

Supplementary Information

Model Data and Equations.

Demography_Sector:_Aging_and_Migration:

annual_fertility_rate = total_fertility_rate/fertility_period

ave_juvenile_immigrant_% = 0.21

ave_la_immigrant_% = 0.014

ave_ra_immigrant_% = 0.001

ave_young_immigrant_% = 0.775

fertility_period = 29

fraction_female = GRAPH(TIME)

(1990.00, 0.505499022), (1990.95833333, 0.505628696), (1991.91666667, 0.505489005), (1992.875, 0.505387904), (1993.83333333, 0.505498385), (1994.79166667, 0.5055073), (1995.75, 0.505545478), (1996.70833333, 0.505512082), (1997.66666667, 0.505363434), (1998.625, 0.505197703), (1999.58333333, 0.504936589), (2000.54166667, 0.504533649), (2001.50, 0.504442685), (2002.45833333, 0.504397604), (2003.41666667, 0.504299221), (2004.375, 0.504148935), (2005.33333333, 0.50390682), (2006.29166667, 0.503157141), (2007.25, 0.501877809), (2008.20833333, 0.500952857), (2009.16666667, 0.500483204), (2010.125, 0.499858444), (2011.08333333, 0.498809435), (2012.04166667, 0.497966751), (2013.00, 0.497473897)

Immigrants(t) = Immigrants(t - dt) + (immigrating - emigrating) * dt

INIT Immigrants = 150973

INFLOWS:

immigrating = total_immigration_all_categories

OUTFLOWS:

emigrating = total_emigration_all_categories

juvenile_death_rate = GRAPH(TIME)

(1990.00, 0.000944505), (1991.00, 0.000608287), (1992.00, 0.000540565), (1993.00, 0.000416055), (1994.00, 0.000366845), (1995.00, 0.000389443), (1996.00, 0.00032462), (1997.00, 0.000306517), (1998.00, 0.000306517), (1999.00,

0.000306517), (2000.00, 0.000306517), (2001.00, 0.000306517), (2002.00, 0.000306517), (2003.00, 0.000306517), (2004.00, 0.000306517), (2005.00, 0.000306517), (2006.00, 0.000306517), (2007.00, 0.000306517), (2008.00, 0.000306517), (2009.00, 0.000306517), (2010.00, 0.000306517), (2011.00, 0.000306517), (2012.00, 0.000306517), (2013.00, 0.000306517)

Juvenile_population_0_to_14(t) = Juvenile_population_0_to_14(t - dt) + (birth + juvenile_Immigrants - maturation_1 - juvenile_death) * dt

INIT Juvenile_population_0_to_14 = 805486

TRANSIT TIME = 15

CAPACITY = INF

INFLOW LIMIT = INF

INFLOWS:

birth = young_adult_females*annual_fertility_rate

juvenile_Immigrants = net_yearly_migration*ave_juvenile_immigrant_%

OUTFLOWS:

maturation_1 = CONVEYOR OUTFLOW

juvenile_death = LEAKAGE OUTFLOW

LEAKAGE FRACTION = juvenile_death_rate

late_adult_death_rate = GRAPH(TIME)

(1.000, 0.00959598), (1.100, 0.007606802), (1.200, 0.006257955), (1.300, 0.005527259), (1.400, 0.005530952), (1.500, 0.005362506), (1.600, 0.00539485), (1.700, 0.005418383), (1.800, 0.005418383), (1.900, 0.005418383), (2.000, 0.005418383)

Late_adult_population_50_to_74(t) = Late_adult_population_50_to_74(t - dt) + (maturation_2 + late_adult_Immigrants - maturation_3 - late_adult_death) * dt

INIT Late_adult_population_50_to_74 = 918718

TRANSIT TIME = 25

INFLOWS:

maturation_2 = CONVEYOR OUTFLOW

late_adult_Immigrants = net_yearly_migration*ave_la_immigrant_%

OUTFLOWS:

maturation_3 = CONVEYOR OUTFLOW

late_adult_death = LEAKAGE OUTFLOW

LEAKAGE FRACTION = late_adult_death_rate

life_expectancy_at_74 = 8

net_yearly_migration = (immigrating-emigrating)

Retirement_age_population_74_plus(t) = Retirement_age_population_74_plus(t - dt) +
(maturation_3 + retirement_age_immigrants - death) * dt

INIT Retirement_age_population_74_plus = 556319

TRANSIT TIME = life_expectancy_at_74

INFLOWS:

maturation_3 = CONVEYOR OUTFLOW

retirement_age_immigrants = net_yearly_migration*ave_ra_immigrant_%

OUTFLOWS:

death = CONVEYOR OUTFLOW

total_emigration_all_categories = GRAPH(TIME)

(1990.00, 9768), (1991.00, 8357), (1992.00, 8057), (1993.00, 10451), (1994.00, 9583),
(1995.00, 8992), (1996.00, 10032), (1997.00, 10034), (1998.00, 12005), (1999.00,
12690), (2000.00, 14931), (2001.00, 15216), (2002.00, 12273), (2003.00, 14345),
(2004.00, 13856), (2005.00, 12628), (2006.00, 12490), (2007.00, 13324), (2008.00,
15158), (2009.00, 18381), (2010.00, 22496), (2011.00, 22883), (2012.00, 21298),
(2013.00, 25036)

total_fertility_rate = GRAPH(TIME)

(1990.00, 1.930), (1991.00, 1.920), (1992.00, 1.880), (1993.00, 1.860), (1994.00,
1.870), (1995.00, 1.870), (1996.00, 1.890), (1997.00, 1.860), (1998.00, 1.810),
(1999.00, 1.850), (2000.00, 1.850), (2001.00, 1.780), (2002.00, 1.750), (2003.00,
1.800), (2004.00, 1.830), (2005.00, 1.840), (2006.00, 1.900), (2007.00, 1.900),
(2008.00, 1.960), (2009.00, 1.980), (2010.00, 1.950), (2011.00, 1.880), (2012.00,
1.850), (2013.00, 1.780)

total_immigration_all_categories = GRAPH(TIME)

(1990.00, 11055), (1991.00, 11089), (1992.00, 12234), (1993.00, 16773), (1994.00,
11348), (1995.00, 10222), (1996.00, 9675), (1997.00, 11541), (1998.00, 14359),
(1999.00, 22237), (2000.00, 18964), (2001.00, 17365), (2002.00, 22673), (2003.00,
19795), (2004.00, 21218), (2005.00, 23910), (2006.00, 29504), (2007.00, 44253),

(2008.00, 48410), (2009.00, 43762), (2010.00, 50251), (2011.00, 54319), (2012.00, 56592), (2013.00, 54394)

young_adult_death_rate = GRAPH(TIME)

(1990.00, 0.001291134), (1991.00, 0.001258465), (1992.00, 0.001279504), (1993.00, 0.001105854), (1994.00, 0.000946978), (1995.00, 0.00096055), (1996.00, 0.00086333), (1997.00, 0.000872981), (1998.00, 0.000872981), (1999.00, 0.000872981), (2000.00, 0.000872981), (2001.00, 0.000872981), (2002.00, 0.000872981), (2003.00, 0.000872981), (2004.00, 0.000872981), (2005.00, 0.000872981), (2006.00, 0.000872981), (2007.00, 0.000872981), (2008.00, 0.000872981), (2009.00, 0.000872981), (2010.00, 0.000872981), (2011.00, 0.000872981), (2012.00, 0.000872981), (2013.00, 0.000872981)

young_adult_females = Young_adult_population_15_to_49*fraction_female

Young_adult_population_15_to_49(t) = Young_adult_population_15_to_49(t - dt) + (maturation_1 + young_immigrants - maturation_2 - Young_Adult_Death) * dt

INIT Young_adult_population_15_to_49 = 1950593

TRANSIT TIME = 35

INFLOWS:

maturation_1 = CONVEYOR OUTFLOW

young_immigrants = net_yearly_migration*ave_young_immigrant_%

OUTFLOWS:

maturation_2 = CONVEYOR OUTFLOW

Young_Adult_Death = LEAKAGE OUTFLOW

LEAKAGE FRACTION = young_adult_death_rate

Economic_Sector:_General_State_Accounting:

annual_petroleum_industry_income = GRAPH(TIME)

(1990.00, 30000), (1991.00, 37718), (1992.00, 29264), (1993.00, 34686), (1994.00, 33444), (1995.00, 36717), (1996.00, 58672), (1997.00, 82862), (1998.00, 46516), (1999.00, 51113), (2000.00, 156851), (2001.00, 188562), (2002.00, 148297), (2003.00, 163919), (2004.00, 194968), (2005.00, 268379), (2006.00, 342106), (2007.00, 299970),

(2008.00, 397452), (2009.00, 304500), (2010.00, 287900), (2011.00, 313000),
(2012.00, 412800), (2013.00, 401200)

ave_capital = GRAPH(TIME)

(1990.00, 0.120634920635), (1991.00, 0.120634920635), (1992.00, 0.130158730159),
(1993.00, 0.136507936508), (1994.00, 0.133333333333), (1995.00, 0.139682539683),
(1996.00, 0.136507936508), (1997.00, 0.152380952381), (1998.00, 0.155555555556),
(1999.00, 0.15873015873), (2000.00, 0.15873015873), (2001.00, 0.15873015873),
(2002.00, 0.165079365079), (2003.00, 0.180952380952), (2004.00, 0.184126984127),
(2005.00, 0.196825396825), (2006.00, 0.190476190476), (2007.00, 0.209523809524),
(2008.00, 0.215873015873), (2009.00, 0.225396825397), (2010.00, 0.2333), (2011.00,
0.2316), (2012.00, 0.2448), (2013.00, 0.2677)

ave_compensation_of_labor = GRAPH(TIME)

(1990.00, 0.203174603175), (1991.00, 0.203174603175), (1992.00, 0.209523809524),
(1993.00, 0.209523809524), (1994.00, 0.228571428571), (1995.00, 0.228571428571),
(1996.00, 0.222222222222), (1997.00, 0.228571428571), (1998.00, 0.234920634921),
(1999.00, 0.24126984127), (2000.00, 0.247619047619), (2001.00, 0.260317460317),
(2002.00, 0.260317460317), (2003.00, 0.2714), (2004.00, 0.2805), (2005.00, 0.3067),
(2006.00, 0.2936), (2007.00, 0.3225), (2008.00, 0.3453), (2009.00, 0.3467), (2010.00,
0.3589), (2011.00, 0.3763), (2012.00, 0.3917), (2013.00, 0.4071)

ave_cost_per_absentee = .915

ave_tax_rate = GRAPH(TIME)

(1990.00, 0.023), (1991.00, 0.023), (1992.00, 0.023), (1993.00, 0.0231), (1994.00,
0.024), (1995.00, 0.0246), (1996.00, 0.025), (1997.00, 0.0255), (1998.00, 0.0254),
(1999.00, 0.0252), (2000.00, 0.025), (2001.00, 0.0256), (2002.00, 0.0244), (2003.00,
0.0246), (2004.00, 0.0234), (2005.00, 0.0253), (2006.00, 0.0253), (2007.00, 0.0253),
(2008.00, 0.0247), (2009.00, 0.0252), (2010.00, 0.0254), (2011.00, 0.0253), (2012.00,
0.0254), (2013.00, 0.0254)

ave_taxable_income = GRAPH(TIME)

(1990.00, 0.146031746032), (1991.00, 0.165079365079), (1992.00, 0.165079365079),
(1993.00, 0.165079365079), (1994.00, 0.177777777778), (1995.00, 0.184126984127),
(1996.00, 0.190476190476), (1997.00, 0.203174603175), (1998.00, 0.203174603175),
(1999.00, 0.209523809524), (2000.00, 0.209523809524), (2001.00, 0.215873015873),
(2002.00, 0.215873015873), (2003.00, 0.234920634921), (2004.00, 0.234920634921),
(2005.00, 0.247619047619), (2006.00, 0.275), (2007.00, 0.2933), (2008.00, 0.3138),
(2009.00, 0.3237), (2010.00, 0.3319), (2011.00, 0.3456), (2012.00, 0.3607), (2013.00,
0.3751)

budget_surplus = (state_income+pension_fund_contribution_to_state_budget)-
(other_expenditures+pension_transfers+absentee_expenditures)

capital_tax_rate = 0.01

employed_persons = labor_force*employment_rate

employer_fee = 0.141

employment_rate = GRAPH(TIME)

(1990.00, 0.947712418), (1991.00, 0.944967074), (1992.00, 0.94084507), (1993.00, 0.940403566), (1994.00, 0.946071595), (1995.00, 0.95105215), (1996.00, 0.951785714), (1997.00, 0.959772628), (1998.00, 0.968144641), (1999.00, 0.968281183), (2000.00, 0.965531915), (2001.00, 0.964845404), (2002.00, 0.961312027), (2003.00, 0.955368421), (2004.00, 0.95549958), (2005.00, 0.95375), (2006.00, 0.965658217), (2007.00, 0.965149651), (2008.00, 0.965658217), (2009.00, 0.97447148), (2010.00, 0.974141258), (2011.00, 0.968339768), (2012.00, 0.963873943), (2013.00, 0.967287942)

General_fund(t) = General_fund(t - dt) + (pension_fund_contribution_to_state_budget + state_income - other_expenditures - pension_fund_income - pension_transfers - absentee_expenditures) * dt

INIT General_fund = 0

INFLOWS:

pension_fund_contribution_to_state_budget =
Pension_fund*regulated_interest_rate

state_income =
income_from_all_other_categories+total_employer_tax_income+annual_petroleum_industry_income+income_tax_contribution+total_capital_tax+income_tax_rev_for_pension

OUTFLOWS:

other_expenditures = other_state_expenses

pension_fund_income = IF budget_surplus > 0 THEN budget_surplus ELSE 0

pension_transfers = total_pension_payouts

absentee_expenditures = ave_cost_per_absentee*total_absentees

income_from_all_other_categories = GRAPH(TIME)

(1990.00, 355222.35), (1991.00, 362889.4), (1992.00, 368000), (1993.00, 370555.3), (1994.00, 370555.3), (1995.00, 375667.05), (1996.00, 385889.4), (1997.00, 391000), (1998.00, 393555.3), (1999.00, 393555.3), (2000.00, 406332.95), (2001.00, 408889.4), (2002.00, 421667.05), (2003.00, 439010.2), (2004.00, 450264.1), (2005.00, 515127.55), (2006.00, 582588.85), (2007.00, 606726.2), (2008.00, 703775.85),

(2009.00, 594652.35), (2010.00, 587679.9), (2011.00, 679230.25), (2012.00, 723990.55), (2013.00, 720545.15)

income_tax_contribution = total_taxable_income*ave_tax_rate

income_tax_rev_for_pension = total_taxable_income*pension_contribution_rate

labor_force = working_age_population*labor_force_participation_rate

labor_force_participation_rate = GRAPH(TIME)

(1990.00, 0.692), (1991.00, 0.685), (1992.00, 0.684), (1993.00, 0.682), (1994.00, 0.686), (1995.00, 0.696), (1996.00, 0.712), (1997.00, 0.725), (1998.00, 0.733), (1999.00, 0.733), (2000.00, 0.734), (2001.00, 0.735), (2002.00, 0.735), (2003.00, 0.729), (2004.00, 0.726), (2005.00, 0.724), (2006.00, 0.720), (2007.00, 0.728), (2008.00, 0.720), (2009.00, 0.728), (2010.00, 0.739), (2011.00, 0.728), (2012.00, 0.719), (2013.00, 0.714)

other_state_expenses = GRAPH(TIME)

(1990.00, 272037.35), (1991.00, 314156.6), (1992.00, 330023.82), (1993.00, 353985.44), (1994.00, 366248.5), (1995.00, 350483.11), (1996.00, 353264.44), (1997.00, 383874.44), (1998.00, 427891.01), (1999.00, 446288.35), (2000.00, 445673.79), (2001.00, 462213.39), (2002.00, 520042), (2003.00, 520353.6), (2004.00, 561007.07), (2005.00, 582121.38), (2006.00, 614128.9), (2007.00, 642946.27), (2008.00, 707581.71), (2009.00, 806667.08), (2010.00, 822964.31), (2011.00, 895817.29), (2012.00, 940457.43), (2013.00, 1029443.45)

pension_contribution_rate = 0.08

Pension_fund(t) = Pension_fund(t - dt) + (pension_fund_income + interest - pension_fund_contribution_to_state_budget) * dt

INIT Pension_fund = 0

INFLOWS:

pension_fund_income = IF budget_surplus > 0 THEN budget_surplus ELSE 0

interest = Pension_fund*pension_fund_interest

OUTFLOWS:

pension_fund_contribution_to_state_budget = Pension_fund*regulated_interest_rate

pension_fund_interest = 0.05

regulated_interest_rate = 0.04

security_fee = 0.081

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total_capital_tax = total_population*ave_capital*capital_tax_rate
total_employer_tax_income =
total_labor_compensation*employer_fee+total_labor_compensation*security_fee
total_labor_compensation = employed_persons*ave_compensation_of_labor
total_taxable_income = employed_persons*ave_taxable_income

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Pension_Sector:

at = 1

ave_female_salary = GRAPH(TIME)

(1990.00, 0.131), (1991.00, 0.142), (1992.00, 0.146), (1993.00, 0.157), (1994.00, 0.161), (1995.00, 0.179), (1996.00, 0.190), (1997.00, 0.21702), (1998.00, 0.233016), (1999.00, 0.242292), (2000.00, 0.254556), (2001.00, 0.26598), (2002.00, 0.284832), (2003.00, 0.295308), (2004.00, 0.306948), (2005.00, 0.31716), (2006.00, 0.331836), (2007.00, 0.349644), (2008.00, 0.372684), (2009.00, 0.384), (2010.00, 0.4008), (2011.00, 0.4176), (2012.00, 0.4368), (2013.00, 0.450)

ave_male_salary = GRAPH(TIME)

(1990.00, 0.241), (1991.00, 0.245), (1992.00, 0.248), (1993.00, 0.252), (1994.00, 0.252), (1995.00, 0.252), (1996.00, 0.252), (1997.00, 0.259284), (1998.00, 0.278724), (1999.00, 0.2904), (2000.00, 0.304896), (2001.00, 0.3192), (2002.00, 0.339348), (2003.00, 0.35046), (2004.00, 0.362604), (2005.00, 0.374412), (2006.00, 0.392064), (2007.00, 0.41484), (2008.00, 0.438384), (2009.00, 0.4536), (2010.00, 0.4716), (2011.00, 0.4896), (2012.00, 0.5052), (2013.00, 0.5244)

ave_position_percent_female = shared_care_effect_female

ave_position_percent_male = shared_care_effect_male

chg_in_cch_at = 1

child_care_resources_policy = GRAPH(pension_inequality)

(0.000, 2.000), (0.100, 1.876), (0.200, 1.737), (0.300, 1.646), (0.400, 1.540), (0.500, 1.453), (0.600, 1.412), (0.700, 1.328), (0.800, 1.234), (0.900, 1.153), (1.000, 1.000)

childcare_gap = total_required_childcare_hours-Childcare_hours

Childcare_hours(t) = Childcare_hours(t - dt) + (chg_in_cch) * dt

INIT Childcare_hours = 0

INFLOWS:

chg_in_cch = (desired_childcare_hours-Childcare_hours)/chg_in_cch_at

desired_childcare_hours = MAX(child_care_resources_policy*hours_mlt, 36)

hours_mlt = 12

pension_inequality = total_yearly_pension_amt_f/total_yearly_pension_amt_m

pension_mlt = .007

pension_point_mlt = 1.675

pension_points_f = pension_point_mlt*Total_lifetime_income_f

pension_points_m = pension_point_mlt*Total_lifetime_income_m

percent_shared_care_female = 1

percent_shared_care_male = 0

shared_care_effect_female = GRAPH(shared_cared_hours_female)

(0.00, 0.9864), (1.01265822785, 0.9848), (2.0253164557, 0.9773), (3.03797468354, 0.97425), (4.05063291139, 0.9682), (5.06329113924, 0.9636), (6.07594936709, 0.9591), (7.08860759494, 0.9561), (8.10126582278, 0.9515), (9.11392405063, 0.9485), (10.1265822785, 0.9424), (11.1392405063, 0.9394), (12.1518987342, 0.9364), (13.164556962, 0.9326), (14.1772151899, 0.9288), (15.1898734177, 0.9212), (16.2025316456, 0.9174), (17.2151898734, 0.9136), (18.2278481013, 0.9106), (19.2405063291, 0.9076), (20.253164557, 0.9015), (21.2658227848, 0.8955), (22.2784810127, 0.8909), (23.2911392405, 0.8894), (24.3037974684, 0.8833), (25.3164556962, 0.8803), (26.3291139241, 0.8788), (27.3417721519, 0.8742), (28.3544303797, 0.8712), (29.3670886076, 0.8697), (30.3797468354, 0.8667), (31.3924050633, 0.8621), (32.4050632911, 0.8606), (33.417721519, 0.8545), (34.4303797468, 0.8485), (35.4430379747, 0.8394), (36.4556962025, 0.8288), (37.4683544304, 0.8258), (38.4810126582, 0.8197), (39.4936708861, 0.8182), (40.5063291139, 0.8152), (41.5189873418, 0.8106), (42.5316455696, 0.8045), (43.5443037975, 0.7985), (44.5569620253, 0.7955), (45.5696202532, 0.7909), (46.582278481, 0.7864), (47.5949367089, 0.7803), (48.6075949367, 0.7788), (49.6202531646, 0.7758), (50.6329113924, 0.7712), (51.6455696203, 0.7682), (52.6582278481, 0.7621), (53.6708860759, 0.7576), (54.6835443038, 0.7545), (55.6962025316, 0.7530), (56.7088607595, 0.7500), (57.7215189873, 0.7439), (58.7341772152, 0.7394), (59.746835443, 0.7364), (60.7594936709, 0.7348), (61.7721518987, 0.7318), (62.7848101266, 0.7288), (63.7974683544, 0.7258), (64.8101265823, 0.7235), (65.8227848101, 0.7212), (66.835443038, 0.7167), (67.8481012658, 0.7121), (68.8607594937, 0.70985), (69.8734177215, 0.7045),

(70.8860759494, 0.7030), (71.8987341772, 0.6985), (72.9113924051, 0.6955),
(73.9240506329, 0.6924), (74.9367088608, 0.6879), (75.9493670886, 0.6773),
(76.9620253165, 0.6727), (77.9746835443, 0.6712), (78.9873417722, 0.6682), (80.00,
0.6515)

shared_care_effect_male = GRAPH(shared_care_hours_male)

(0.00, 1.0000), (1.01265822785, 0.9967), (2.0253164557, 0.9951), (3.03797468354,
0.9935), (4.05063291139, 0.9919), (5.06329113924, 0.9886), (6.07594936709,
0.9853), (7.08860759494, 0.9805), (8.10126582278, 0.9788), (9.11392405063,
0.9740), (10.1265822785, 0.9674), (11.1392405063, 0.9658), (12.1518987342,
0.9609), (13.164556962, 0.9593), (14.1772151899, 0.9544), (15.1898734177, 0.9495),
(16.2025316456, 0.9414), (17.2151898734, 0.9381), (18.2278481013, 0.9316),
(19.2405063291, 0.9267), (20.253164557, 0.9219), (21.2658227848, 0.9170),
(22.2784810127, 0.9121), (23.2911392405, 0.9105), (24.3037974684, 0.9056),
(25.3164556962, 0.9007), (26.3291139241, 0.8958), (27.3417721519, 0.8926),
(28.3544303797, 0.8909), (29.3670886076, 0.8877), (30.3797468354, 0.88445),
(31.3924050633, 0.8812), (32.4050632911, 0.8714), (33.417721519, 0.868133333333),
(34.4303797468, 0.864866666667), (35.4430379747, 0.8616), (36.4556962025,
0.8519), (37.4683544304, 0.8453), (38.4810126582, 0.8388), (39.4936708861,
0.8323), (40.5063291139, 0.8307), (41.5189873418, 0.8274), (42.5316455696,
0.8258), (43.5443037975, 0.8226), (44.5569620253, 0.8193), (45.5696202532,
0.8177), (46.582278481, 0.8160), (47.5949367089, 0.8112), (48.6075949367, 0.8079),
(49.6202531646, 0.8047), (50.6329113924, 0.7998), (51.6455696203, 0.7949),
(52.6582278481, 0.7916), (53.6708860759, 0.7867), (54.6835443038, 0.7819),
(55.6962025316, 0.7786), (56.7088607595, 0.7770), (57.7215189873, 0.7721),
(58.7341772152, 0.7688), (59.746835443, 0.7656), (60.7594936709, 0.7623),
(61.7721518987, 0.7591), (62.7848101266, 0.7526), (63.7974683544, 0.7460),
(64.8101265823, 0.7347), (65.8227848101, 0.7265), (66.835443038, 0.7216),
(67.8481012658, 0.7167), (68.8607594937, 0.7135), (69.8734177215, 0.7070),
(70.8860759494, 0.7037), (71.8987341772, 0.6972), (72.9113924051, 0.6907),
(73.9240506329, 0.6858), (74.9367088608, 0.6809), (75.9493670886, 0.6777),
(76.9620253165, 0.6744), (77.9746835443, 0.6712), (78.9873417722, 0.6647), (80.00,
0.6500)

shared_care_hours_male = percent_shared_care_male*childcare_gap

shared_cared_hours_female = childcare_gap*percent_shared_care_female

total_income_f =

ave_female_salary*years_of_employment*ave_position_percent_female

total_income_m = ave_position_percent_male*ave_male_salary*years_of_employment

Total_lifetime_income_f(t) = Total_lifetime_income_f(t - dt) +

(chg_in_total_lifetime_income_f) * dt

INIT Total_lifetime_income_f = 6

INFLOWS:

chg_in_total_lifetime_income_f = (total_income_f-Total_lifetime_income_f)/at

Total_lifetime_income_m(t) = Total_lifetime_income_m(t - dt) +
(chg_in_total_lifetime_income_m) * dt

INIT Total_lifetime_income_m = 10

INFLOWS:

chg_in_total_lifetime_income_m = (total_income_m-Total_lifetime_income_m)/at

total_pension_payouts =
((total_yearly_pension_amt_m*male_retirement_population)+(total_yearly_pension_amt_f*female_retirement_population))

total_required_childcare_hours = 84

total_yearly_pension_amt_f = pension_mltp*pension_points_f

total_yearly_pension_amt_m = pension_points_m*pension_mltp

years_of_employment = 40

{ The model has 150 (150) variables (array expansion in parens).

In 1 Modules with 6 Sectors.

Stocks: 12 (12) Flows: 28 (28) Converters: 110 (110)

Constants: 37 (37) Equations: 101 (101) Graphicals: 36 (36)

}

Calculations:

female_employee_percent = .47

female_employees = employed_persons*female_employee_percent

female_retirement_population = total_pensioners*percent_elderly_female

late_adult_pensioners = Late_adult_population_50_to_74*pensioner_percent_62_to_73

male_employee_percent = .53

male_employees = employed_persons*male_employee_percent

male_retirement_population = total_pensioners*percent_elderly_male

pensioner_percent_62_to_73 = .35

percent_elderly_female = .52

percent_elderly_male = .48

percent_male_absenteeism = (total_male_absentees/male_employees) * 100

total_absentees = total_female_absentees+total_male_absentees

total_male_absentees = GRAPH(TIME)

(1990.00, 24000), (1991.00, 25000), (1992.00, 25000), (1993.00, 26000), (1994.00, 24000), (1995.00, 24000), (1996.00, 29000), (1997.00, 27000), (1998.00, 26000), (1999.00, 32000), (2000.00, 44860), (2001.00, 48051), (2002.00, 49734), (2003.00, 49278), (2004.00, 40324), (2005.00, 44441), (2006.00, 44605), (2007.00, 46993), (2008.00, 51575), (2009.00, 49878), (2010.00, 49608), (2011.00, 46284), (2012.00, 48754), (2013.00, 48189)

total_pensioners = late_adult_pensioners+Retirement_age_population_74_plus

total_population =

Juvenile_population_0_to_14+Young_adult_population_15_to_49+Late_adult_population_50_to_74+Retirement_age_population_74_plus

working_age_population =

Young_adult_population_15_to_49+Late_adult_population_50_to_74

DATA:

PENSION_FUND_DATA = GRAPH(TIME)

(1990.00, 0), (1991.00, 0), (1992.00, 0), (1993.00, 0), (1994.00, 0), (1995.00, 0), (1996.00, 0), (1997.00, 0), (1998.00, 0), (1999.00, 0), (2000.00, 0), (2001.00, 649750), (2002.00, 666000), (2003.00, 856614), (2004.00, 1053063), (2005.00, 1335291), (2006.00, 1669755), (2007.00, 2182000), (2008.00, 2594000), (2009.00, 2915000), (2010.00, 2824000), (2011.00, 3481000), (2012.00, 3543000), (2013.00, 4426000)

STATE_INCOME_DATA = GRAPH(TIME)

(1990.00, 0), (1991.00, 0), (1992.00, 0), (1993.00, 0), (1994.00, 0), (1995.00, 498966), (1996.00, 554180), (1997.00, 597481), (1998.00, 586383), (1999.00, 654994), (2000.00, 845756), (2001.00, 877398), (2002.00, 855218), (2003.00, 883513),

(2004.00, 986211), (2005.00, 1120291), (2006.00, 1290887), (2007.00, 1362449),
(2008.00, 1520367), (2009.00, 1354127), (2010.00, 1433283), (2011.00, 1580595),
(2012.00, 1664677), (2013.00, 1679327)

TOTAL_FEMALE_ABSENTEEISM_DATA = GRAPH(TIME)

(1990.00, 6.10), (1991.00, 6.10), (1992.00, 6.14), (1993.00, 6.71), (1994.00, 6.10),
(1995.00, 6.05), (1996.00, 6.14), (1997.00, 6.14), (1998.00, 6.24), (1999.00, 6.43),
(2000.00, 6.43), (2001.00, 6.43), (2002.00, 6.43), (2003.00, 6.71), (2004.00, 6.76),
(2005.00, 7.40), (2006.00, 7.40), (2007.00, 7.50), (2008.00, 7.50), (2009.00, 8.10),
(2010.00, 7.60), (2011.00, 7.10), (2012.00, 7.30), (2013.00, 7.00)

TOTAL_MALE_ABSENTEEISM_DATA = GRAPH(TIME)

(1990.00, 2.38), (1991.00, 2.52), (1992.00, 2.67), (1993.00, 2.86), (1994.00, 2.86),
(1995.00, 2.90), (1996.00, 2.90), (1997.00, 2.95), (1998.00, 3.14), (1999.00, 3.14),
(2000.00, 3.19), (2001.00, 3.29), (2002.00, 3.48), (2003.00, 3.67), (2004.00, 3.81),
(2005.00, 4.50), (2006.00, 4.50), (2007.00, 4.50), (2008.00, 4.70), (2009.00, 5.00),
(2010.00, 4.60), (2011.00, 4.10), (2012.00, 4.20), (2013.00, 4.10)

TOTAL_PENSION_PAYOUTS_DATA = GRAPH(TIME)

(1990.00, 0), (1991.00, 0), (1992.00, 0), (1993.00, 0), (1994.00, 0), (1995.00, 0),
(1996.00, 0), (1997.00, 0), (1998.00, 0), (1999.00, 0), (2000.00, 0), (2001.00, 68659),
(2002.00, 72440), (2003.00, 77128), (2004.00, 81113), (2005.00, 85457), (2006.00,
90382), (2007.00, 97311), (2008.00, 105221), (2009.00, 112789), (2010.00, 120592),
(2011.00, 134693), (2012.00, 150704), (2013.00, 164763)

TOTAL_POPULATION_DATA = GRAPH(TIME)

(1990.00, 4233116), (1991.00, 4249830), (1992.00, 4273634), (1993.00, 4299167),
(1994.00, 4324815), (1995.00, 4348410), (1996.00, 4369957), (1997.00, 4392714),
(1998.00, 4417599), (1999.00, 4445329), (2000.00, 4478497), (2001.00, 4503436),
(2002.00, 4524066), (2003.00, 4552252), (2004.00, 4577457), (2005.00, 4606363),
(2006.00, 4640219), (2007.00, 4681134), (2008.00, 4737171), (2009.00, 4799252),
(2010.00, 4858199), (2011.00, 4920305), (2012.00, 4985870), (2013.00, 5051275)

TOTAL_YEARLY_PENSION_F_DATA = GRAPH(TIME)

(1990.00, 0.0), (1991.00, 0.0), (1992.00, 0.0), (1993.00, 0.0), (1994.00, 0.0), (1995.00,
0.0), (1996.00, 0.0), (1997.00, 0.0), (1998.00, 0.0), (1999.00, 0.0), (2000.00, 0.0),
(2001.00, 0.0), (2002.00, 0.0), (2003.00, 0.0), (2004.00, 0.0), (2005.00, 0.0), (2006.00,
0.125264), (2007.00, 0.134188), (2008.00, 0.144669), (2009.00, 0.152585), (2010.00,
0.160481), (2011.00, 0.168335), (2012.00, 0.175145), (2013.00, 0.182435)

TOTAL_YEARLY_PENSION_M_DATA = GRAPH(TIME)

(1990.00, 0.0), (1991.00, 0.0), (1992.00, 0.0), (1993.00, 0.0), (1994.00, 0.0), (1995.00, 0.0), (1996.00, 0.0), (1997.00, 0.0), (1998.00, 0.0), (1999.00, 0.0), (2000.00, 0.0), (2001.00, 0.0), (2002.00, 0.0), (2003.00, 0.0), (2004.00, 0.0), (2005.00, 0.0), (2006.00, 0.17215), (2007.00, 0.185097), (2008.00, 0.197944), (2009.00, 0.208961), (2010.00, 0.219765), (2011.00, 0.22945), (2012.00, 0.237064), (2013.00, 0.245067)

WORKING_AGE_POPULATION_DATA = GRAPH(TIME)

(1990.00, 2869311.0), (1991.00, 2874830.0), (1992.00, 2883629.0), (1993.00, 2893209.0), (1994.00, 2907091.0), (1995.00, 2918264.0), (1996.00, 2930775.0), (1997.00, 2943055.0), (1998.00, 2959590.0), (1999.00, 2977974.0), (2000.00, 3000841.0), (2001.00, 3019514.0), (2002.00, 3040080.0), (2003.00, 3068589.0), (2004.00, 3096463.0), (2005.00, 3127144.0), (2006.00, 3162792.0), (2007.00, 3202340.0), (2008.00, 3254045.0), (2009.00, 3306922.0), (2010.00, 3356935.0), (2011.00, 3406589.0), (2012.00, 3458409.0), (2013.00, 3503314.0)