour Market Flows from Unemployment

	Single, no children	Non-working partner, no children	Working partner, no children	Single, children	Non-working partner, children	Working partner, children	Total
U->U							
1995	0.74	0.69	0.70	0.80	0.76	0.65	0.70
2002	0.89	0.89	0.85	0.91	0.89	0.80	0.85
2002–1995	0.15	0.19	0.15	0.11	0.13	0.16	0.15
U->E							
1995	0.22	0.20	0.24	0.17	0.19	0.29	0.24
2002	0.08	0.08	0.11	0.07	0.09	0.17	0.12
2002–1995	-0.14	-0.11	-0.13	-0.10	-0.10	-0.13	-0.12
U->O							
1995	0.04	0.11	0.06	0.07	0.06	0.06	0.06
2002	0.04	0.03	0.04	0.02	0.02	0.03	0.03
2002–1995	-0.01	-0.08	-0.02	-0.05	-0.04	-0.03	-0.03

Source: Labour Force Survey.
Note: Transitions from unemployment (U) into employment (E) and out of the labour force (O).

3. Taxes and Benefits

The Czech tax-benefit system consists of taxes and social and health insurance contributions (see subsection 3.1) and social benefits (see subsection 3.2).[6] The main reference year is 2006, while we also briefly describe the system in the years before 2006. The main changes to taxes and benefits introduced in 2007 are described in subsection 3.3.

Taxes and benefits are in general administered at the central level, with the exception of social assistance benefits, which are provided at the municipal level. Table A8 (in the Appendix) shows the amounts of income, taxes and benefits in 2006.[7]

3.1 Taxes and Social Contributions

The Czech taxation system consists of income taxes, including social and health contributions, consumption taxes and property taxes. The income taxes include personal income tax and corporate income tax. Social and health insurance contributions, which may be viewed as a type of income tax, include contributions for social insurance and the state employment policy, and public health insurance contributions. The consumption taxes consist of value added tax (VAT), excise taxes and customs. Finally, property taxes include road tax, real estate tax, inheritance tax, gift tax and real estate transfer tax. We focus our description on personal income tax and social and health insurance contributions, which we use in the microsimulations.

[6] We focus our description on the instruments which we use in the model.

[7] All pecuniary values are in Czech crowns (CZK). The average exchange rate was 28.3 CZK/EUR in 2006.

3.1.1 Personal Income Tax

Personal income tax[8] is paid by a person who has residence or lives in the Czech Republic for at least 183 days in a year. The tax base for personal income tax is divided into five groups: 1) wages and salaries; 2) income from business activities, including income from agriculture, forestry and fishery, and income from copyright; 3) capital income, including dividends and interest; revenues from expiration of contracts of complementary pension insurance with state support; income from life insurance (minus premiums paid); income from options and forwards; honoraria; 4) rental income; and 5) other income. Other income includes income from occasional activities exceeding 20,000 CZK per year. Some types of income are taxed at a separate tax rate (described below).

The tax base does not include sickness benefits, state social support, social assistance, unemployment benefit, the amount of pensions lower than 162,000 CZK per year, stipends, tax bonuses, loans and drafts, income from property insurance, benefactions, alimony, travel expenses paid by employers, meals or beverages provided by employers, social insurance contributions paid by employers, winnings in state lotteries, income from appreciation of currency, etc., and income taxed according to a separate tax scheme. Furthermore, the tax base does not include income from selling one's own house or flat if a person has lived there for at least two years before the transfer or if the time between buying and selling the house or flat was more than five years.

Entrepreneurs may account for losses in order to reduce their profit, but only in the case of the same activity. For example, a loss made on main entrepreneurial activity may not be deducted from rental income. For entrepreneurs, taxable income is also net of costs. Instead of deducting the amount of actual costs, a taxpayer may replace it by 80% (50% until 2005) of revenues from agriculture, forestry and fishery, 60% of revenue from technical enterprise (25% until 2005), 50% of revenue from non-technical enterprise (25% until 2005), 40% of revenues of copyright (30% until 2005) or 30% of rental revenues (20% until 2005). If the entrepreneur's spouse or other household members (except children in compulsory schooling) help the entrepreneur with his or her business, the taxable income from this partnership is divided among the household members.

There is a minimum tax base for entrepreneurs who have gross income of more than 15,000 CZK in a year. The minimum tax base is not compulsory for entrepreneurs paying lump-sum income tax[9], entrepreneurs who started their activity in the current or previous year or ended business activity this year, entrepreneurs receiving parental allowance from state social support, old-age pensions, invalidity pensions, part invalidity pension for at least one month in the year, benefit for treatment of a family member, and students under 26.

[8] Income tax is paid by corporations and individuals. Since the microsimulation model is household-oriented, the following paragraphs are devoted to personal income tax.

[9] Lump-sum tax may be applied in the case of specific entrepreneurial activities. It is paid in advance by entrepreneurs with no employees with a yearly taxable income of less than 1,000,000 CZK in the last three years, and is designed to help them reduce costs for book-keeping and accounting. The minimum lump-sum tax is 600 CZK per year, and the amount depends on forecasted income as agreed with the tax authority. Tax rates are the same as in the case of income taxation.

Taxpayers may deduct the following exemptions from their tax base:

- *Social and health insurance contributions paid* (see subsection 3.1.2).
- *Gifts to charitable organisations* may be deducted if the amount of the gift is at least 2% of the tax base or 1,000 CZK, and if the charity is recognised by the state. The taxpayer may deduct at most 10% of the tax base.
- *Interest* used for mortgage repayments.
- *Complementary pension insurance with state support*. The total deductible amount is the sum of all payments to complementary pension funds exceeding 6,000 CZK. The amount deducted may not exceed 12,000 CZK.
- *Private life insurance*. The maximum total deductible amount is 12,000 CZK. The taxpayer must be insured for at least five years, and must be under 60. The minimum amount of insurance premium is 40,000 CZK if the duration of insurance is between 5 and 15 years, and 70,000 CZK if the duration is more than 15 years.
- *Labour union fees* paid to labour unions. The maximum amount is either 1.5% of the taxable income or 3,000 CZK.[10]

Married couples with at least one child all living in the same household may choose to fill out a joint tax return. They may do so if they are eligible at least on the last day of the year. The tax base of the couple is the sum of their personal tax bases. The base, net of the exemptions listed above, is split evenly between the two taxpayers, and the tax is determined separately for each. Joint taxation may not be applied if either person is bound by the minimum tax base or pays lump-sum personal income tax. Joint taxation was introduced in 2006, while couples were allowed to fill in a joint income tax return for 2005.

The income tax is paid from the tax base minus social and health insurance contributions and other tax deductible items. The calculation is based on the following scheme:[11]

Tax base	Tax
0–121,200 CZK	12%
121,200–218,400 CZK	14,544 CZK + 19% on amount over 121,200 CZK
218,400–331,200 CZK	33,012 CZK + 25% on amount over 218,400 CZK
331,200 CZK and over	61,212 CZK + 32% on amount over 331,200 CZK

Taxpayers may deduct the following amounts from their income tax:

- *Personal allowance* for each taxpayer (7,200 CZK). If the taxpayer was collecting an old-age pension throughout the year, he or she may not apply this exemption if his/her yearly pension was higher than 38,040 CZK. If the taxpayer started to collect an old-age pension

[10] In addition to these exemptions, the following items could be exempted prior to 2006: *personal exemption* for each taxpayer; *spouse exemption* if a spouse lived with the taxpayer in the same household and did not have a yearly gross income higher than 38,040 CZK; *disability exemption* if receiving full or part-invalidity pension; and *student exemption* for students.

[11] The income tax burden was eased for low-income groups as of January 2006. Before 2006, the first tax bracket was 0–109,200 CZK, while the first two marginal tax rates were 15% and 20%.

later than January, he or she may deduct 7,200 CZK independently of the amount of the pension.

- *Spouse allowance* (4,200 CZK) applies if a spouse lives with the taxpayer in the same household and does not have a yearly income higher than 38,040 CZK. If the spouse is disabled, the allowance rises to 8,400 CZK. The income of the spouse tested for this purpose is generally in gross terms. It does not include disability pension, state social support, social care benefits, state support for complementary pension insurance, state support for savings for building purposes, or stipends.[12]
- *Disability allowance* (1,500 CZK) may be deducted if the taxpayer receives a part-invalidity pension. If the taxpayer receives a full invalidity pension, he or she may deduct 3,000 CZK. If the taxpayer is especially heavily disabled, he or she may deduct 9,600 CZK.
- *Student allowance* (2,400 CZK) may be deducted if the taxpayer is less than 26 and is an undergraduate student, or if he/she is a graduate student and is less than 28.
- *Allowance per child.* Families with children whose taxable income is at least six times the minimum wage may deduct from their income tax a tax allowance per child.[13] The child or children must live in the same household as the parents, or may alternatively be temporarily placed in institutions for the purposes of study or preparation for future work. The amount of the allowance is 6,000 CZK per child, up to a maximum of five children. If the tax duty is lower than the tax allowance, the difference is called a tax bonus and is paid to the taxpayer, while the taxpayer's tax duty is then 0 CZK. If the tax duty is higher than the tax allowance, the taxpayer pays the difference between the two.

Except for personal allowance, the taxpayer deducts 1/12 of the amount for each month during which the conditions listed above are met. The allowance per child and tax bonus may be deducted as of 2005, replacing an exemption amount per child. The other allowances listed above were introduced in 2006, replacing tax deductible items.

A dependent child for the purposes of tax allowances or bonuses is defined as one's own child, an adopted child, a child in foster care, children of one's spouse and grandchildren if they are younger than 18, or younger than 26 if not receiving full invalidity pension and currently preparing for future employment. A child who cannot prepare for future employment because of injury, long-term illness or disability that prevents work is also considered dependent. If a parent, grandparent or spouse of a parent does not have his or her own taxable income, so that a tax bonus cannot be paid to him or her, then the bonus is paid to another person who lives in the same household with the child and has taxable income.

The minimum income which is subject to income tax is 15,000 CZK. The minimum tax amount which is paid is 200 CZK.

The following income is not included in the regular tax base but taxed under separate tax schemes.

[12] Spouse allowance may be applied for one's own spouse only. On the other hand, the definition of a family for the purposes of state social support and social assistance includes spouses or partners.

[13] A person is eligible for a tax allowance if at least 90% of his or her taxable income is earned in the Czech Republic.

10% tax rate
- Income of authors publishing in newspapers or other media if this income is less than 3,000 CZK per month.

15% tax rate
- Dividends from bonds and drafts.
- Interest on current personal accounts.
- Income from complementary pension insurance with state support (state support is not taxed) and income from life insurance (except income when the contract is terminated; in that case, the income is taxed using the regular tax scheme).
- Income from occasional work less than 5,000 CZK per month.
- Income from the liquidation of a company.

20% tax rate
- Winnings in lotteries (with the exception of state lotteries).

3.1.2 Social and Health Insurance Contributions

Social and health insurance contributions consist of social insurance and state employment policy contributions (further divided into pension insurance, contributions for the state employment policy[14] and sickness insurance), and health insurance contributions. All the contributions are summarised in the following table.

	Employee	Employer (per employee)	Entrepreneur
Social Insurance	8.0%	26.0%	34.0%
of which: Pension	6.5%	21.5%	28.0%
Employment	0.4%	1.2%	1.6%
Sickness	1.1%	3.3%	4.4%*
Health Insurance	4.5%	9.0%	13.5%
Total	12.5%	35.0%	47.5%

Note: * paid on a voluntary basis.

Social insurance and state employment policy contributions are paid by employers, employees and individual entrepreneurs. Entrepreneurs pay sickness insurance voluntarily and from main business activity only. Pension insurance may be paid voluntarily by students, entrepreneurs from abroad and persons registered with labour offices but not receiving unemployment benefits. In these cases, registration is required.

The contributory base is the gross wage plus any bonuses, but not income which is not subject to income taxation, occasional income, income taxed under a separate tax scheme, recompensation, etc. For entrepreneurs, the monthly contribution base is at least 50% of the monthly average gross income from the previous year, but not more than 40,500 CZK per month.

Contributions for public health insurance are paid by employers, employees, entrepreneurs and the state. For employee and employer, the contributory base is the gross wage and bonuses, except

[14] Within the state employment policy, unemployment benefits and active labour programmes are provided.

the income that is not subject to income tax. The contributory base also does not include payments made by employers for complementary pension insurance with state support. For each day when a worker is absent from work or is on unpaid leave, the contributory base is the average daily minimum wage in the economy. The minimum contributory base for employees equals the minimum wage.

The contributory base is 4,708 CZK for persons for whom public health insurance is paid by the state (e.g. students, pensioners and children). For entrepreneurs, the base is 50% of the monthly average gross income in the previous year, but not more than 40,500 CZK per month.

3.1.3 Consumption and Property Taxes

Value added tax is levied on goods, real estate transfers, services provided in the Czech Republic and goods imported from outside the European Union. The tax is also levied on vehicles imported from EU Member States and goods from EU Member States which are subject to excise taxes in the Czech Republic. The standard tax rate is 19%, with a preferential rate of 5% applied to groceries, non-alcoholic beverages, books, etc. Other consumption taxes include *excise taxes* (levied on mineral oil, alcohol, beer, etc.) and *customs*.

Property taxes include *road tax* (paid for vehicles), *real estate tax* (levied on land and buildings), *inheritance tax* (paid by inheritors), *gift tax* (paid by benefactors) and *real estate transfer tax* (paid by those selling real estate).

3.2 Social Benefits

Social benefits include social insurance benefits, state social support and social assistance. Social insurance benefits are contributory and insurance-based, while state social support and social assistance benefit are non-contributory and financed via taxes. The benefits may be broken down into the following categories:

- Social insurance benefits
  - Unemployment benefits
  - Sickness benefits
  - Pensions
- State social support
  - Means-tested: child benefit, social supplement, housing benefit
  - Non-means-tested: parental allowance, foster care benefit, funeral grant, birth grant
- Social assistance
  - Social assistance benefits
  - Social care benefits.

The system is organised around the *minimum living standard* (MLS), which is calculated at the personal and household level, and is intended to reflect the cost of living. Most types of benefits are then defined as given percentages of the overall family level MLS. The personal part of the MLS is defined per each person in the household and depends on the age of the person. On the other hand, the household part of the MLS depends on how many people live in the household, and reflects living expenses. The following table summarises the monthly amounts of the MLS in 2006.

Age	Personal MLS (CZK)	Number of persons	Household MLS (CZK)
0–6	1,750	1	2,020
6–10	1,950	2	2,630
10–15	2,310	3 or 4	3,260
15–26	2,530	5 and over	3,660
Adults	2,400		

3.2.1 Social Insurance

Benefits based on social insurance include unemployment benefit, sickness benefit and pensions. Unemployment benefit and sickness benefit are not taxable, while pensions above 162,000 CZK per year are subject to income tax.

Unemployment Benefits

Unemployment benefits are available to individuals actively searching for a job who were employed for at least 12 months in the previous three years and who are not receiving an old-age pension, full invalidity pension or sickness benefits. The employment record required to be eligible for unemployment benefits includes specific periods such as military or civil service, custody of a child under three years, etc. A person is entitled to unemployment benefit if he or she was employed for at least six months after the end of the previous unemployment spell. An unemployed person registered with a labour office may have monthly income from work up to half of the statutory minimum wage per month.[15]

The benefit is calculated from income net of social insurance contributions and income tax in the previous job, or the net profit from previous entrepreneurial activity. The amount of the benefit is 50% of the previous income in the first three months and 45% in the following three months of the unemployment spell, but not more than 2.5 times the MLS of an adult one-member household (i.e. at most 11,050 CZK per month in 2006).[16] The amount of unemployment benefit is increased for persons in retraining organised by a district labour office. Furthermore, the benefit is paid for longer than six months for persons older than 50.

Sickness Benefits

Disablement benefit is paid for all days that a person is disabled, but for not more than one year, or at most two years if the person is disabled due to work injury. The amount of the disablement benefit is relatively low at the beginning, but increases after the first three days of illness and again after two weeks. The replacement rate between the benefit and the previous gross wage is low, particularly for persons with medium and high earnings.

Maternity allowance is available to women who give birth to one or more children and who have paid health insurance for at least 270 days in the previous two years. Eligible entrepreneurs must have paid health insurance for at least 180 days in the last year before the birth. The woman must not have a paid job and may not run her own business. The allowance is paid for at most 28 weeks, or 37 weeks to a woman who has had more than one child or is single or a widow or does not live with a partner.

[15] This condition was introduced in October 2004. The average monthly minimum wage was 7,763 CZK in 2006.

[16] The maximum amount was 1.5 times the MLS before October 1999.

Other benefits include *benefit for treatment of a family member* and *maternity and pregnancy benefit*. The former benefit is available to a person caring for an ill child provided that the child lives in the same household as the benefit recipient. The latter benefit is paid to a woman working in a less well-paid position because of her pregnancy or maternity with the aim of compensating her for the lost income.

Pensions

Five types of pensions are provided in the Czech Republic: old-age pensions, full invalidity pensions, part-invalidity pensions, widow or widower pensions, and orphan pensions. Pensions are not simulated, as they are determined by the average income in the years prior to retirement.

Until 1995, the statutory old-age pension age was 60 for men and 57 for women with no children, 56 for women who had raised one child, 55 for women with two children, 54 for women with three or four children, and 53 for women with five or more children. The pension age has been increasing by two months for men and four months for women each year since 1996, and this will continue until the end of 2012. In 2006, the pension age was 61 years and 8 months for men, 60 years and 4 months for childless women, 59 years and 4 months for women with one child, etc.

A person may decide to work longer than until the age at which he or she is eligible for an old-age pension. The pension is then increased to account for the period of later retirement. A person receiving old-age pension may also have widow or widower pension, state social support and social assistance, but not unemployment benefit, sickness benefit, full invalidity pension or part-invalidity pension. A person may also claim a pension three years before he or she reaches the statutory pension age. When drawing a full (part) invalidity pension, the person may claim a pension five (two) years before the statutory pension age. The amount of the pension is decreased accordingly.

3.2.2 State Social Support

All benefits provided through state social support are non-taxable and may be divided between means-tested and non-means-tested benefits. Net household income for the purposes of income tests for state social support is defined as income net of income tax and contributions, stipends, housing supplements from employers, bonuses, alimony, sickness benefits, unemployment benefits, income from abroad and pensions. The tax bonus per child is not included. Net profit from entrepreneurial activity is included if it is greater than zero. On the other hand, net household income does not include any debts.

A family is defined for the purposes of state social support (except housing benefit, for which all persons with the same domicile address are considered) as a person, dependent children, parents of dependent children, spouses or partners, and dependent children of dependent children (if they are not married, widowed or divorced) if they live with the person in the same household and meet the costs of living together. If a dependent child is under 18, the condition of meeting the costs of living together is not required. If a dependent child is over 18 and under 26 and is training for future employment, the condition of meeting the costs together is not required if the child has the same domicile address as his or her parents. A spouse is considered to be a household member.

A dependent child for the purposes of state social support is classified as a child that has not yet finished compulsory schooling and until 26 if he or she is training for future employment and lives in the same household as his or her parents, or, alternatively, if the child cannot train for future employment because of injury or long-term illness or if the child is not able to work. A child is also dependent between the end of compulsory schooling and 18 if registered at a district labour office and not receiving unemployment benefit. A child receiving a full invalidity pension is not considered a dependent child. For the purposes of state social support, the condition of living in the same household is not tested if the child is under 18 and training for future employment, or is between 18 and 26 and shares the same domicile address as his or her parents.

A dependent child may temporarily live outside the household for the purposes of study or training for future work. Similarly, a spouse may temporarily live out of the household because of work duties, for example.[17]

Means-tested Benefits

Child Benefit

Child benefit is targeted at families with children if their net household income is less than $3 \times MLS$ of the family. The net household income which is tested for the purposes of child benefit is the net household income (defined above) plus foster care benefit and parental allowance. The relevant period for the income test is the calendar year prior to the year when the income is tested.

The benefit is provided per each dependent child in the following amount:

$$ChildBenefit = A \times Child'sMLS$$

where
A = 0.32 if the net household income is lower than 1.1 x MLS,
A = 0.28 if the net household income is between 1.1 x MLS and 1.8 x MLS,
A = 0.14 if the net household income is between 1.8 x MLS and 3 x MLS.

Social Supplement

A social supplement is available to families with at least one dependent child if their net income was less than $1.6 \times MLS$ in the previous quarter. Net household income for the purposes of the income test is the net household income relevant for the child benefit test plus child benefit. The relevant time span for the income test is the previous calendar quarter.

The amount of the benefit is determined as

$$SocialBenefit = \sum Children'sMLS - \frac{\sum Children'sMLS \times \max\{NetIncome, TotalMLS\}}{TotalMLS \times A}$$

where A = 1.6.

[17] Among households eligible for at least one means-tested benefit in 2002, about 2% of household members were only temporarily out of the household. The analysis is based on the Mikrocenzus 2002 sample and the eligibility rules valid in 2002.

The children's part of the MLS may be increased by multiplying the allowance by 2.7 if the child is disabled, 2.4 if the child is partially disabled, 1.2 if the child is persistently ill and 1.1 if children are born within three years. The household part of the MLS can be multiplied by 1.4 if both or just one parent is disabled, 1.1 if one of the parents is disabled, and by 1.05 for a single parent (who does not need to be disabled). If several conditions are fulfilled, the social supplement is then the sum of the basic allowance and the sum of allowances calculated as allowances with particular conditions, minus the basic allowance.

Housing Benefit

Housing benefit is available to families who own or rent a flat and whose net income was below 1.6 × MLS in the previous quarter. A household or a family is defined as all persons residing at the same domicile address. The household may thus contain, for example, non-relative persons such as tenants. Housing benefit is received by the household head. Due to common practice, however, we assume for the purposes of the microsimulations that a household is defined in the same way as for state social support and for social assistance.

Net household income for the purposes of the income test for housing benefit is the same as for the social supplement, i.e. the net household income relevant for the child benefit income test plus child benefit. The relevant period for the income test is also the same as for the social supplement, i.e. the calendar quarter before the income is tested.

The amount is calculated using the following formula:

$$Hous.Benefit = Household'sMLS - \frac{Household'sMLS \times \max\{NetIncome, TotalMLS\}}{TotalMLS \times 1.6}$$

Non-tested Benefits

Parental Allowance

Parental allowance is available to a parent who cares in person and on a daily basis for a child up to four years old, or up to seven years old when the child is disabled. If the person receives maternity benefit or sickness benefit associated with childbearing, the amount of these benefits is subtracted from the parental allowance. The amount of the parental allowance is $1.54 \times MLS$ of an adult person ($1.1 \times MLS$ before May 2004), i.e. 3,696 CZK in 2006.

Foster Care Benefit

Foster care benefit is available to foster parents caring for a child, except for periods spent by the child in childcare or similar institutions. The amount of the benefit for a child is $1.2\times$ the children's part of the MLS or $2.0\times$ the children's part of the MLS if the child is dependent. The benefit is increased if the child is persistently ill or disabled.

The benefit may be increased by a foster parent allowance which equals $0.5 \times MLS$ of the foster parent, provided that the child lives in the same household. Furthermore, there is a one-off bonus of $4 \times MLS$ of the foster parent when the parent adopts a child.

Funeral Grant

A one-off funeral grant of 5,000 CZK is available to a person arranging a funeral.

Birth Grant

A birth grant is available to any mother who gives birth to one or more children. The amount is $10 \times$ MLS of a child younger than six (17,500 CZK). If two or more children are born, the amount is $15 \times$ MLS of a child younger than six per each child born (52,500 CZK for twins, 78,750 for triplets, etc.).[18]

3.2.3 Social Assistance

Social assistance includes social assistance benefits and social care benefits. While social assistance benefits are means-tested, social care benefits are non-tested.

Social Assistance Benefits

Social assistance benefit serves as a last resort. When the net household income, including any state social support benefits, is less than the family-level MLS, the household is entitled to social assistance benefit calculated as

$$SocialAss.Benefit = MLS - NetIncome$$

In other words, the social necessity benefit tops up the net household income to the household level MLS. Net household income is defined as the average monthly income, net of income tax and contributions, or the net profit of entrepreneurs plus unemployment benefit, sickness benefit, pensions and state social support. Net profit from entrepreneurial activity is included at the level of at least the MLS of a one-person household (including the personal and household part of the MLS). The tax bonus is not considered.

A family and a dependent child are defined in the same way as for state social support, with the exception of housing benefit. The condition that the household must meet the costs of living together is always tested here. A temporary period spent outside the household for the purposes of work or training for future employment is allowed.

Social assistance benefit may be increased to account for the cost of housing or costs related to health, etc. Conversely, it can be lowered if the person is not actively searching for a job or active in improving his or her own financial situation, etc. Furthermore, the amount of the benefit is increased by 600 CZK if the person is disabled.

Social Care Benefits

Social care benefits are one-off specific allowances usually paid to disabled people for specific purposes such as homecare services, spa services, increased cost of diabetic food, wheelchair purchase, etc.

[18] The amounts are valid as of April 2006. Before April 2006, the amounts were substantially lower. In particular, the amount was 5 x MLS of a child younger than six (8,750 CZK). For twins, the amount was 6 x MLS of a child younger than six per each child born (21,000 CZK for twins). For three or more children, the amount was 10 x MLS of a child younger than six per each child born (52,500 CZK for triplets).

3.3 Taxes and Benefits in 2007

Taxes and social and health contributions were not changed in 2007. On the other hand, major changes to some benefits were implemented. The main pillar of the reform was the changeover to a one-component construction of the minimum living standard level and the introduction of an existence minimum. Consequently, the income test rules were adjusted for child benefit and the social supplement. Major changes to parental allowance, housing benefit and social assistance were introduced.

The concept of the minimum living standard was changed to reflect the number of persons in the household only. In particular, household level MLS amounts are no longer defined, while the personal amounts account for the second and further adults in the household at a reduced rate. The following table summarises the monthly amounts of the MLS in 2007:

Category	MLS (CZK)
First adult	2,880
Second and further adults	2,600
Child (age 0–6)	1,600
Child (age 6–15)	1,960
Child (age 15–26)	2,250
One-member household	3,126

For the first adult person in the household, the MLS is 2,880 CZK. The amount for the second and further adults is reduced to 2,600 CZK. The amount for children depends on their age. The last row in the table shows the MLS for households with one member (3,126 CZK).

In addition to the new MLS concept, a so-called "existence minimum" of 2,020 CZK a month was introduced as the minimum amount necessary to survive. It replaces the MLS in the formula for social assistance benefits if an unemployed person does not cooperate to improve his situation (refuses job offers etc.). The existence minimum is not applied to dependent children or persons receiving full invalidity or old-age pension or older than 65.

Unemployment Benefit

The maximum amount of unemployment benefit was increased to 58% of the economy-wide average wage in the first three quarters of the preceding year, i.e. 11,722 CZK, while it was 11,050 CK in 2006. The minimum amount is 12% of the average wage in the first three quarters of the preceding year.

Child Benefit

The coefficients in the formula for child benefit were adjusted to reflect the changes in the MLS. Child benefit is provided in the following amounts:

$$ChildBenefit = A \times Child'sMLS$$

where
A = 0.36 if the net household income is lower than 1.5 x MLS,
A = 0.31 if the net household income is between 1.5 x MLS and 2.4 x MLS,
A = 0.16 if the net household income is between 2.4 x MLS and 4 x MLS.

Social Supplement

Following the MLS reform, parameter A in the formula for social supplement has increased to 2.2.

Housing Benefit

The construction of housing benefit was changed to account for housing costs. The household is entitled to this benefit if its housing costs are higher than 30% (35% in Prague) of the net household income, while the housing costs are at most normative costs. The normative costs are declared by the Ministry of Labour and Social Affairs, reflecting the number of persons in the household, the number of inhabitants in the municipality, and the type of housing (rental and other). The amount of the housing benefit is equal to the difference between the normative costs and 30% (35% in Prague) of the net household income.

If the net household income is lower than the MLS, the household is entitled to the benefit if its housing costs are higher than 30% (35% in Prague) of the MLS. The amount of the benefit is 30% (35% in Prague) of the MLS.

Parental Allowance

The amount of parental allowance has increased substantially to 40% of the average wage in the non-profit sector two years before. In 2007 it is equal to 7,582 CZK, while it was 3,696 CZK in 2006.

Birth Grant

As of January 2007, the birth grant is provided in the amount of $11.1 \times$ MLS of a child younger than six (17,760 CZK). If two or more children are born, the amount is $16.6 \times$ MLS of a child younger than six per each child born (53,120 CZK for twins, 79,680 CZK for triplets, 106,240 CZK for quadruplets, etc.).

Social Assistance

The net household income relevant for the income test reflects 70% of work and other income and 80% of unemployment benefits and sickness benefits. Within social assistance, a new benefit (*housing supplement*) is provided. It is targeted at households whose net household income, including housing benefit and social assistance benefit and after paying housing costs (at most the normative costs), is still lower than the MLS. Their income is then topped up to the MLS on the assumption that the individual actively seeks a job. Due to common practice, we assume that all individuals eligible for social assistance benefits meet the requirement of active job search.

4. Data

The dataset that we used for the microsimulations is Mikrocenzus 2002. It was collected in March 2003 and contains detailed demographic, socio-economic and income data on households in 2002. However, using this dataset entails the problem of data ageing between 2002 and the main reference year 2006. We also describe the Average Gross Earnings Information System, which we use for the purposes of data ageing (see subsection 5.2).

Mikrocenzus 2002

The purpose of the survey was to obtain representative data on the income and socio-demographic characteristics of households and their individual members. The survey was targeted at households, as they represent the main economic unit.

The data were collected in March 2003, referring to 2002. During the survey, 11,040 flats were contacted, i.e. about 0.25% of all permanently occupied flats in the Czech Republic (0.5% in Prague). The response rate was 72%, resulting in a total sample of 7,678 flats. The survey contains all persons, including tenants and foreigners, regularly living in the selected flats for at least one month during 2002 (although students and workers belonging to the flat but staying elsewhere are all included). The dataset contains information on the number of months in particular labour market states during 2002, but without time succession (the same applies to pensions and social income). The survey consists of three questionnaires: part A refers to flats, B is for households within a flat, and C is for individuals. The dataset is then divided into a household file containing parts A and B, and then an individual file containing part C.

Questionnaire A refers to whole flats and contains information on persons and their socio-economic characteristics: birth year, gender, marital status, year of last marriage, highest level of education attained, main economic activity in 2002 and income sources. Part A also asks for the person's relationship to the head of the household, information on joint housekeeping with other persons living in the flat, and the reason for and the length of absence from the flat during 2002.

Questionnaire B contains information on households within a flat and consists of three parts:

- A self-reported category of net household pecuniary income in 2002;
- Pecuniary and non-pecuniary transfers between the household and persons outside the household;
- Consumption of products from an own farm or enterprise.

Questionnaire C was filled in by persons with their own income in 2002. Persons engaged in economic activity were asked to provide information on the type of employment and the economic branch of their employer and an estimate of the average hours of work per week. Incomes were surveyed in the following categories:

- Income from dependent work and pecuniary fringe benefits;
- Non-pecuniary fringe benefits from main employment;
- Income from entrepreneurial or other self-employment activity, honoraria and pecuniary income from such activities transferred to the household;
- Social income;
- Other income (for example, capital income and rents received).

The effect of non-responses leads to biases when aggregating the data using population weights from other sources such as Census 2001. The bias is observed mainly for the demographic characteristics and social composition of households. In particular, the average household size is much lower than in Census. Mikrocenzus also exhibits a lower share of entrepreneurs and job-seekers. In comparison to Census, the dataset contains a higher share of persons older than the statutory retirement age, while almost no bias is detected for town size or house type. The CZSO used standard techniques to calculate weighting coefficients to diminish the bias. The weighting coefficients were derived for flats and then allocated to households and individuals within flats.

Another source of bias arises from under-reported or missing data. Missing data on individual incomes are negligible in the dataset (0.8%) and were imputed using the so-called "hot-deck" method, i.e. taken from randomly selected persons with the same characteristics. According to estimates from previous surveys, the income data are under-reported by around 10%. The size of under-reporting differs according to the level and the source of income. The data were adjusted to correct for under-reporting in the same way as in previous surveys (e.g. Mikrocenzus 1996). At the individual level, the income data were compared to other statistical and administrative data sources and adjusted accordingly. In particular, data on gross income from dependent work were compared to the statistics on average wage across economic branches. Based on this comparison, all work incomes were corrected, including income from entrepreneurial activities. In the case of social income, some items were adjusted or imputed according to eligibility rules.

Under-reporting was not corrected for sickness benefit, some state social support benefit and for all other incomes. While sickness benefit is under-reported due to poor reporting of short-term illnesses, some means-tested benefits depend on a determinative period longer than a year, so that these cannot be imputed based on information in Mikrocenzus 2002. Data on pensions were not changed, as under-reporting is not prevalent in this case.

In contrast to under-reporting, unemployment benefits were over-reported, as some persons were not able to separate these benefits from social assistance benefits. According to the amount of unemployment benefit and the number of months collecting this benefit, a proportion of the total unemployment benefit was moved to social assistance or other social income.

During the survey, wages from main employment were reported in either gross or net terms. The CZSO converted all net values in this case into gross values. However, this approach did not take into account capital and rental income in the calculation of income taxes.

The size of the non-survey error was eliminated to a great extent by the CZSO using the procedures described in this subsection. On the other hand, the size of the survey error – which is naturally large given the size of the sample – was calculated and published by the CZSO.

The Average Gross Earnings Information System (AEIS)

The Average Gross Earnings Information System (AEIS), which we used for data ageing, is administered by a private company for the Ministry of Labour and Social Affairs. The survey provides quarterly information on hourly wages and working hours of employees in selected companies in the business sector. It contains detailed information on earnings across gender, age, occupations, industries and regions. While companies with more than 1,000 employees are all selected, firms with 10 to 999 employees are chosen as a random sample. The total sample

contains more than 3,500 firms employing approximately 1.3 million workers. The AEIS is the only dataset which provides information on wages across gender and occupations which is used for the purposes of data ageing.

5. Model

In this section we describe the process of model building. In particular, we identify in the dataset the instruments described in Section 3. Since the reference year is different from the survey year, we overview the issue of data ageing. Then we describe the assumptions and show summary statistics for the overall sample and for selected household types. Finally, we discuss other modelling issues such as coverage, income from the informal economy and non-take-up of benefits.

5.1 Identification

In this subsection we identify in the dataset the instruments described in Section 3. Table A2 in the Appendix summarises which instruments are available in the dataset and which of them we simulate.

Taxable income for the purposes of personal income tax includes gross wages from main employment, other income from main employment, gross income from secondary employment, and income from occasional work. Income from occasional work is taxed under a separate tax scheme (15%) if the amount is lower than 5,000 CZK per month. Taxable income also comprises gross profit/loss from entrepreneurial activity and honoraria (available in net terms, taxable under a separate tax scheme if less than 3,000 CZK per month). Pensions are subject to income tax if the yearly amount is greater than 162,000 CZK. Finally, taxable income also includes income from rents received and from the occasional sale of agricultural products from own production, while capital income and income from pensions and life insurance are taxed under a separate tax scheme. Other income variables are heterogeneous, making it impossible to distinguish particular income sources.

In some cases, gross income should be determined from net values for the purposes of personal income taxation:

- Gross conversion of income from main employment where reported in net terms (the CZSO has converted all net items into gross terms, but net items are still available in the dataset).
- Gross conversion of other (capital, rental) incomes, which are all reported in net terms. For the purposes of income taxation, costs should be deducted. As these are not reported, they could be replaced by statutory costs: 20% of gross rental income and 50% of gross revenues from the occasional sale of own agricultural products.
- Gross conversion of pensions, which are in net terms where appropriate (for yearly pensions greater than 162,000 CZK).
- Gross conversion of income from entrepreneurial activity that is reported net of contributions (which are partly paid voluntarily by entrepreneurs). We assume that entrepreneurs pay all contributions, including those paid voluntarily.

Social and health insurance contributions are deducted from income from main and secondary employment and from entrepreneurial income. For the purposes of calculating tax exemptions and tax allowances, household composition and the labour market status of household members

should be determined based on the information in the dataset. Regular income tax is determined, while separate income tax is calculated based on incomes taxable under the separate tax scheme.[19] We simulate the following tax allowances: personal, spouse, disability (based on receiving full or part invalidity pension) and student. Other allowances or exemptions cannot be simulated.

Unemployment benefit, sickness benefit and pensions are all available in the dataset, but cannot be simulated. Unemployment benefits may only be simulated for persons with information on income from work.

Before simulating benefits based on income tests, we have to determine the amounts of the MLS based on household composition. Information on the age and labour market status of children allows us to distinguish between dependent children within households for the purposes of income tests.

We simulate the following means-tested benefits: child benefit, social supplement, housing benefit and social assistance benefit. Regarding the social supplement, we are able to simulate increased amounts of the benefit for lone parents only. Increased amounts reflecting the health status of children cannot be simulated as there is no such information in the dataset.

The following benefits cannot be simulated but are available in the dataset: parental allowance, foster care benefit, birth grant, funeral grant and social care benefit.

5.2 Data Ageing

Mikrocenzus contains 2002 data, while the main reference year for the microsimulations is 2006. All income data which are not simulated should be adjusted accordingly. The main reference data for adjusting income variables is the AEIS dataset on average wages of employees, while for other items in the dataset either administrative data or inflation rates have been used.

- Work income, sickness benefits and unemployment benefits
  We adjust gross income from dependent work using the AEIS data on average wages across occupations and gender. The same data source is used for ageing income from entrepreneurial activity, as no other suitable datasets exist in this case. We use economy-wide AEIS statistics on average wages for ageing sickness and unemployment benefits, as these benefits depend on the level of previous income. Unemployment benefit is provided for a period of six months based on the net income from previous work. In this case, the period of benefit collection is not distant from the previous work activity, so the proposed ageing technique is appropriate. However, the technique could potentially deliver misleading results for sickness benefits in the case of long-term illnesses. Fortunately, this is not confirmed by the evidence. The average duration of illnesses was 35 calendar days in 2006 (see Table 3). Although new notified cases of illnesses are high, their duration is mostly short, suggesting that the proposed technique for ageing sickness benefits is appropriate.

- Pensions, non-tested and other social income
  Pensions are aged to the reference year using administrative data from the Czech Social Security Administration on average pensions across pension types. Other non-tested benefits are adjusted using actual parameters or the inflation rates published by the CZSO.

[19] Married couples have been able to fill in a joint income tax return only as of 2005.

- Other income
  Some capital and other non-work income depends on interest rates, while ageing in the case of other items is difficult. Since the other income categories are heterogeneous in Mikrocenzus 2002, we use the inflation rate as a parameter for ageing.

Table 3: Incapacity for Work due to Disease or Injury

	2001	2002	2003	2004	2005	2006
New notified cases of incapacity for work per 100 sickness insured persons	86.2	80.4	81.7	61.6	68.2	60.2
Average duration of 1 case of incapacity for work (calendar days)	28.6	30.8	30.5	34.8	32.8	35.3
Average percentage of incapacity for work	6.7	6.8	6.8	5.9	6.1	5.8

Source: Czech Statistical Office.

Table 4: Key Indicators

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2006 vs. 2002**
GDP (%, y-o-y, real terms)	2.5	1.9	3.6	4.2	6.1	6.1	21.5
Inflation rate (%, end-of-period)	4.7	1.8	0.1	2.8	1.9	2.5	7.5
Average monthly nominal wages (%, y-o-y)	8.7	7.3	6.6	6.6	5.2	6.5	27.4
Average monthly real wages (%, y-o-y)	3.8	5.4	6.5	3.7	3.3	3.8	18.5
Number of employees (%, y-o-y)	0.3	-0.8	-2.0	-0.2	2.2	1.2	1.1
ILO unemployment rate (%)	8.1	7.3	7.8	8.3	7.9	7.1	-0.7**
ILO long-term unemployment rate (%)*	4.2	3.7	3.9	4.3	4.3	3.9	5.1**
Registered unemployment rate (%)	8.3	8.9	9.7	10.0	9.5	8.6	-1.6**

Source: Czech Statistical Office, Ministry of Labour and Social Affairs, own calculations.
Note: * Persons unemployed more than 12 months, ** Cumulative change in the number of unemployed persons in percent.

The pure income data ageing approach assumes that labour market participation in the reference period is the same as in the survey period. In other words, the model is static in nature. Due to changes in the economy and on the labour market, we have to discuss changes in labour market participation and how these changes would affect the results. The effect may be more pronounced when the reference period is far from the survey date, as is 2006 versus 2002 in this case.

Table 4 shows the key macroeconomic indicators between 2001 and 2006. GDP growth rates in constant prices indicate that in 2002 the economy reached the bottom of a moderate economic slowdown (a 1.9% year-on-year change, as compared to 2.5% in 2001 and 6.1% in 2006). The rate of economic growth accelerated between 2002 and 2006, while the cumulative growth of the number of employees was only 1.1% and the number of job seekers decreased by 0.7% (ILO definition) or 1.6% (administrative data). Although the number of employed and unemployed is almost the same in 2006 as in 2002, the composition of the employed and unemployed in terms of skills and economic branches has changed to some extent. In particular, the number of long-term unemployed increased by 5.1% between 2002 and 2006. Although the composition of employed and unemployed persons changed to some extent between 2002 and 2006, we believe that applying appropriate data ageing techniques lead to results comparable to those obtained using a 2006 sample.

5.3 Model Description

Using the information provided in Section 3, we write tax-benefit equations. For appropriate parameters, the equations allow us to calculate personal income tax for any individual with taxable income. Using the information on household composition, we are able to determine the benefits for which the household is eligible and the resulting net household income.

Applying the tax-benefit equations to prototypal households, we calculate net replacement rates by simulating transitions between the state of employment and unemployment either with or without unemployment benefits. When simulating transitions between the labour market states, we assume that the gross income of the other adult partner in the household, if there is any, is the same, while the net income of that person is recalculated. Net household income and net replacement rates are simulated for prototypal households using parameters from 1996, 2006 and 2007.[20]

We define the following household types: single individuals, households with a non-working partner and households with a working partner earning either half, two thirds or the full economy-wide average wage. Another five categories are defined in the same way, considering the presence of two children aged 6 and 4 in the household. In order to investigate the effect of parental allowance, which is provided for caring for children younger than 4, we consider a further five household types with two children aged 4 and 2 as an alternative.

In the next step we match the tax-benefit equations with the dataset. The model loads parameters for 2002 and converts net income items in the dataset into gross values. As we use 2006 as the reference year, the model updates the income variables to 2006 (see subsection 5.2). In the next step, the model determines spouses and children within households for the purposes of simulating income taxes and benefit eligibility tests. The minimum subsistence amount is also determined for every household at this stage. Then the model calculates income tax, social security contributions and social benefits. The instruments are simulated using the data aged to 2006 and the 2006 parameters. For the purposes of analysing the effects of the reform introduced in 2007, we apply the 2007 parameters using the 2006 data. Regarding housing benefit, we assume a household living in a small town, while for social assistance we assume that all the unemployed are actively seeking a job, so that social assistance benefits top up their net household income to the MLS amount.[21]

Using the model, we simulate net replacement rates for household heads and partners in the dataset. We do not consider students and persons receiving full invalidity or old-age pension. Employed persons are defined as those with employment for at least 3 months during the year and without any unemployment benefits. The short-term unemployed are those receiving unemployment benefits. On the other hand, the long-term unemployed are defined as persons without any employment and without unemployment benefits. Net replacement rates are thus calculated for employed persons transiting to unemployment either with or without unemployment benefits. For unemployed persons in the dataset, we do not estimate their potential

[20] Housing benefit provided in 2007 is considered to be a part of social assistance.

[21] While job search activity is not reported in the dataset, we label all non-working individuals as unemployed. By ILO definition, an unemployed individual is seeking a job and is able to start working in two weeks.

entry wage, but instead assume their transitions into employment with earnings equal to either two thirds or half of the economy-wide average wage.

Table A3 in the Appendix shows the net household income and summary statistics in 2002. The sample contains 8,118 individuals with an average net household income of 21,310 CZK. Most persons are from households with a working spouse – specifically 42% with children and 24% without children. These household types also have the highest net household income. On the other hand, 5.5% of individuals are without a partner and with children, with a net household income of 11,044 CZK. Out of the total number of individuals, 7,019 are employed and 1,099 are without employment.

5.4 Other Modelling Issues

The microsimulation model is based on household level data, so persons living in institutions – primarily foreign workers – are not covered. In the Czech Republic, the number of persons living in institutions may be large by international comparison. The CZSO estimates, for example, that the number of foreign workers living in institutions (hostels) is around 70,000. However, foreigners are often not eligible for social benefits. The model is therefore targeted at the native population, mostly living in households. Other issues which we discuss here are the role of income from the informal economy and non-take-up of benefits.

The microsimulation model does not capture income from the informal economy. In particular, income from unofficial work is not included in net household income, which is tested for the purposes of benefit eligibility. Households have incentives to declare low net household income in order to be eligible for social benefits. On the other hand, income from informal work leads to higher net replacement rates.

Jurajda and Zubricky (2005) show that income from unofficial work significantly reduces the job-seeking incentives for unemployed persons. In particular, when taking up an official job, net replacement rates may be greater than 100%, since entering into the official employment figures results not only in the loss of some social support, but also in the loss of any income from unofficial work. Jurajda and Zubricky demonstrate how much space (or "incentive") there is in the Czech system of taxes and benefits for unofficial work activities. The space is represented as the spread between the minimum official take-home wage and the total labour cost borne by employers. The lower bound (official net wage) makes the unemployed person indifferent between working officially and not working, while the upper bound (total labour costs borne by the employer) makes the employer indifferent between employing the person officially and not employing. The space between the bounds represents the range of unofficial wages for which both the unemployed person and the employer are better off. The results for several family types and potential wage positions indicate that the spread is high. In particular, total labour costs are more than twice the minimum official net wage. This result is particularly due to high social security contributions paid by employees and employers.

Evidence on high disincentives to job-seeking of persons with income from unofficial work can also be found in Jahoda (2004). Using examples of workers with different entry wages for a given family type, Jahoda estimates the amount of unofficial income and the corresponding marginal effective tax rates. These rates are all greater than 100%, even in the case of workers whose earnings equal the average wage. It can therefore be concluded that income from unofficial work

is a significant factor that should be borne in mind when drawing lessons from microsimulations on the issue of work incentives.

The non-take-up of benefits is another effect which is not captured by our microsimulations. It reduces net replacement rates, thus increasing work incentives. In particular, we assume that all individuals and households pay all taxes that they are required to, and claim all benefits for which they are eligible.[22]

The only existing study on this issue focusing on the Czech Republic is probably Mareš (2001). He first simulates how many households were eligible for specific benefits in 1996 using Mikrocenzus 1996, and then compares these potential claims with administrative data from the Ministry of Labour and Social Affairs. The results reveal that child benefits are collected by 92% of households of those eligible, while the share is 63% in the case of the social supplement and only 40% for housing benefit. This suggests that non-take-up may be more significant for benefits targeted at poor households with children, in line with similar results for other European countries. Based on opinion polls surveyed in 1999, Mareš draws direct information on experience with collecting benefits. The results show that non-take-up is in general less widespread than in other EU countries. This is probably due to the fact that the eligibility criteria for benefits are not as strict as in the EU (in 2000) and that benefit collection is not such a stigma as elsewhere in the EU. The extent of non-take-up is between 10% and 30% in terms of persons eligible for benefits. The main determinants of non-take-up include socio-demographic characteristics and social background. In particular, persons not claiming some benefits either have no incentive for claiming, are not informed, or are stigmatised. These effects may be largely associated with the complexity of the tax and benefit system, coupled with poor administration of benefits. Given that non-take-up of benefits is less widespread than in other countries, we believe that our results are little affected by neglecting non-take-up of benefits.

6. Results

Before analysing distributions of net replacement rates using micro-data, we simulate net household income and net replacement rates for typical households. While we describe the main changes between 1996 and 2006, we also compare the results with 2007.

6.1 Net Replacement Rates for Household Types

The profiles of net replacement rates in 1996, 2006 and 2007 are illustrated in Figure A1 and Figure A2. For households without children and transitions between employment and short-term unemployment (the left-hand panel in Figure A1), net replacement rates are in general lower in 2006 than in 1996 except for entry wages greater than the average wage, i.e. exceeding 100 on the horizontal axis.[23] The rates decreased further in 2007 for very low entry wages and single individuals or households with an idle partner. On the other hand, the replacement rates increased in 2007 for households with an idle partner for an entry wage between 50% and 80%, and for single individuals with an entry wage around 40% of the average wage. Net replacement rates are

[22] Contrary to non-take-up of benefits, not-entitled taking of benefits increases net replacement rates. This is not discussed here due to lack of any evidence.

[23] This is due to higher unemployment benefits in 2006 relative to 1996. While the maximum unemployment benefit was 3,990 CZK in 1996, it had increased to 11,050 CZK in 2006 and further to 11,722 CZK in 2007.

also lower in 2006 and further in 2007 for transitions into long-term unemployment and low entry wages in the case of single individuals and households with a non-working partner (the right-hand panel in Figure A1). Slightly higher net replacement rates are surprisingly observed in 2007 at low entry wages of individuals from households where the partner earns half of the average wage.

Figure A2 shows net replacement rates for households with two children aged 6 and 4. For transitions between employment and short-term unemployment (the left-hand panel), the replacement rates are significantly lower in 2006 than in 1996 for households without a partner or with an idle partner. On the other hand, the rates are higher in 2006 for individuals with a higher entry wage from households where the partner earns at least two thirds of the average wage. In 2007, the rates decreased further for entry wages lower than 50% or 60% of the average wage and for households without a partner or with an idle partner, and increased otherwise. For transitions between employment and long-term unemployment (the right-hand panel in Figure A2), the rates are in general lower in 2006 compared to 1996 and further in 2007 except for households with a working partner, for which the rates increased. As we will see later, this reflects changes in the social assistance scheme, which is more generous to households with some work income in 2007, while social assistance is reduced for households without any work income.

In Figure A3 the net replacement rates are, as an alternative, simulated for households with two children aged 4 and 2 in order to examine how the rise in the amount of parental allowance as of January 2007 affects the results. While the profiles of net replacement rates are similar to those for households with children aged 6 and 4 in Figure A2, the replacement rates are higher in 2007 than in 2006 particularly for single parents, if we consider transitions between employment and long-term unemployment. As the parental allowance is not means-tested, its changes have rather little effect on replacement rates. We will explore the effect of parental allowance on work incentives later.

Overall, the evidence provided in Figures A1, A2 and A3 indicates that net replacement rates changed marginally between 1996 and 2006 or 2007 for households that are better off in terms of their potential wage or have a partner earning at least two thirds of the average wage, except for the short-term unemployed with an entry wage greater than 120% of the average wage, who receive a higher unemployment benefit in 2006 and 2007 relative to 1996. For low-income households, the net replacement rates mostly decreased until 2006 and 2007.

The net replacement rates from Figures A1 to A3 are also expressed in Table A4, which shows wage levels in per cent of the average wage for which the net replacement rate is 75% or 90%. Simulations are shown for selected household types and for transitions between employment and short-term unemployment (upper panel) and between employment and long-term unemployment (lower panel). For the short-term unemployed with an NRR equal to 75% in 1996, the entry wage was 42% of the average wage for single individuals, while it was higher if a partner was present in the household, reaching 77% if the partner did not work or 104% of the average wage if the partner earned the average wage. The net replacement rates are all higher if there are children in the household, as documented in the subsequent rows in Table A4. These results indicate that short-term unemployed individuals from households with a partner or/and children face higher disincentives to work as compared to single individuals. The disincentives diminished to some extent until 2006, except for households with children where the other partner earns at least two thirds of the average wage. In particular, the entry wage increased to 151% of the average wage

for persons with a partner earning the average wage and with two children aged 6 and 4, or to 161% if the children are aged 4 and 2. The results also suggest that in 2007 the entry wages increased further for households with children and an NRR equal to 75%. For very high net replacement rates reaching 90%, the entry wage is higher in 2006 and further in 2007 for households with children where the partner earns the average wage.

The lower panel of Table A4 shows entry wages for transitions between employment and long-term unemployment, i.e. the state without work and without unemployment benefits. While work incentives were lower in 1996 for the short-term unemployed with a working partner, for the long-term unemployed facing an NRR equal to 75% the incentives are lower when the partner is idle. For this household type in 1996, the entry wage reached 77% of the average wage for childless households and 107% for households with two children aged 6 and 4, or 78% if the children were aged 4 and 2. While entry wages decreased until 2006 in most cases, they are also lower in 2007 except for households with a working partner.

While we find high net replacement rates for individuals from households with a working partner, these individuals conversely have the lowest unemployment rates and experience shorter unemployment spells in comparison with individuals from other household types, as we documented in Section 2. On the other hand, employment prospects are the least favourable for single parents, facing the highest unemployment rate and longer unemployment spells. This suggests that the link between net replacement rates and labour market flows and stocks is not straightforward if one examines variation in net replacement rates across household types. Instead, the effect of net replacement rates on labour market behaviour should be further analysed for particular household types. Our results indicate that labour market flows depend on household composition, particularly the presence of a partner and her or his labour market status and children, a factor neglected in previous studies.

The overall trend towards decreasing net replacement rates between 1996 and 2006 is primarily due to the fact that the average wage increased faster than the amount of benefits. The average wage in the economy increased by 106%, while the amounts of the minimum subsistence amount, which determine the level of means-tested benefits, rose by 66% for single individuals, by 57% for a couple without children, and by 51% for a couple with two children aged 6 and 4. The amounts of social benefits thus decreased between 1996 and 2006 relative to the average wage. In addition, social benefits are reduced for married couples with children in 2006 as a consequence of joint income taxation, which increases the net household income relevant for income tests so that such households receive less social income. This may be significant for households with a non-working partner.[24]

[24] Net replacement rates are not in principle comparable across individuals with different work intensities. In the Czech Republic, most workers work around 40 hours per week. In particular, an inspection of the Mikrocenzus 2002 dataset reveals that 78% of employees worked between 38 and 45 hours per week in 2002, indicating that net replacement rates are comparable. This also suggests that the incidence of very low wages may be negligible due to the minimum wage threshold. The ratio of the full-time minimum to average wage was 26% in 1996 and 38% in 2006. This should be considered when interpreting the results.

6.2 Contribution of Benefits to Net Replacement Rates in 2006 and 2007

We explore factors driving changes in net replacement rates between 2006 and 2007 by decomposing net replacement rates into the contributions of net work income and particular benefits. The net replacement rates for transitions between employment and short-term unemployment are illustrated in Figure A4 and Figure A5. For childless households (Figure A4), social assistance is the main factor determining the NRR for low wage earners among single individuals and households with idle partners. While the contribution of social assistance decreased in 2007 relative to 2006, the contribution of housing benefit saw an increase for the same household types. On the other hand, the amount of unemployment benefit has the main role in determining net replacement rates for all the household types. While the same can be said for households with children (Figure A5), housing benefit is primarily responsible for rising net replacement rates for single parents and for households with a non-working partner and children in 2007. The net replacement rates of other households are driven by the work income of the other partner.

For transitions between employment and long-term unemployment, where unemployment benefit is not provided, net replacement rates are driven primarily by social assistance in the case of single individuals and households with an idle partner, or by the work income of the other partner, if there is any (Figure A6). While the same is observed for households with children (Figure A7), the net replacement rates are also affected by child benefit, social supplement and housing benefit. For households with children and either without a partner or with an idle partner, the contribution of housing benefit increased in 2007, compensating for the reduction in social assistance.

6.3 Budget Constraints in 2007 relative to 2006

Net replacement rates capture relative changes in net household income in the state without and with employment. In order to examine how the reform in 2007 affects net household income in both employment and unemployment, we investigate the changes in the contributions of taxes and particular social benefits to net household income in 2007 relative to 2006 in Figures A8 to A13. While the left-hand panels show the changes in contributions to net household income in CZK for employed individuals, the middle panels concern the short-term unemployed with unemployment benefits, and the right-hand panels are for the long-term unemployed, who are not eligible for unemployment benefits.

Among childless households (Figures A8 and A9), employed low wage earners living alone or with a non-working partner see a mild increase in their net household income due to higher housing benefit and social assistance, except for the lowest wages, where the social assistance is reduced. Social assistance benefits are affected by two factors in 2007. While the lower MLS in 2007 leads to a lower amount of social assistance benefits, the benefits are conversely increased by the introduction of reduction coefficients into the eligibility test for social assistance in 2007 (see Section 3.3). This favours households with some work income. The increase in net income is hence about 1,600 CZK per month for individuals earning about 40% of the average wage from households with an idle partner (left-hand bottom panel in Figure A8). The peak moves to 80% of the potential entry wage for the short-term unemployed from the same household category (middle bottom panel in Figure A8). On the other hand, the short-term unemployed with a high entry wage benefit from the rise in the maximum amount of unemployment benefit in 2007. Finally, long-term unemployed persons living alone or with an idle partner are worse off in 2007

(right-hand panels in Figure A8). The significant reduction in social assistance due to the lower MLS is not fully compensated by increasing housing benefit.

Childless households with a working partner see no change in their net household income in 2007 relative to 2006, except for the short-term unemployed receiving unemployment benefits with very high potential earnings and for the long-term unemployed whose partner earns half of the average wage (Figure A9). The latter category benefits from the introduction of reduction coefficients into the income test for social assistance in 2007, leading to higher social assistance benefits for households with a working partner relative to households where the partner has no work income.

The reform of benefits introduced in 2007 brought significant changes to the net income of households with children, as documented in Figures A10 and A11. While the overall patterns are similar to those of households without children, households with children receive substantially higher housing benefit and also a higher social supplement. In particular, employed individuals either without or with a partner who does not work have a higher net household income if they earn up to 100% or 120% of the average wage (left-hand panel in Figure A10). On the other hand, all the short-term unemployed receive more in 2007 due to higher housing benefits, except for very low potential entry wages. Furthermore, the long-term unemployed are worse off in 2007 if there is no partner in the household, or have the same net income if they have an idle partner. They do not benefit from the increased housing benefit, because of a significant drop in social assistance due to the lower MLS in 2007 (right-hand panels in Figure A10). On the contrary, long-term unemployed individuals face higher net household income if there is a working partner in the household (right-hand panels in Figure A11). Again, the reduction coefficients implemented in the eligibility test for social assistance benefits do not penalise households with work income as compared to households where no one works. A higher net income due to social assistance is also observed in 2007 for employed individuals living with children and a working partner if their potential wage is low (left-hand panel in Figure A11). Finally, short-term unemployed individuals also have a higher net income, mostly due to higher social assistance, regardless of their potential entry wage, except for those whose partner earns the average wage (middle panels in Figure A11). Households with children also see a higher social supplement in 2007, while various positive and negative peaks in net household income are observed due to shifts in the eligibility criteria for child benefits.

The contributions of taxes and benefits to net household income are simulated in Figures A10 and A11 for households with two children aged 6 and 4. In order to examine how the significant rise in the amount of parental allowance affects the results, Figures A12 and A13 show the changes in contributions for households with two children aged 4 and 2. As parental allowance is not means-tested, all household types benefit from the increased parental allowance regardless of the labour market status of the person in question. However, households where there is no partner or an idle partner face reductions in other benefits, primarily in social supplement and social assistance, while households with a working partner face mild reductions in child benefit and social supplement. The overall message from this comparison is that while the parental allowance is higher for all, some less well off households lose by reductions in other means-tested benefits.

6.4 Determinants of Net Replacement Rates

The results obtained for typical households suggest that net replacement rates are in general higher for households with children and also if there is a partner in the household. Applying the tax-benefit equations to the micro-dataset, we are able to assess the determinants of net replacement rates among employed and unemployed individuals and to gain insights into how net replacement rates are distributed. Table A5 presents estimates of the NRR equations. While the first four columns are for potential transitions of employed individuals into short-term and long-term unemployment, the other four columns show results for unemployed individuals, assuming their transitions into employment with potential earnings equal to two thirds or half of the average wage.

The results suggest that for transitions between employment and short-term unemployment, the average net replacement rate is 0.72 in 2006 (column 1). While the NRR is on average lower for transitions into long-term unemployment (column 3), the average replacement rates are also high for unemployed individuals (columns 5 and 7). This suggests that while employed individuals are prone to experience repeated spells of short-term unemployment, unemployment traps may also be significant for unemployed individuals. As the other columns in Table A5 indicate, the presence of children is a significant factor increasing net replacement rates for both employed and unemployed individuals in 2006 (types 4 to 6 relative to types 1 to 3), as is the presence of a partner in the household (types 3 and 6 relative to types 1 and 4).

The average net replacement rates are all significantly higher in 2007, as documented in columns 1, 3 and 5 in Table A5, indicating an even higher risk of being locked in an unemployment trap in 2007. The risk is particularly high for potential transitions of employed individuals into short-term unemployment from households with children, as column 2 suggests (types 4 to 6). For potential transitions of employed individuals into long-term unemployment (column 4), the net replacement rates are lower in 2007 particularly for single parents, reflecting the reduction in social assistance for households without work income. On the other hand, the presence of a working partner increases net replacement rates in 2007, due to higher social assistance benefits for households with work income, and thus the risk of being locked in a long-term unemployment trap.

Individuals without employment in the sample also face higher net replacement rates in 2007 relative to 2006 if we consider their potential transitions into employment with earnings equal to two thirds of the average wage (column 5 in Table A5). While for households with children with no work income the replacement rates are lower in 2007, the rates are significantly higher for households with a working partner (column 8). This reflects the desirable effect of the reform of the social assistance scheme reducing the support for households with children without any work income and rewarding households with some work income. On the other hand, the reform increases the risk of unemployment traps for both employed and unemployed individuals from households with children and with a working partner.

6.5 Incidence of High Net Replacement Rates

Exploring net replacement rates for typical households, we show how household composition and particular types of benefits affect net household income and net replacement rates. While Table A5 shows which factors significantly affect net replacement rates, in what follows we analyse the incidence of high net replacement rates in 2006 and 2007.

The upper panel in Table A6 shows the share of employed individuals for whom the net replacement rate is higher than 70%, 80% and 90% if we consider their potential transitions into short-term unemployment, receiving unemployment benefits. In 2006, 31% of employed persons would face a net replacement rate higher than 80%, while 6% of employed persons face a very high NRR of 90% or higher. This indicates a significant disincentive to avoid short spells of unemployment. As the other rows in Table A6 suggest, the presence of a working partner or children is associated with high net replacement rates. The changes introduced in 2007 do not reduce the incidence of high net replacement rates. In particular, the share of all employed individuals facing an NRR greater than 80% increases to 34% in 2007, or to 7% for NRRs greater than 90%. The share of employed individuals facing a high NRR is in general higher in 2007 for households with children. The incidence of an NRR higher than 80% increases from 9% to 20% for single parents, or from 9% to 21% for households with children where the partner does not work.

While the incidence of short-term unemployment traps is significant in 2006 and 2007, the risk of long-term unemployment traps for employed persons is much lower (the lower panel in Table A6). In particular, 6% of employed persons would face an NRR greater than 80% in 2006, while 2% would face an NRR greater than 90%. The incidence of high NRRs increases moderately between 2006 and 2007. In line with the coefficient estimates in column 4 in Table A5, the incidence decreases for single parents, while it increases significantly for households with children and a working partner.

Table A7 presents the share of unemployed individuals who would face a high NRR when finding a job at two thirds (the upper panel) or half (the lower panel) of the average wage. While 12% of unemployed persons would face an NRR greater than 80% when accepting a job at two thirds of the average wage, the incidence increases to 16% in 2007. Again, the incidence of a high NRR is greater for households with a partner or with children. Considering transitions into employment at half of the average wage, the share of individuals facing an NRR greater than 80% decreases from 50% to 19% for households with a non-working partner, while it increases from 44% to 58% for households with children and a working partner. This is in line with the last column in Table A5, which provides on average a significantly lower NRR estimate for households with children and a non-working partner in 2007, and a higher estimate if the partner works.

6.6 Budgetary Impacts

The microsimulation model allows us to aggregate income tax and social benefits for all individuals and households. Table A8 shows the predictions for 2002, 2006 and 2007. While income tax yields 94.0 billion CZK in 2002, in 2006 the total tax payments amount to 97.1 billion CZK, while 3.8 billion CZK is paid out as tax bonuses.[25] In 2007, the income tax rule is unchanged, so the aggregate tax is the same as in 2006.[26] Among social benefits, the greatest amounts are paid out in the form of child benefit, parental allowance, social assistance and housing benefit. In 2007, total benefit outlays increase by as much as 14.7 billion CZK. The expenditures on child benefit and social supplement do not change significantly, while the

[25] Joint income taxation was introduced for married couples with at least one child in 2006, while couples were allowed to fill in a joint income tax return for 2005. Considering individual taxation, aggregate personal income tax would be 102.3 billion CZK in 2006.

[26] The results in 2007 are calculated by applying the 2007 parameters to the 2006 data.

parental allowance costs 12.5 billion CZK more than in 2006, and housing benefit 5.8 billion CZK more relative to 2006. On the other hand, the expenditures on social assistance drop by 3.7 billion CZK. As we have seen, the reform of social assistance reduces social assistance for households without any work income. On the other hand, the housing benefit scheme is not optimally designed in 2007, as it distorts work incentives, particularly for single parents and for households with children and a non-working partner. While parental allowance is substantially increased for all eligible households, less well off households lose other means-tested benefits.

7. Conclusions

In this paper we investigate net replacement rates between net non-work and work income and associate high levels of these rates with work disincentives.[27] We find high net replacement rates in 1996 for households with children and a working partner, particularly for transitions between employment and short-term unemployment. In general, the replacement rates decreased moderately until 2006 primarily because wages rose faster than social benefits, but the incidence of high replacement rates remains high. In particular, about a third of all employed individuals have a low incentive to avoid short spells of unemployment with the unemployment benefits provided, while unemployment traps are also widespread among the unemployed. The incidence of unemployment traps increased further in 2007 despite the reform of benefits, particularly for individuals from households with children and with a working partner.[28]

We compare the evidence on the incidence of high net replacement rates of individuals from selected household types with specific unemployment rates and aggregate labour market flows calculated from the individual-level Labour Force Survey. We show that unemployment rates and flows from unemployment are strongly related to household composition, particularly to the presence of a partner and her or his labour supply and also to children in the household, a factor neglected in previous studies. We find that single parents have the highest specific unemployment rates, while they also experience long spells of unemployment in comparison with individuals from other household types. Single parents, on the other hand, face moderate levels of net replacement rates. Furthermore, while individuals from households with a working partner have the highest net replacement rates, as their work income does not add much to the net household income, these individuals have the lowest unemployment rates and experience short unemployment spells in comparison with individuals from other household types. This suggests that labour supply is often a joint decision within couples, indicating that work habits due to household composition and labour market attachment also affect labour market behaviour. While previous studies examined labour market flows versus net replacement rates using the variation in net replacement rates across household types, further research should investigate the flows and replacement rates for particular household types.

We explore which instruments are responsible for high net replacement rates, distorting work incentives. While unemployment benefit contributes to net replacement rates for the short-term unemployed, the net replacement rates of low wage earners are significantly affected by social

[27] We associate significant work disincentives with net replacement rates higher than 80%. We focus on the pecuniary motivation for job search, but other factors, such as job search monitoring by the authorities providing social benefits, are also important.

[28] In this paper we do not consider fixed costs of work related, for example, to commuting and child care. These costs would in principle lead to even higher net replacement rates.

assistance, while housing benefit is an important source of income for poor households with children. We show that the changes to the benefit rules introduced in 2007 adversely affect the work incentives emanating from the combined effect of taxes and benefits. While social assistance is in general less generous, diminishing the incidence of high net replacement rates for low wage earners from households with a non-working partner, the reform gives preferential treatment to households with some work income by increasing the amount of social assistance benefits. This further increases the incidence of high net replacement rates among poor households with a working partner. We also find that the housing benefit scheme, which was overhauled to reflect housing costs, increases net replacement rates, distorting work incentives, particularly among households with children. Finally, parental allowance was substantially increased in 2007. As this benefit is not means-tested, it raises the income of all households with at least one child younger than 4, but less well off households lose other means-tested benefits. While net replacement rates are little affected by the rise in parental allowance, the upsurge in household income may lock individuals into their current labour market states, increasing the loss of human capital among non-working parents.

Further changes to taxes and benefits are desirable in order to diminish the distortions of non-work income on work incentives and to ensure fiscal sustainability. As such reforms are often costly for the state budget, they should be 'ex-ante' examined with regard to how they may affect the labour market behaviour of particular population groups. Further research should analyse how housing benefit distorts work incentives in regions, as the benefit is linked to local costs of living. Finally, the microsimulation model should be matched with individual-level data containing labour market flows with the aim of finding direct evidence on the effects of non-work income and net replacement rates on labour market behaviour, focusing on specific household types.

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Glossary of Terms and Abbreviations

Average Gross Earnings Information System (AEIS)	Informační systém o průměrném výdělku
Czech Social Security Administration	Česká správa sociálního zabezpečení
Czech Statistical Office (CZSO)	Český statistický úřad
Minimum living standard (MLS)	Životní minimum
Ministry of Labour and Social Affairs	Ministerstvo práce a sociálních věcí
Income tax	Daň z příjmu
Tax bonus per child	Daňový bonus na dítě
Consumption taxes	Spotřební daně
Value added tax	Daň z přidané hodnoty
Excise tax	Spotřební daň
Customs	Cla
Property taxes	Majetkové daně
Road tax	Silniční daň
Real estate tax	Daň z pozemku a ze staveb
Inheritance tax	Daň dědická
Gift tax	Daň darovací
Real estate transfer tax	Daň z převodu nemovitostí
Social and health insurance contributions	Příspěvky na sociální a zdravotní pojištění
Pension insurance contributions	Příspěvky na důchodové pojištění
Contributions for the state employment policy	Příspěvky na státní politiku zaměstnanosti
Sickness insurance contributions	Příspěvky na nemocenské pojištění
Public health insurance contributions	Příspěvky na zdravotní pojištění
Unemployment benefit	Dávka v nezaměstnanosti
Sickness benefit	Nemocenská
Pension	Důchod
Child benefit	Přídavek na dítě
Social supplement	Socialní příplatek
Housing benefit	Příspěvek na bydlení
Parental allowance	Rodičovský příspěvek
Foster care benefit	Dávka pěstounské péče
Funeral grant	Pohřebné
Birth grant	Porodné
Social assistance benefit	Dávka sociální potřebnosti, příspěvek na živobytí
Social care benefit	Dávka sociální péče
Housing supplement	Příplatek na bydlení

Appendix

Table A1: Incomes, Taxes and Benefits in 2002

Instrument	Billion CZK	%	Number of households paying or receiving the instrument (%)**
Wages and salaries	803.9		62.6
Net mixed income of entrepreneurs	297.0		17.8
Net disposable income	1271.8		
Health and social insurance			
Employees (compulsory)	89.3		62.1
Entrepreneurs (compulsory)	20.6		
Entrepreneurs (voluntary)	15.2		
Income tax	113.9		69.6
Social benefits	303.8		80.5
Pensions	212.6		45.6
Sickness benefits	32.7		12.5
Passive employment policy benefits	6.1		9.6
State social support	33.7	100.0	
Child benefit	13.4	39.6	31.9
Social supplement	6.3	18.6	7.1
Housing benefit	3.0	9.0	6.4
Commuting benefit*	1.3	3.8	5.6
Parental allowance	8.0	23.8	8.5
Allowance for soldiers*	0.01	0.04	0.01
Foster care benefits	0.4	1.2	0.1
Birth grant	0.8	2.3	2.5***
Funeral grant	0.5	1.6	
Other benefits (provided by municipalities)	11.6		11.6

Sources: Czech Statistical Office, own calculations.
Note: ESA 95 data refer to households, except social income, which is by use.
* Not provided in 2005. ** Calculations based on Mikrocenzus 2002, *** Birth grant and funeral grant.

Table A2: Identification

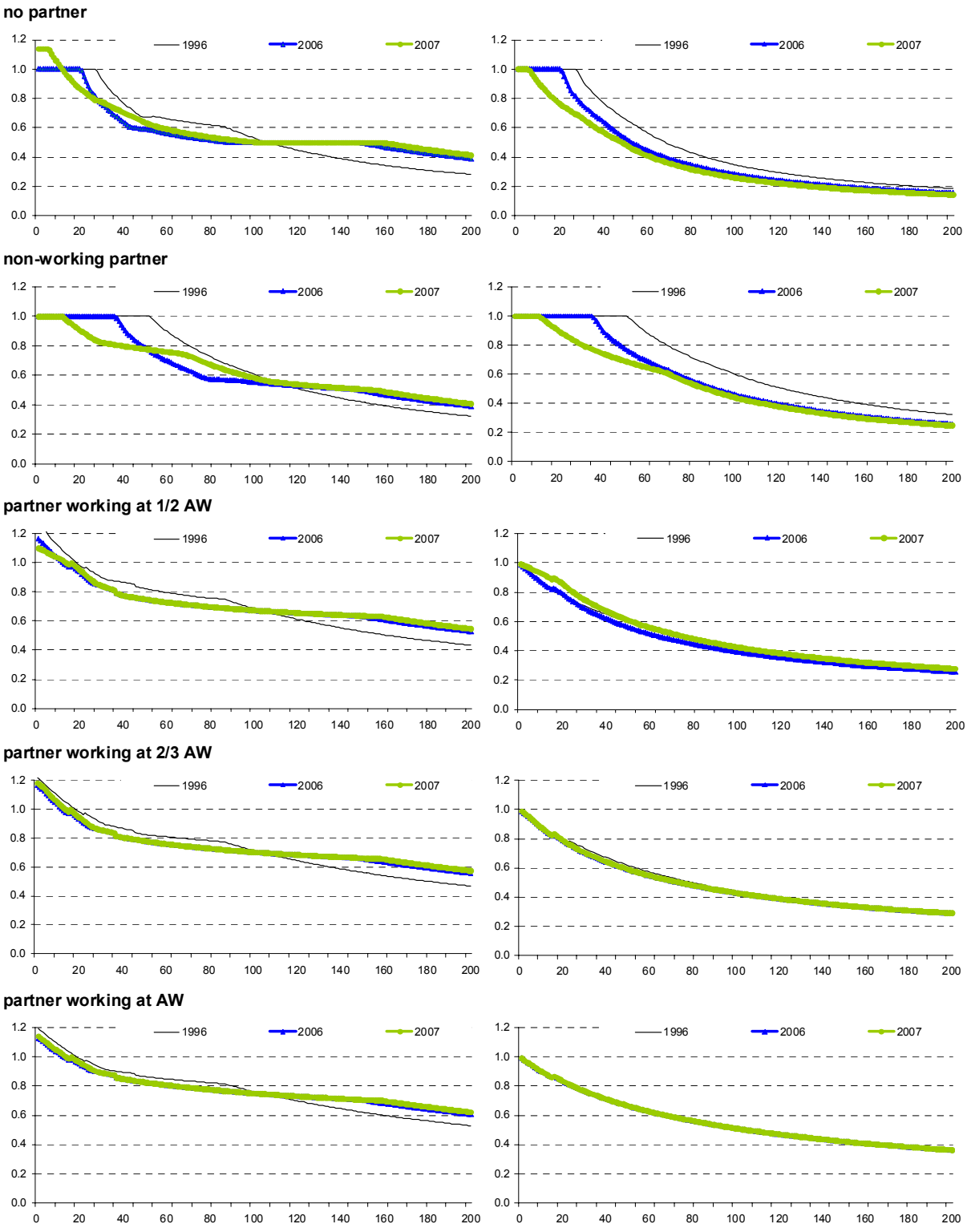
Instrument	Available in the dataset*	Simulated (yes/partly/no)	Data requirements if available in the dataset
Personal income tax	Yes	Yes	Gross earnings, marital status and the presence of the spouse, the number of dependent children, information on full/partial disability. Disability may be assessed according to full/part disability pension collection only. Some exemptions cannot be simulated.
Value added tax, excise tax, customs	No	No	Not available
Road tax, real estate tax, inheritance tax, gift tax, real estate transfer tax	No	No	Not available
Social and health insurance contributions	For employees only, not for entrepreneurs	Partly	Gross earnings. For entrepreneurs, it is assumed they pay all contributions, including those paid voluntarily.
Unemployment benefit	Yes	No	Net earnings (available for persons with a record of employment during the survey year)
Sickness benefit	Yes	No	Gross wage (available for persons with a record of employment during the survey year)
Pensions	Yes	No	Available in the dataset
Child benefit	Yes	Yes	Net household income, information on dependent children
Social supplement	Yes	Partly	Net household income, information on dependent children (increased amounts cannot be simulated, except for lone parents)
Housing benefit	Yes	Yes	Net household income, household composition
Parental allowance	Yes	No	Information on dependent children (cannot simulate increased amounts due to disability)
Foster care benefit	Yes	No	Information on fostered children (cannot be distinguished from other dependent children)
Funeral grant	Yes	No	Information on deceased relatives
Birth grant	Yes	No	Births (available for the survey year only)
Social assistance benefit	Yes	Partly	Net household income. Irregular assistance may be provided depending on disability, wealth, the degree of cooperation with the social office, etc.
Social care benefit	Yes	No	Benefits provided by municipalities for specific purposes

Note: * All instruments which are available in the dataset are reported at the individual and household level. At the household level, the funeral grant and birth grant are summed.

Table A3: Net Household Income in CZK and Summary Statistics (2002)

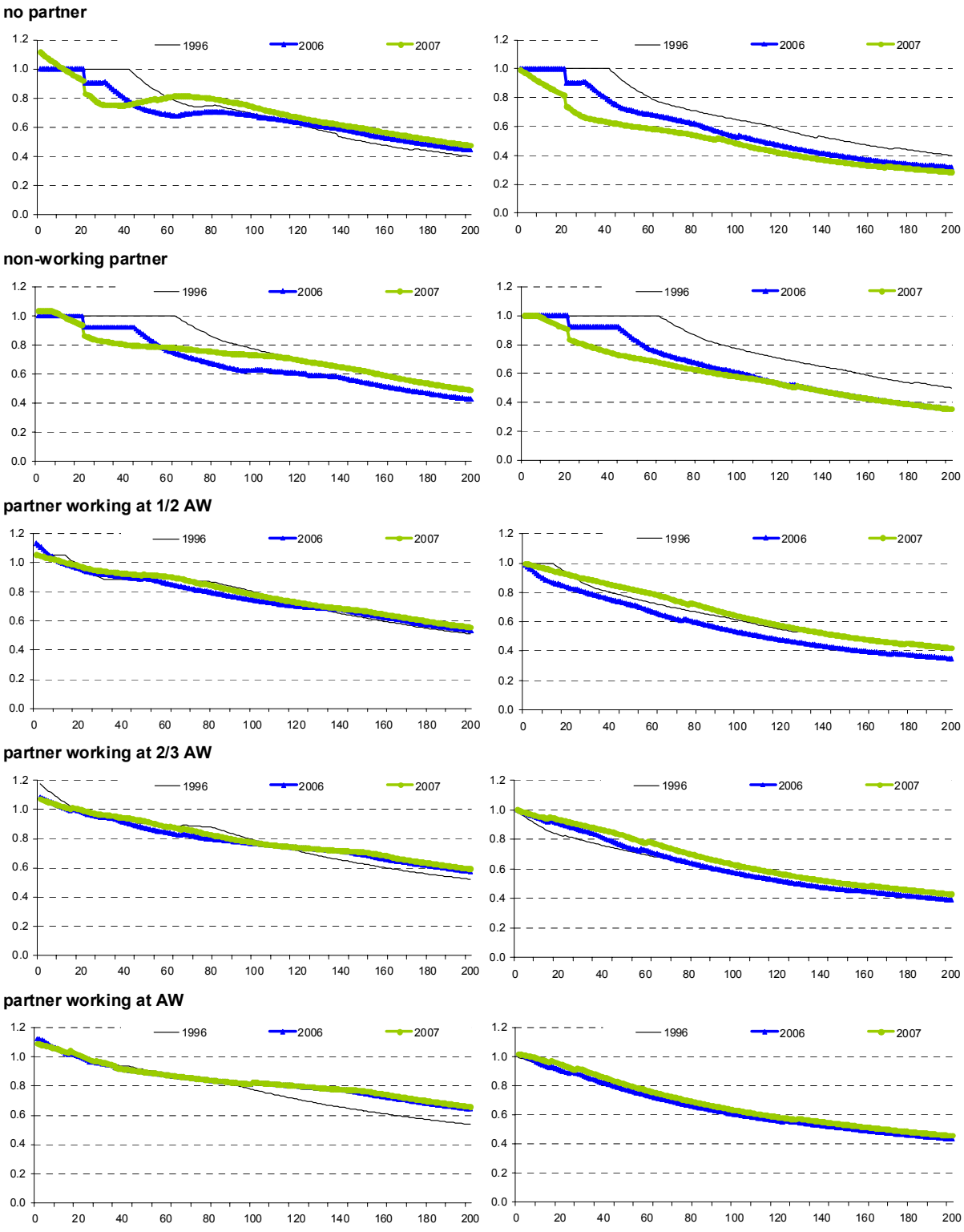
Partner	Children	Mean	Std. Dev.	Obs.	Freq.	% Freq.
Whole sample						
All	All	21 310	13 667	8 118	4 442 927	100.0
No	No	12 951	12 124	1 051	524 706	11.8
Non-working	No	17 224	12 239	424	273 327	6.2
Working	No	23 865	11 839	2 054	1 082 395	24.4
No	Yes	11 044	5 119	451	246 421	5.5
Non-working	Yes	15 934	14 145	671	439 362	9.9
Working	Yes	25 375	13 621	3 467	1 876 716	42.2
Working individuals						
All	All	22 668	13 463	7 019	3 677 504	100.0
No	No	13 665	12 684	966	464 693	12.6
Non-working	No	18 534	12 883	367	230 087	6.3
Working	No	24 451	11 080	1 928	979 230	26.6
No	Yes	12 985	5 203	316	148 818	4.0
Non-working	Yes	17 964	15 288	576	344 088	9.4
Working	Yes	26 937	13 006	2 866	1 510 588	41.1
Non-working individuals						
All	All	14 787	12 733	1 099	765 423	100.0
No	No	7 416	2 240	85	60 013	7.8
Non-working	No	10 249	2 473	57	43 240	5.6
Working	No	18 308	16 528	126	103 165	13.5
No	Yes	8 086	3 233	135	97 603	12.8
Non-working	Yes	8 605	3 186	95	95 274	12.4
Working	Yes	18 934	14 205	601	366 128	47.8

Figure A1: NRRs for Household Types (no children)



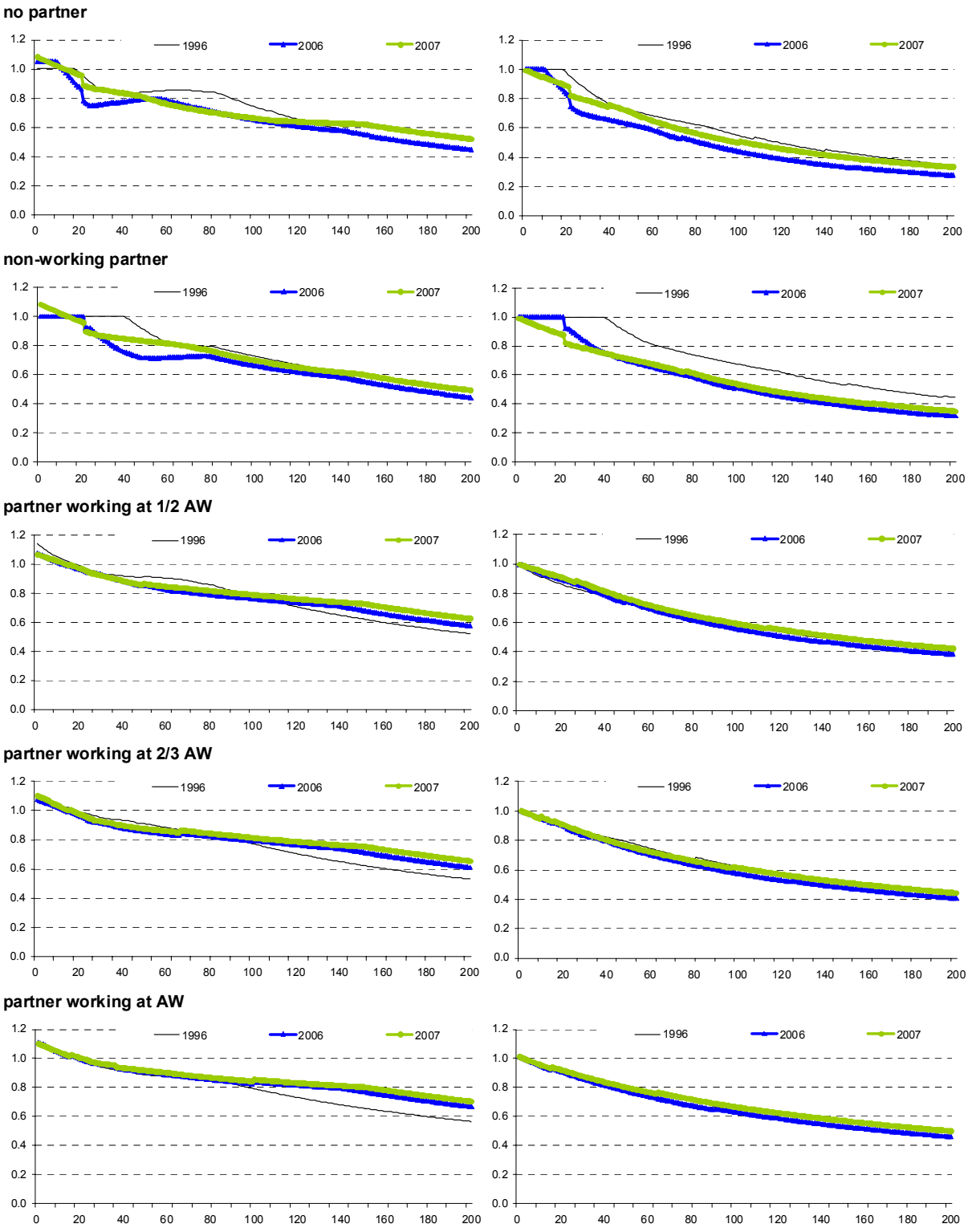
Note: Transitions between employment and unemployment with unemployment benefits (left-hand panel) and between employment and unemployment without unemployment benefits (right-hand panel). Wage in relation to AW in % is on horizontal axis. The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A2: NRRs for Household Types (two children aged 6 and 4)



Note: Transitions between employment and unemployment with unemployment benefits (left-hand panel) and between employment and unemployment without unemployment benefits (right-hand panel). Wage in relation to AW in % is on horizontal axis. The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A3: NRRs for Household Types (two children aged 4 and 2)



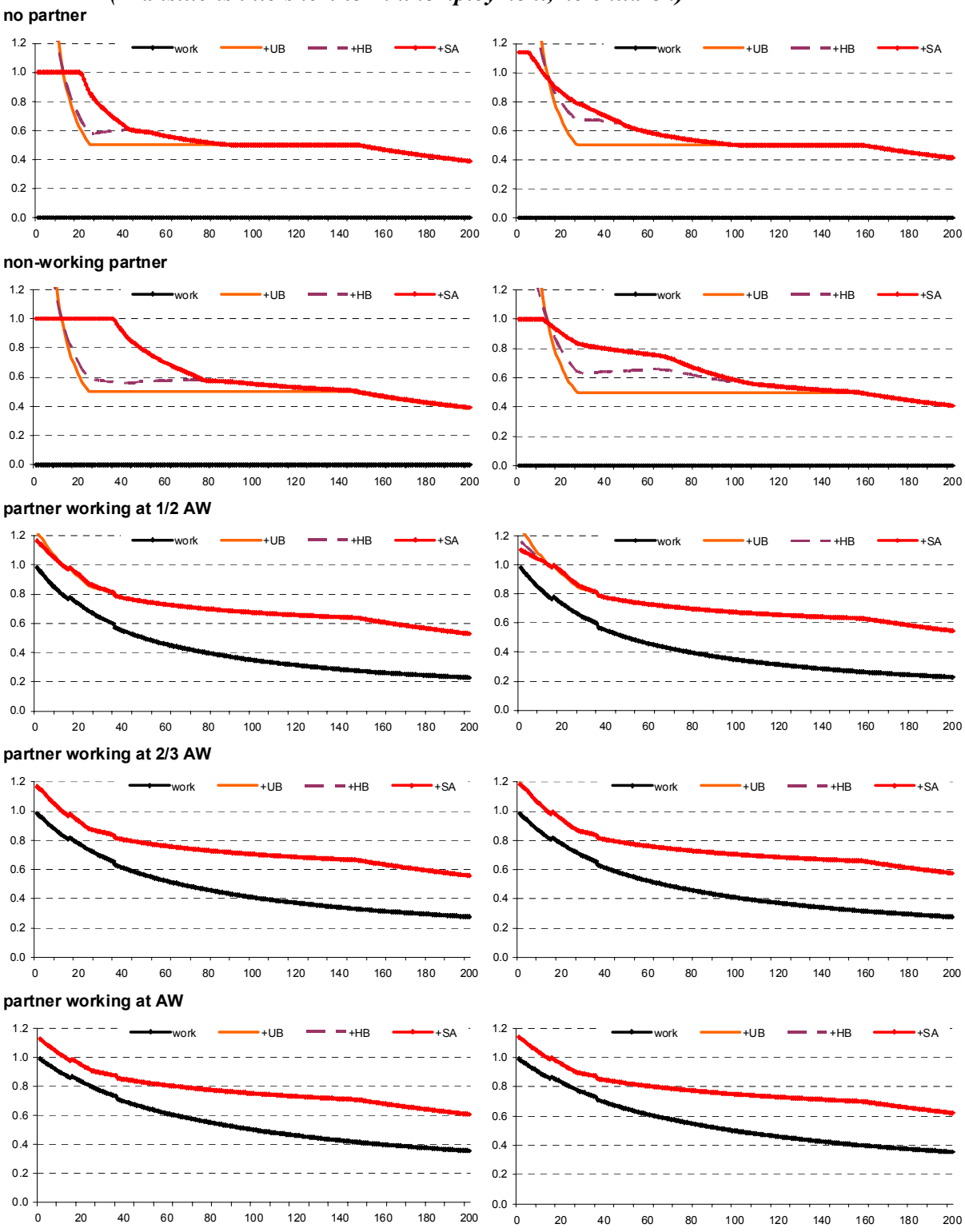
Note: Transitions between employment and unemployment with unemployment benefits (left-hand panel) and between employment and unemployment without unemployment benefits (right-hand panel). Wage in relation to AW in % is on horizontal axis. The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Table A4: Entry Wage in Relation to AW in % for Specific NRRs

		NRR=75%			NRR=90%		
Partner	**Children**	**1996**	**2006**	**2007**	**1996**	**2006**	**2007**
E - U(UB)							
no	no	42	32	34	32	24	18
non-working	no	77	54	66	60	42	21
working (1/2 AW)	no	87	51	51	31	23	24
working (2/3 AW)	no	93	67	67	32	23	25
working (AW)	no	104	101	101	37	27	28
no	yes (6+4)	71	46	98	50	32	22
non-working	yes (6+4)	107	64	84	76	47	22
working (1/2 AW)	yes (6+4)	113	99	113	30	42	63
working (2/3 AW)	yes (6+4)	111	114	114	53	43	55
working (AW)	yes (6+4)	108	151	158	54	48	48
no	yes (4+2)	100	70	64	27	19	22
non-working	yes (4+2)	94	42	84	50	26	22
working (1/2 AW)	yes (4+2)	109	110	131	63	37	37
working (2/3 AW)	yes (4+2)	107	133	155	55	36	40
working (AW)	yes (4+2)	114	161	177	46	55	62
E - U(no UB)							
no	no	42	32	22	32	24	11
non-working	no	77	54	40	60	42	21
working (1/2 AW)	no	25	24	31	9	8	14
working (2/3 AW)	no	29	25	25	9	8	9
working (AW)	no	34	33	33	11	10	10
no	yes (6+4)	71	46	22	50	32	11
non-working	yes (6+4)	107	64	40	76	47	22
working (1/2 AW)	yes (6+4)	54	42	71	24	9	27
working (2/3 AW)	yes (6+4)	44	52	70	11	23	30
working (AW)	yes (6+4)	61	56	65	20	22	32
no	yes (4+2)	44	22	39	26	16	18
non-working	yes (4+2)	78	42	41	50	26	17
working (1/2 AW)	yes (4+2)	50	47	54	13	19	22
working (2/3 AW)	yes (4+2)	60	49	53	19	20	22
working (AW)	yes (4+2)	61	58	71	20	22	26

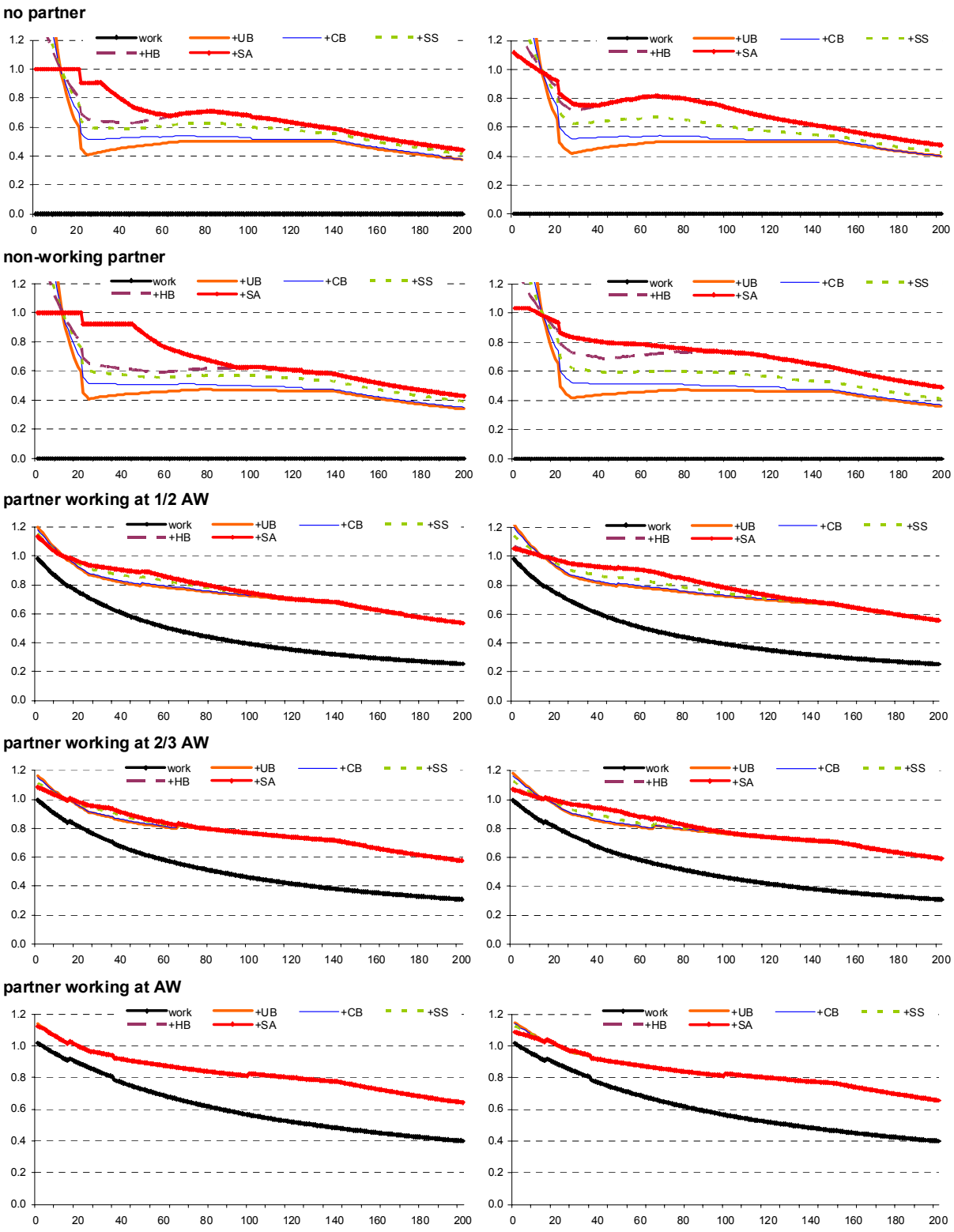
Note: Transitions between employment and unemployment with unemployment benefits (upper panel) and between employment and unemployment without unemployment benefits (lower panel). Children aged 6 and 4 or 4 and 2 as an alternative. The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A4: Contribution of Benefits to NRRs in 2006 (left) and 2007 (right) (Transitions into short-term unemployment, no children)



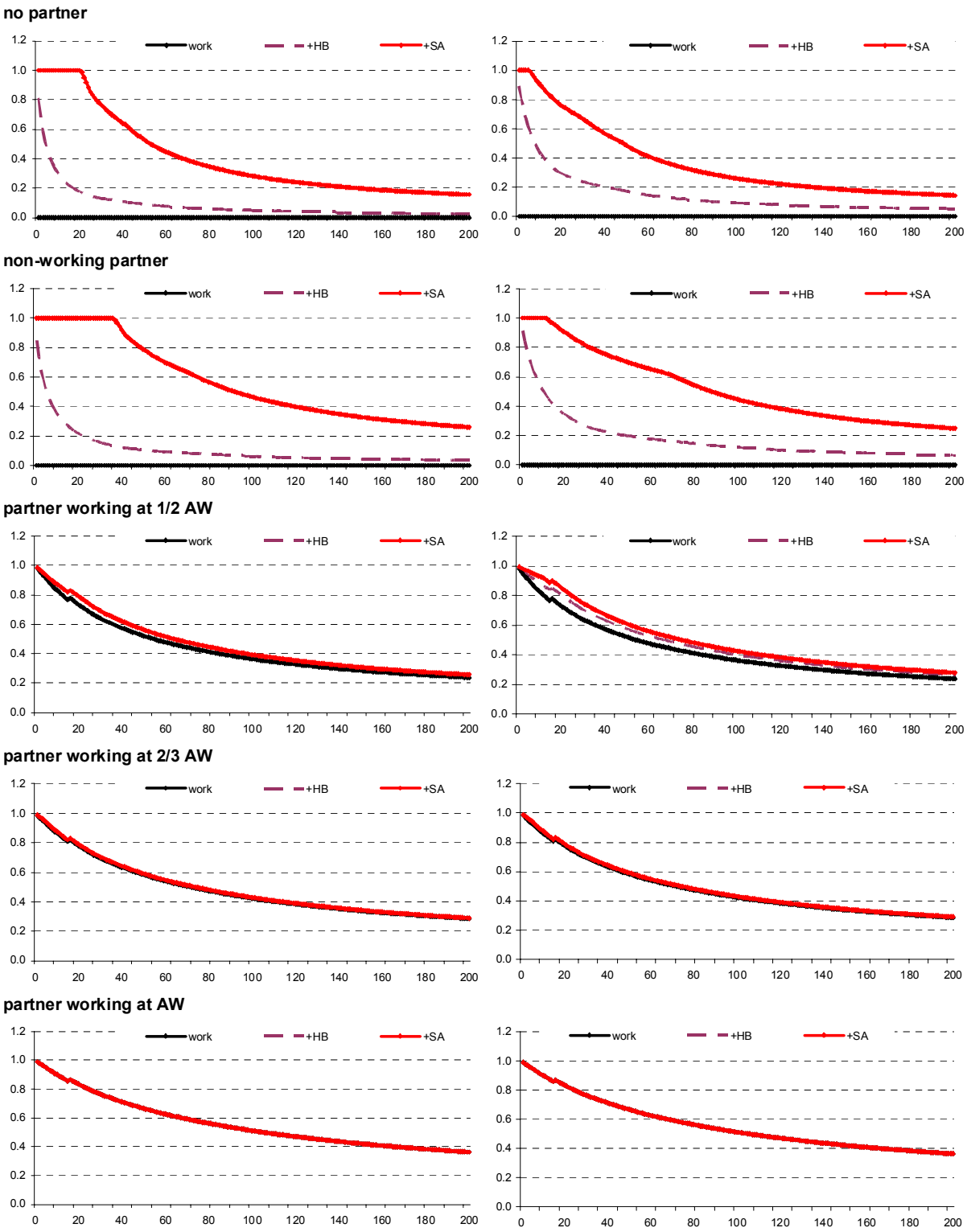
Note: Contribution of work income (work), unemployment benefit (UB), housing benefit (HB) and social assistance (SA, total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A5: Contribution of Benefits to NRRs in 2006 (left) and 2007 (right)
(Transitions into short-term unemployment, two children aged 6 and 4)



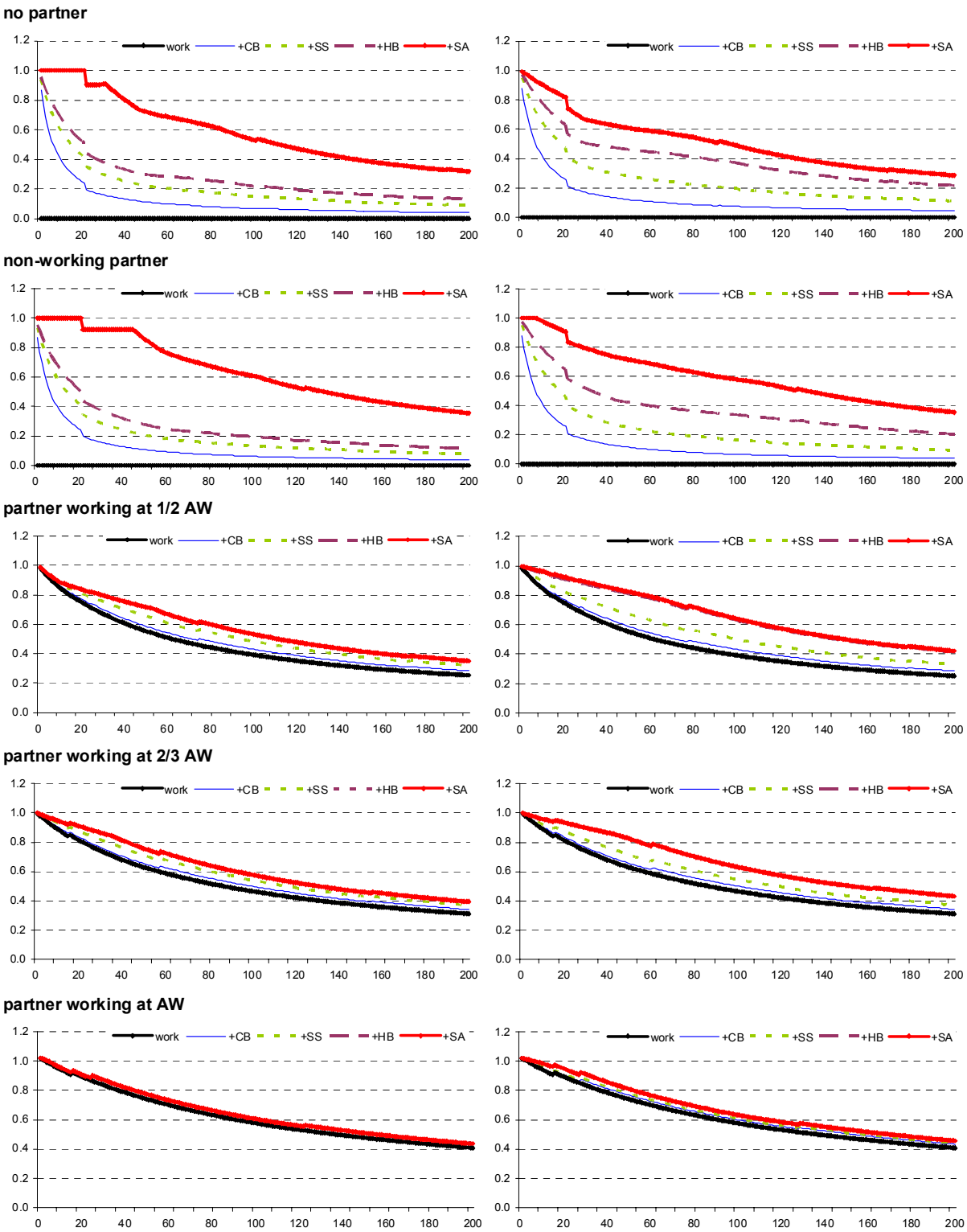
Note: Contribution of work income (work), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB) and social assistance (SA, total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A6: Contribution of Benefits to NRRs in 2006 (left) and 2007 (right) (Transitions into long-term unemployment, no children)



Note: Contribution of work income (work), housing benefit (HB) and social assistance (SA, total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

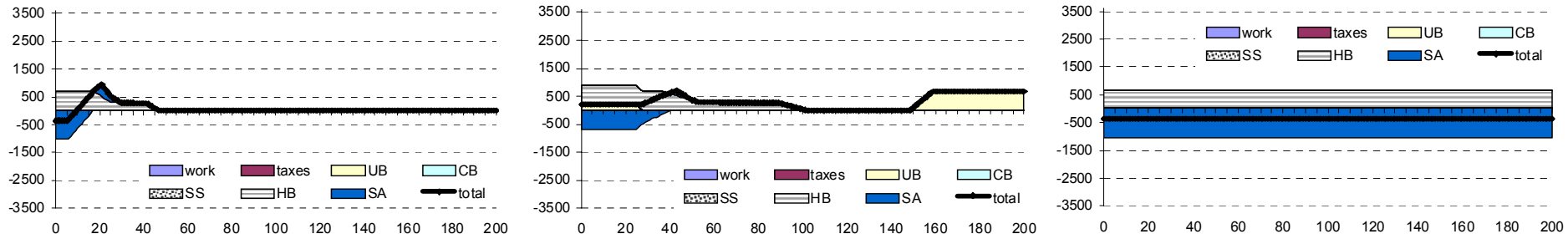
Figure A7: Contribution of Benefits to NRRs in 2006 (left) and 2007 (right) (Transitions into long-term unemployment, two children aged 6 and 4)



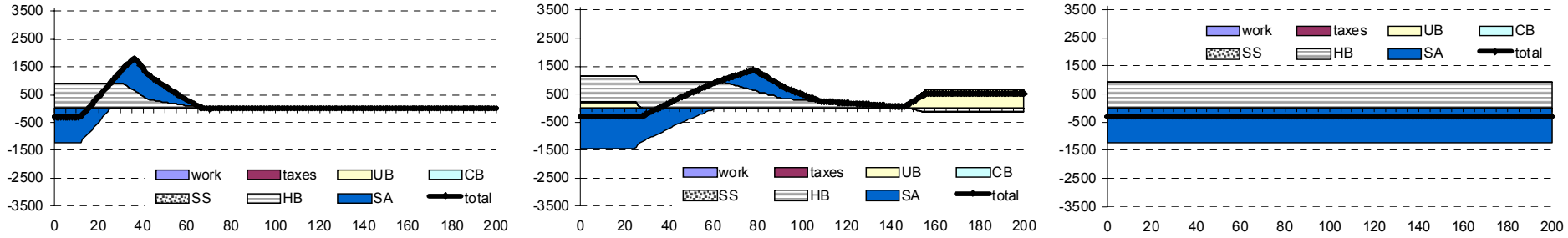
Note: Contribution of work income (work), child benefit (CB), social supplement (SS), housing benefit (HB) and social assistance (SA, total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A8: Changes in Contributions of Taxes and Benefits to Net Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term Unemployment (right)

no partner, no children

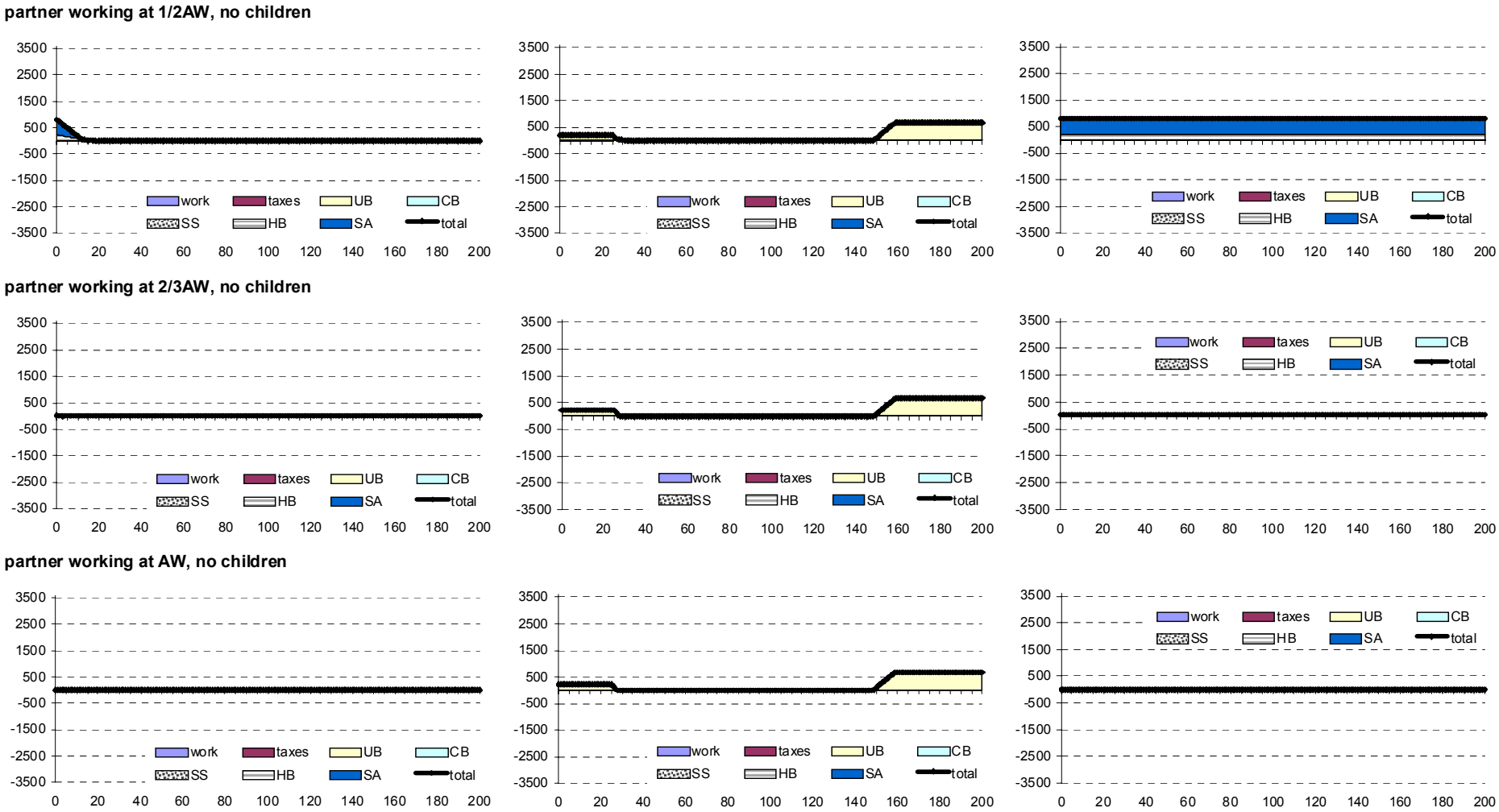


non-working partner, no children



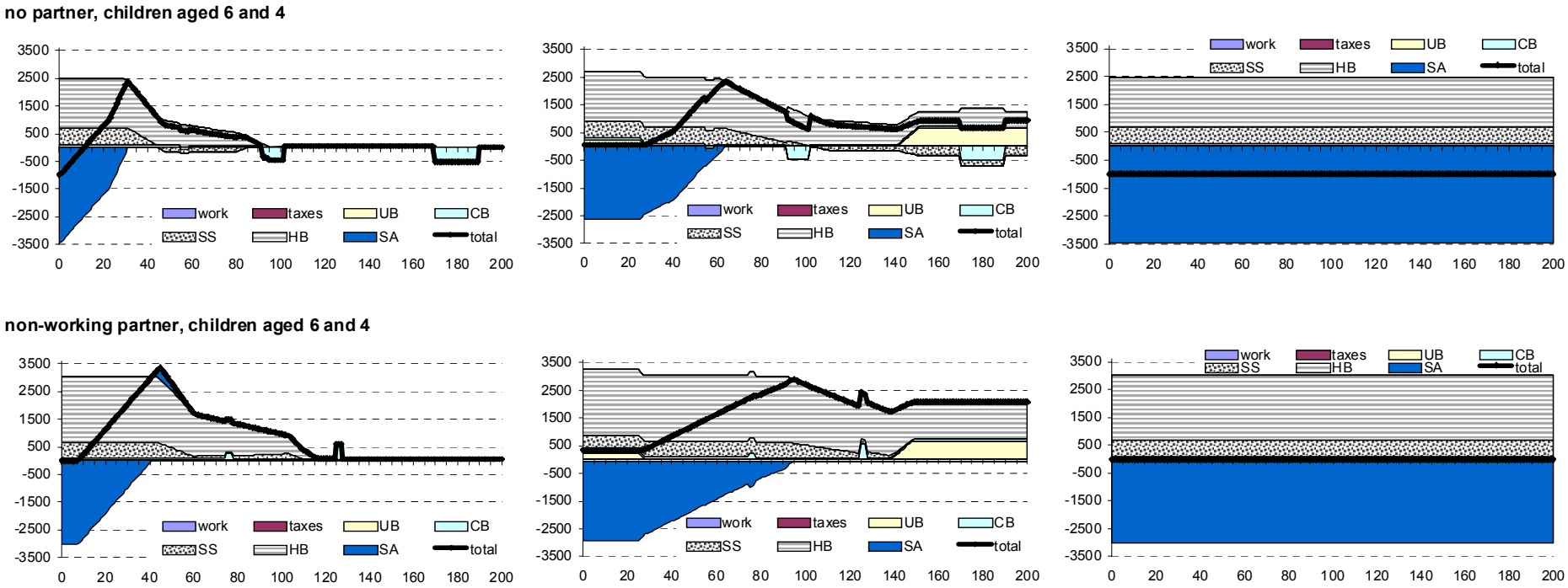
Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A9: Changes in Contributions of Taxes and Benefits to Net Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term Unemployment (right)



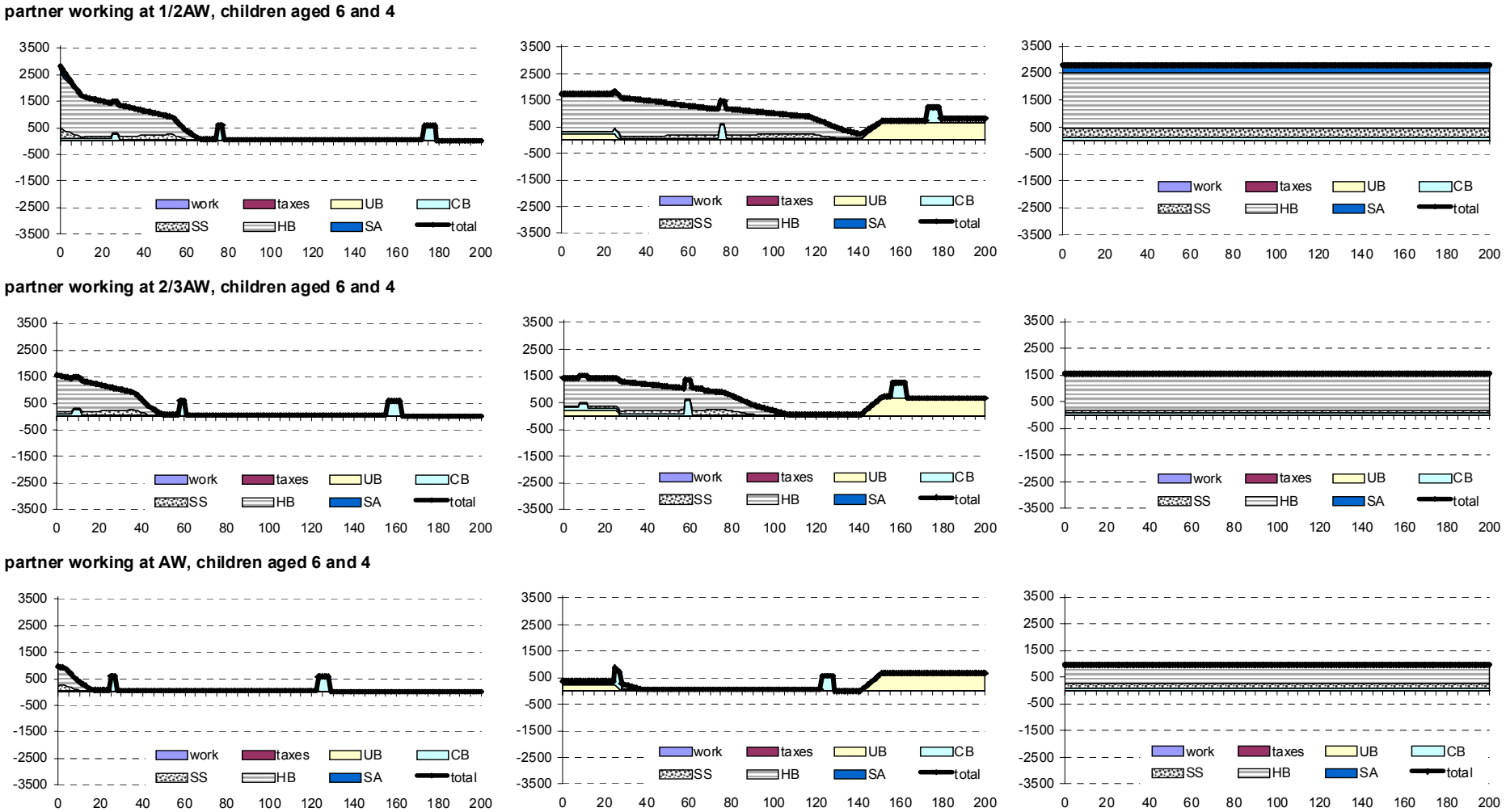
Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A10: Changes in Contributions of Taxes and Benefits to Net Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term Unemployment (right)



Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

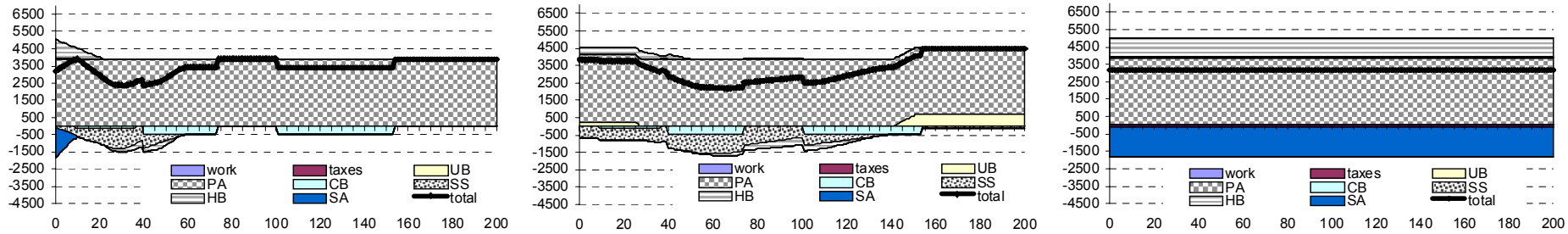
Figure A11: Changes in Contributions of Taxes and Benefits to the Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term Unemployment (right)



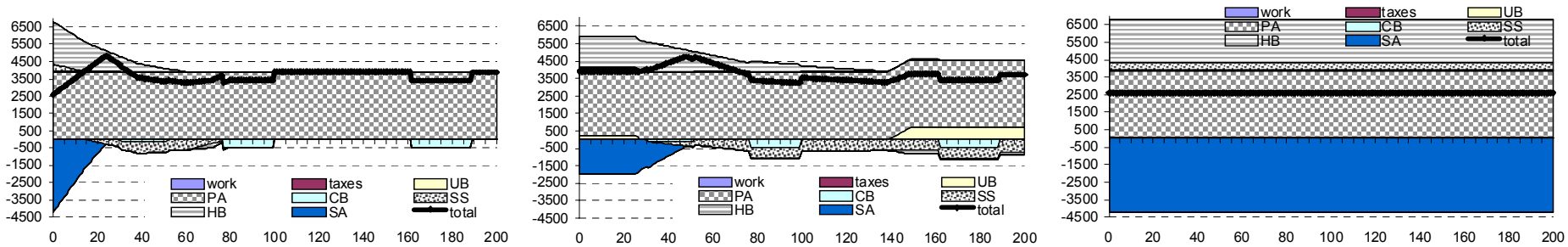
Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A12: Changes in Contributions of Taxes and Benefits to Net Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term Unemployment (right)

no partner, children aged 4 and 2

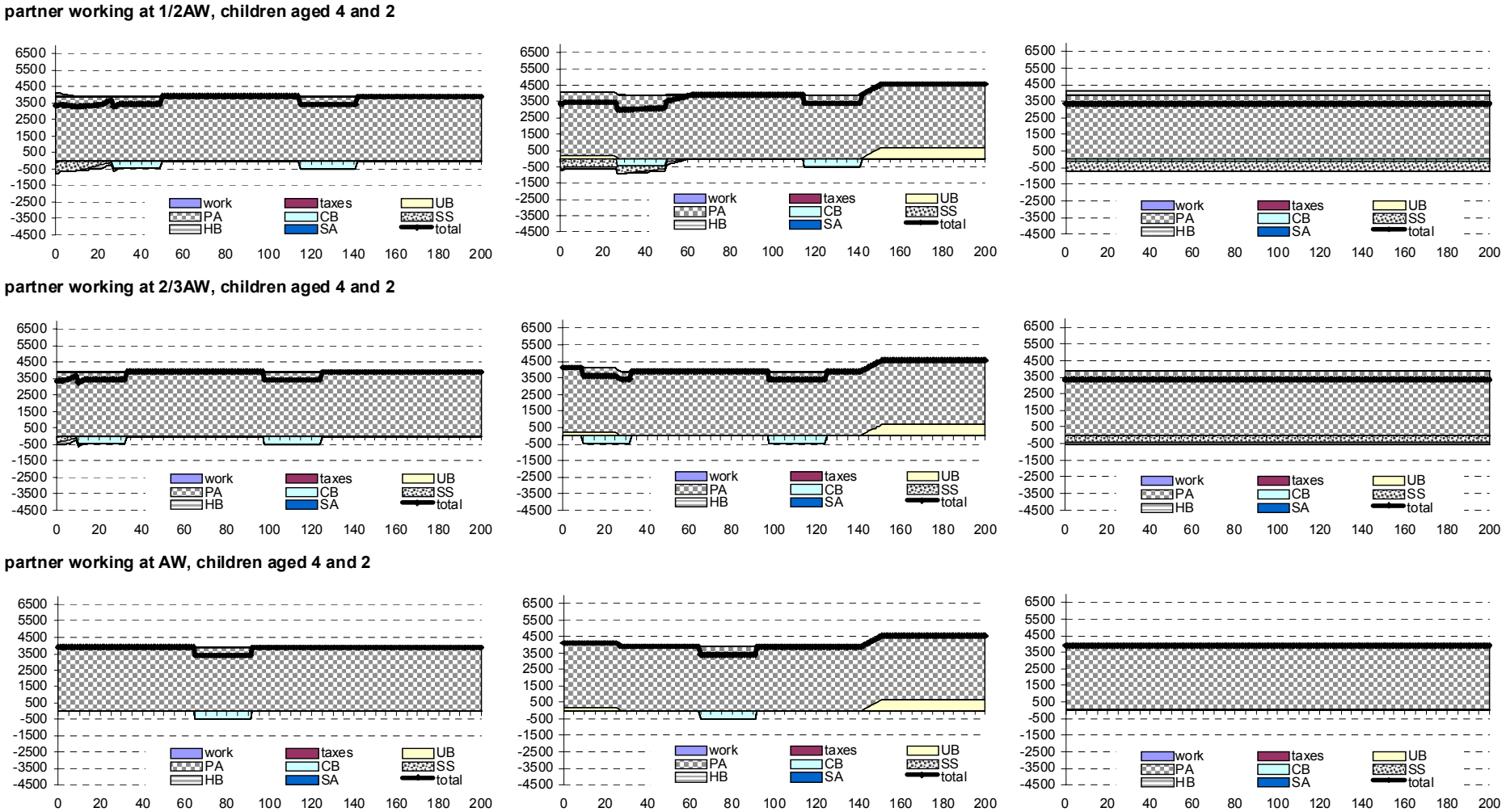


non-working partner, children aged 4 and 2



Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Figure A13: Changes in Contributions of Taxes and Benefits to Net Household Income in CZK between 2006 and 2007 in Employment (left), Short-Term Unemployment (middle) and Long-Term unemployment (right)



Note: Contribution of work income (work), taxes and social security insurance payments (taxes), unemployment benefit (UB), child benefit (CB), social supplement (SS), housing benefit (HB), social assistance (SA) and total change (total). The ratio of the minimum to average wage was 26% in 1996 and 38% in 2006.

Table A5: Weighted OLS Regressions of Net Replacement Rates

	Employed individuals				Unemployed individuals			
	E-U(UB)		E-U(noUB)		U-E(2/3AW)		U-E(1/2AW)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
constant	0.723***		0.547***		0.679***		0.757***	
type1		0.520***		0.342***		0.482***		0.618***
type2		0.663***		0.449***		0.609***		0.714***
type3		0.743***		0.523***		0.692***		0.768***
type4		0.672***		0.588***		0.613***		0.689***
type5		0.668***		0.550***		0.691***		0.785***
type6		0.798***		0.635***		0.731***		0.792***
d2007	0.012***		0.010***		0.013**		0.006	
type1*d2007		0.019***		-0.027***		0.003		0.004
type2*d2007		0.008		0.006		0.002		-0.022
type3*d2007		0.002		0.013***		0.004		0.004
type4*d2007		0.041***		-0.067***		0.013		0.001
type5*d2007		0.035***		0.005		-0.005		-0.040***
type6*d2007		0.009***		0.029***		0.024***		0.022***
N	14038	14038	14038	14038	2198	2198	2198	2198
R^2	0.002	0.98	0.001	0.95	0.004	0.99	0.001	0.99

Note: Transitions into short-term and long-term unemployment and into employment at two thirds and half of the average wage.
Dummies for children, non-working partner, working partner, family types, year 2007 (d2007) and interactions.
Type1: single, no children; type2: non-working partner, no children; type3: working partner, no children; type 4: single, children; type5: non-working partner, children; type6: working partner, children. *** significant at 1%, ** at 5%, * at 10%.

Table A6: Incidence of high NRRs among Employed Persons in per cent (for NRR>70%, 80% and 90%) in 2006 and 2007

		2006			2007		
Partner	**Children**	**>70%**	**>80%**	**>90%**	**>70%**	**>80%**	**>90%**
E->U(UB)							
All	All	64	31	6	68	34	7
No	No	3	1	1	4	1	0
Non-working	No	37	5	1	42	7	1
Working	No	75	22	1	77	22	1
No	Yes	36	9	4	62	20	2
Non-working	Yes	45	9	3	57	21	1
Working	Yes	87	57	12	89	61	15
E->U(noUB)							
All	All	18	6	2	21	7	2
No	No	3	1	1	1	0	0
Non-working	No	5	2	1	4	1	0
Working	No	6	1	0	7	2	0
No	Yes	25	8	3	4	2	1
Non-working	Yes	16	7	3	15	3	1
Working	Yes	32	10	2	41	16	3

Note: Share of individuals in per cent with NRRs greater than 70, 80 and 90% in 2006 and 2007. Potential transitions into short-term unemployment (upper panel) and long-term unemployment (lower panel).

Table A7: Incidence of high NRRs among Unemployed Persons in per cent (for NRR>70%, 80% and 90%) in 2006 and 2007

		2006			2007		
Partner	**Children**	**>70%**	**>80%**	**>90%**	**>70%**	**>80%**	**>90%**
U->E(2/3AW)							
All	All	47	12	1	54	16	1
No	No	4	0	0	7	0	0
Non-working	No	6	0	0	12	0	0
Working	No	51	16	2	51	16	2
No	Yes	19	4	0	20	9	0
Non-working	Yes	50	2	0	32	7	0
Working	Yes	65	20	1	82	24	1
U->E(1/2AW)							
All	All	73	36	7	77	39	7
No	No	23	12	2	32	16	5
Non-working	No	66	17	0	40	16	0
Working	No	70	40	14	72	41	14
No	Yes	42	9	4	45	13	5
Non-working	Yes	81	50	6	85	19	2
Working	Yes	89	44	8	97	58	8

Note: Share of individuals in per cent with NRRs greater than 70, 80 and 90% in 2006 and 2007. Potential transitions into employment with earnings equal to two thirds (upper panel) and half (lower panel) of the average wage.

Table A8: Predicted Aggregate Revenues and Expenditures (billion CZK)

	2002	**2006**	**2007**	**2007-2006**
Income tax	94.0	97.1 (102.3)*	97.1	0.0
Tax bonus per child	0.0	3.8 (1.6)*	3.8	0.0
Parental allowance (PA)	11.9	11.9	24.3	12.5
Child benefit (CB)	12.4	12.6	12.1	-0.4
Social supplement (SS)	3.4	3.4	3.3	-0.1
Housing benefit (HB)	6.4	6.4	12.2	5.8
Social assistance (SA)	7.9	7.9	4.2	-3.7
Housing supplement (HS)	0.0	0.0	0.7	0.7
Total benefits	42.0	42.1	56.8	14.7
Total - tested benefits	30.1	30.3	32.5	2.2
SA+HS	7.9	7.9	4.9	-3.0
HB+SA+HS	14.3	14.3	17.1	2.8

Note: Calculated using the model.

* Individual income taxation considered in parentheses.

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