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A New Pension Adjustment Formula for Germany – Distributional Sensitivity Results

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Zusammenfassung*

Vor dem Hintergrund einer fundamental veränderten sozialpolitischen Strategie im bundesdeutschen Alterssicherungssystem hin zu einer Stärkung privater Altersvorsorge haben die Prinzipien der Rentendynamisierung in Deutschland eine hohe öffentliche Aufmerksamkeit erlangt. In diesem Kontext präsentiert das Papier eine vergleichsweise einfache Anpassungsformel mit einer eingebauten Verteilungskomponente.

Auf der Basis der neuen Formel werden Sensitivitätsstudien in Bezug auf den Wohlstand der Älteren in Deutschland durchgeführt und diese Ergebnisse mit der Wohlstandslage anderer bundesdeutscher Altersgruppen verglichen. Die korrespondierenden Sensitivitätsanalysen variieren mit den Parametern der neuen Formel und sind zusätzlich auf andere Rentenanpassungsformeln bezogen, um die divergierenden Konsequenzen der verschiedenen Formeln und deren unterschiedliche „Philosophien" miteinander zu vergleichen. Die genutzten Mikrodaten stammen aus dem deutschen Sozio-oekonomischen Panel (SOEP) 1984-2010.

Summary*

Amidst the backdrop of a fundamentally changed socio-political strategy within the German pension system towards a strengthening of private pension schemes, in Germany the principles of pension adjustments have attracted a great deal of public attention. In this context, the paper presents a relatively simple adjustment formula with an intrinsic distributional component.

On the basis of the new formula, sensitivity studies concerning the well-being of the elderly in Germany are performed, and these results are compared to the well-being of other German age groups. The corresponding sensitivity analyses vary due to the parameters of the new formula, and, additionally, they are related to alternative pensions' adjustment formulas in order to compare the diverging consequences of several formulas and their different underlying "philosophies". The micro-data used is from the German Socio-Economic Panel (SOEP) 1984-2010.

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Content

1. Introduction

In the context of pension adjustments, three issues arise: (1) the question in which way pensioners should participate on macroeconomic productivity gains or, more general, on overall welfare developments (socio-political perspective), (2) the issue of financial sustainability of the pension system (fiscal perspective), and (3) the impact of pension adjustments on price developments and on the macroeconomic demand (macroeconomic perspective).

This paper focuses on the first issue, i. e., on socio-political aspects. It offers a new pension adjustment formula and uses this formula for intergenerational distributional (sensitivity) analyses.

Specifically, the paper is organized in three steps as follows. Firstly, the new adjustment formula is presented. Secondly, the pension adjustments generated by this formula and by other adjustment formulas are empirically discussed for Germany. Thirdly, the impact on well-being (income distribution) for different age groups in Germany is considered (referring to the German Socio-Economic Panel (SOEP) as the micro-database).[1]

2. Adjustment formulas

2.1 Rules

On principle, an adjustment formula is challenged by the following criteria:

1. It must be affordable.

2. It should guarantee a tight relationship between contributions and payments (in a pay-as-you-go system).

3. It should produce comprehensible intra- and intergenerational distributional results.

4. For reasons of acceptance concerning the pension system, it should ensure a living standard above public assistance for longtime assured people.

The latter is compatible with securing individual living standards mainly by the statutory pension system, as a main target of this system. Moreover, discretionary interventions should be avoided since they may cause irregularities with respect to the rules of the pension system and, hence, may also put the pension system's acceptance at risk. In the past, in Germany there have been many of such discretionary interventions which overruled the formally valid adjustment formulas. For instance, in 2006 a zero adjustment of pensions was performed by politics, and in 2000 the pensions were adjusted by the inflation rate of the previous year – in both cases independent of the formal adjustment rules (in 2000: adjustment by net wages, in 2006: adjustment by the current adjustment formula).

Principally, pensions can be adjusted by different variables, e. g., by inflation rates, by gross wages, or by net wages. Furthermore, a pensions' adjustment formula may comprise redistributive elements (explicitly considering different income levels of the pensioners), etc. Since 2005, in Germany a formula on the basis of modified gross wages and of a factor reflecting sustainability has been installed. In this context, particularly two points of criticism exist: Firstly, the taking into account of non-obligatory contributions to private pensions' schemes appears problematic, and, secondly, the weighting of the quotient of the change of the pensioners' number to that of contributors by an (obscure) factor α is more or less arbitrary.

[1] As a reference for the SOEP database, see, e. g., Wagner, Frick, and Schupp 2007.

2.2 A new adjustment formula

Because of such drawbacks I argue in favour of a gross-wage based adjustment rule which should be modified by another (demographic and labour market's) "sustainability factor" and by a "distributional factor". This new formula is named as "integrated gross-wage adjustment" (abbreviated: IGWA). In my eyes it is much more plausible than the existing formula.[2]

In detail, the three formula's elements are constructed as follows:

(1) *Gross-wages' component:* It takes into account that in the German pay-as-you-go system the contributions result from payments out of the gross wages. Additionally, the reference on gross wages may avoid politically non-intended redistributions to the (relative) disadvantage of the target groups which may otherwise occur (i. e., if adjustments refer to net incomes and if, e. g., child allowances increase from which non-target groups like the elderly would also benefit via pension adjustments). Since an adjustment formula should, principally, unfold countercyclical effects (reflecting the role of social insurance systems as "automatic stabilisers"), in the formula, proposed here, a lagged gross-wage adjustment is integrated (operationalized as the geometric mean of gross-wage changes from period t-3 to period t-1).

(2) *Stability component:* It reflects the relation between pensioners and contributors in terms of their change over time. Insofar it represents demographic as well as labour market's effects on pension payments. For a pay-as-a-you-go system it is constitutive that there is a kind of balance between both groups of persons mentioned.

(3) *Distributional component:* It results from acquirement (4) sketched in Section 2.1: For a somewhat "representative" pensioner the level of his/her pension should amount to a specified percentage share of the average net (labour) income at a given point of time. In the following, 64 percent are supposed since such a level reflects a pension's amount that is (sufficiently) above the level of the German social assistance allowances.

On balance, the new formula looks as follows:

(1)

$$ARW_t = ARW_{t-1} \cdot \left(\frac{L_{t-1}}{L_{t-3}} \right)^{0.5} \cdot \frac{\frac{R_{t-2}}{Z_{t-2}}}{\frac{R_{t-1}}{Z_{t-1}}} \cdot x_t ,$$

where:

$$x_t = \frac{0.64 \cdot \frac{L^{(n)}_{t,ph}}{12}}{ARW^*_t \cdot 45 \cdot 0.9}$$

and:

$x_t \geq 1.00$

[with: t = annual index, ARW = pension's base value, ARW* = pension's base value without considering the distributional element x, L = average gross wage p. a., R = number of pensioners, Z = number of contributors, x = distributional component, $L^{(n)}_{ph}$ = average per-head net wage p. a.].

[2] This formula has been developed by Faik and Köhler-Rama 2009a und 2009b. The considerations in Chapter 2 greatly refer to these sources.

For purposes of reducing complexity, in Formula (1) – concretely: concerning the equation of x_t – it is assumed that all pensioners have to pay ten percent out of their pension to the public health system and that they do not have to pay any tax. Since an interplay between ARW_t (or ARW_t*) and x_t exists, ARW_t* at first must be calculated via a value of x_t in the amount of 1.00 (i. e., ARW_t* results from the product of ARW_{t-1} and of the gross-wages' and stability components), and then, on this basis, for ARW_t* a new value for x_t can be computed which determines the final pension's base value in year t (ARW_t). If the relative pension's level[3] falls short compared to the mentioned target value of 64 percent, x_t is greater than 1.00, and it is numerically fully considered in Equation (1). In the opposite case, if x_t amounts to a value less than 1.00, x_t is set to the value of 1.00.

3. Empirical adjustments for Germany

3.1 Preliminary remarks

In a pay-as-you-go system, like the German statutory pension system, expenditures (for pensions and other expenditures, e. g., for rehabilitation or for administrative purposes) and revenues (through contributions or through government subsidies) must be on balance by construction. If expenditures increase (decrease), revenues must also rise (decline; and the other way around). Thus, the contribution rate to the German statutory pension system results from this fundamental relationship:[4]

(2)

$$b_t \cdot L_t \cdot Z_t + Y_t = Q_t \cdot R_t + B_t \qquad with: Y_t := \left(1-\gamma_t\right)\cdot\left(b_t \cdot L_t \cdot Z_t\right) \quad and: B_t := \left(1-ß_t\right)\cdot\left(Q_t \cdot R_t\right)$$

$$\Leftrightarrow b_t = \frac{R_t}{Z_t}\cdot\frac{Q_t}{L_t}\cdot\frac{1-\gamma_t}{1-ß_t}$$

[with: t = annual index, b = contribution rate, L = average gross wage, Z = number of contributors, Y = other revenues than contributions – especially governmental subsidies –, γ = proportionality factor for other revenues, Q = average pension, R = number of pensioners, B = other expenditures than pension payments, ß = proportionality factor for other expenditures].

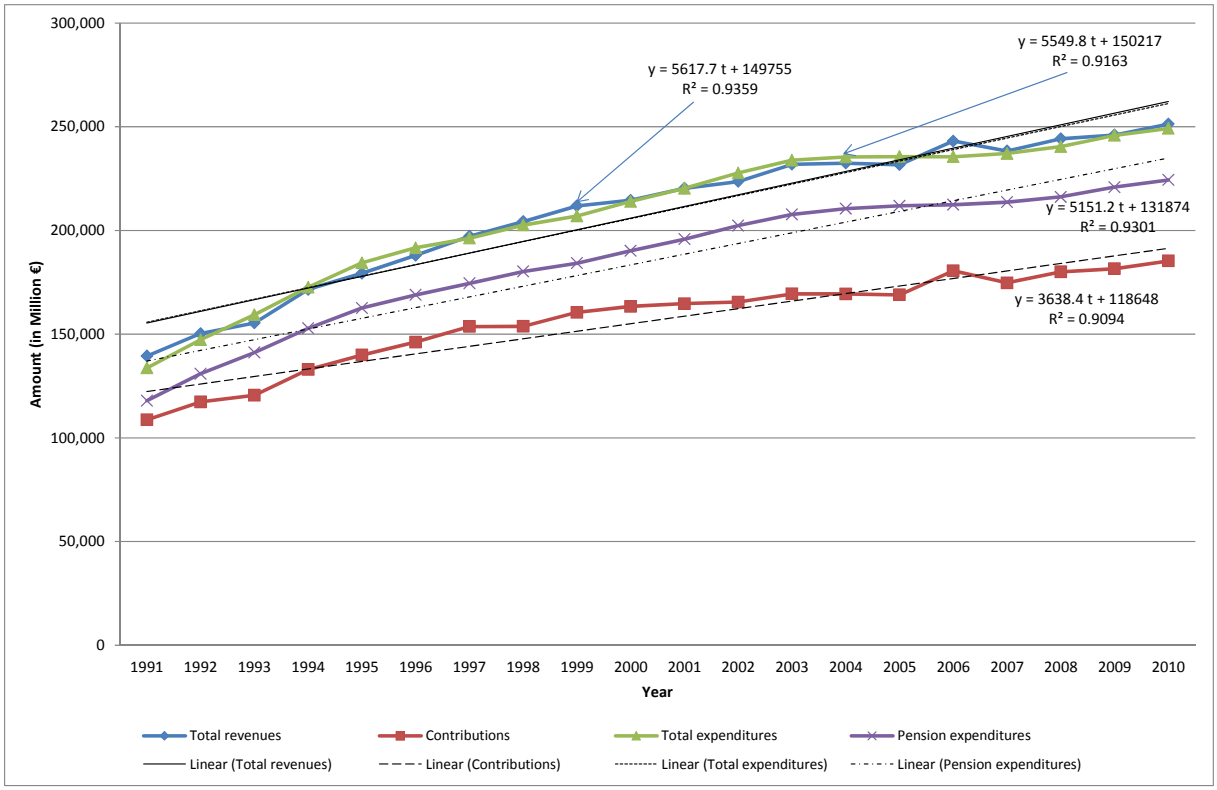
According to Equation (2), the contribution rate is determined by the product of the ratio between pensioners and contributors as well as of the relative pension's level (and of a ratio indirectly representing the relation between proportionality factors for other revenues and other expenditures). Thus, growing pension payments (e. g., caused by higher adjustment rates) generate, ceteris paribus, higher contribution rates (et vice versa).

Figure 1 illustrates the empirical development of the main elements of Formula (2) for Germany 1991-2010 (also depicting – increasing – functions for the presented curves' trends). Expectedly, the trends for the total revenues and for the total expenditures within the German statutory pension system have been very close together over time. The gap between the curves for pension expenditures and for contributions is – according to Equation (2) – eliminated through a positive difference between Y (other revenues) and B (other expenditures).

[3] This relative pension's level is defined as the relation between the (net) pension payment to a "representative" pensioner (an average earner with 45 contribution periods) and the average net labour income level.

[4] For reasons of simplicity, in Equation (2) it is assumed that other revenues and other expenditures may be characterized by proportionality factors concerning total revenues and concerning total expenditures.

Figure 1: Revenues and expenditures of the German statutory pension system 1991-2010 (Germany as a whole)



Comments:
All regression parameters are statistically significant at the 1-percent level; t = Year – 1991, R^2 = determination coefficient.

Source: DRV 2012, pp. 228-229

3.2 Different methods of adjustment

Figure 2 depicts – for (western) Germany 1983-2010[5] – the empirically calculated adjustment rates. In this context, in 13 years the actual adjustments are less, and also in 13 years they are greater than the rates generated by (fictive) adjustments on the basis of the inflation rates of the previous year; in one year (2000) the values of the adjustments have had the same amount since in 2000 pensions have been singularly adjusted by the inflation rate of 1999. However, at the end of the observation period – 2003-2010 – the actual adjustments are less than the inflation-based adjustments so that since 2003 pensioners would have profited by the latter kind of adjustment. This was the ultimate outcome of considerable wage moderation on the part of the German work force during the first decade of the 21st century.[6]

Moreover, Figure 2 reveals the (fictive) adjustment rates generated by the IGWA formula. In this context, two cases are differentiated from each other: the so-called static case and the so-called dynamic case. While in the static case it is assumed that the adjustment rates do not alter the general macroeconomic framework, the opposite is presumably valid in the dynamic case. In this latter model variant, the pension adjustment's level in period t influences the contribution rate in the same period which in turn acts on the level of unemployment in

[5] This period of time is chosen for reasons of consistency with the micro-database used in this paper, the SOEP, which has been conducted since 1984 in annual intervals where the annual income values refer to the previous year, respectively.
[6] See in this context, e. g., Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung 2010, pp. 104-107.

the subsequent period t+1. Ultimately, this affects the level of wages in period t+1 – via a change of the national income which depends on the number of the unemployed –, and this is of importance concerning the adjustment rate in t+1 (see Equation (1)). Then the causal chain adjustment rate (t+1) → contribution rate (t+1) → level of unemployment (t+2) → level of wages (t+2) → adjustment rate (t+2) → … further on works. This mechanism reveals a kind of self-regulation in the sense that a higher (lower) adjustment rate leads to a higher (lower) contribution rate and subsequently – caused by a higher (lower) level of unemployment and by a lower (higher) level of wages – generates a lower (higher) adjustment rate and a lower (higher) contribution rate in the next round.[7]

It can be seen by Figure 2 – comparing the actual adjustments with the static IGWA values – that in 11 years the static IGWA values are higher than the actual adjustments but that in the remaining 16 years the opposite is the case. With respect to the comparison between actual and dynamic IGWA values, the balance more clearly inclines on the side of actual adjustments because now in 18 out of 27 years these adjustments are higher than in the dynamic IGWA case.

In this context, in principle, it makes sense to separate two periods of time: 1983-1991 and 1992-2010 because during these periods two fundamentally different official adjustment formulas were at work: from 1983 to 1991 adjustments by changes of gross wages and from 1992 on some variants of adjustments by changes of net wages (or "modified gross wages").[8] However, it should be kept in mind, as already mentioned, that the corresponding formulas were not continuously applied. Despite this restriction, a crude methodical comparison between the different adjustment rules appears of interest.

The empirical results make clear that during the first period of time (1983-1991) the actual adjustments have been, on average, by 0.74 % and during the second period of time (1992-2010) by 0.48 % higher than the (fictive) adjustments by IGWA (static). With respect to the adjustments by IGWA (dynamic), between 1983 and 1991 practically no difference emerged compared to the actual adjustments (the latter have been 0.01 % less), and between 1992 and 2010 the actual adjustments had, averagely, a higher value (+0.83 %). For the entire period 1983-2010, the mean percentage deviation between actual adjustments and both IGWA rules was positive and amounted, in both cases, to +0.56 %. These (small) discrepancies emerge, amongst others, from differences concerning the underlying time-lags, the introduction or operationalization of demographic factors, etc.

Table 1 summarizes the different (geometric) mean adjustment rates generated by the several methods.

Table 1: (Geometric) Mean adjustment rates of different methods in (western) Germany 1983-2010 (in %; 1983-1990: western Germany, 1991-2010: Germany as a whole)

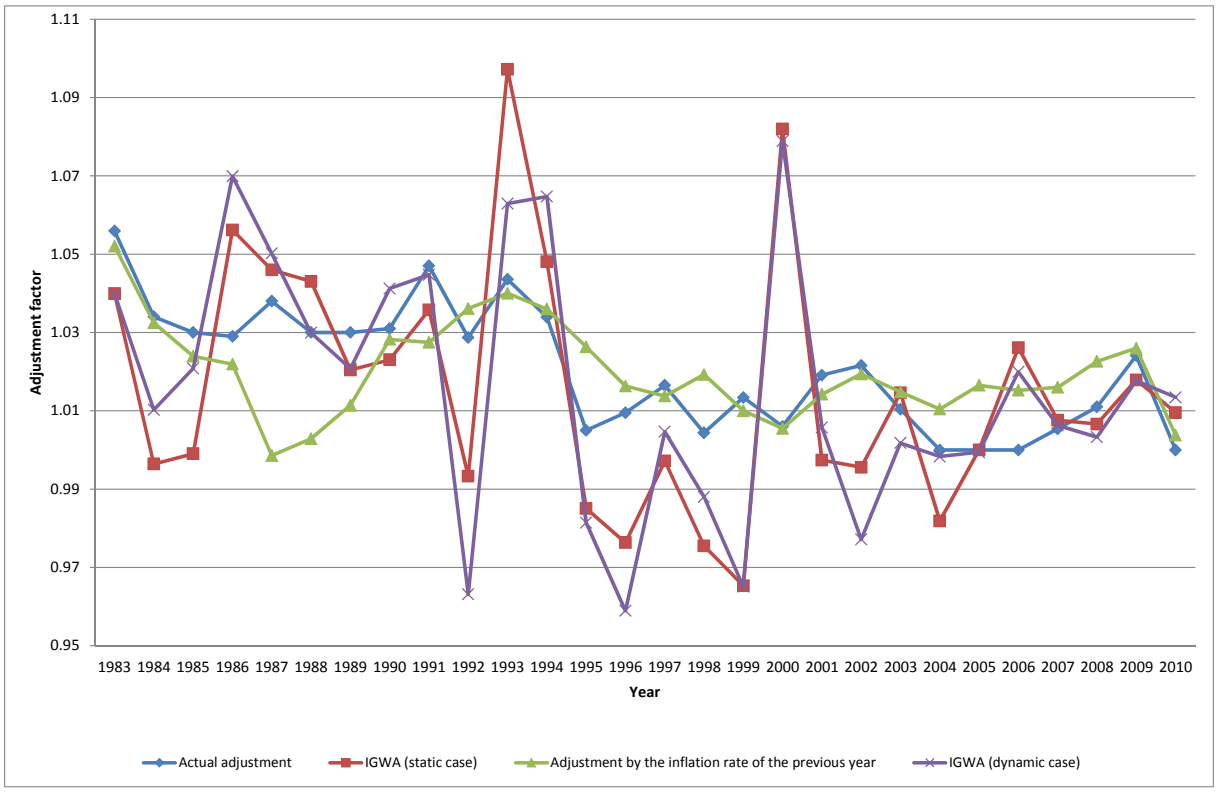
Adjustment rule	1983-1991	1992-2010	1983-2010
Actual adjustments	+3.6	+1.3	+2.1
Inflation-based adjustments	+2.2	+1.9	+2.0
IGWA (static)	+2.9	+0.9	+1.5
IGWA (dynamic)	+3.6	+0.5	+1.5

Source: Present author's own calculations (partly on the basis of DRV 2012, Chapters 11-12)

[7] The empirical estimates for the dynamic case are stated in Appendix 1 where more technical hints are given.
[8] See, e. g., Faik and Köhler-Rama 2009a, p. 603.

Comparing the static and the dynamic IGWA case with each other, one can detect on the basis of Figure 2 that both curves are, more or less, parallel to each other.[9]

Figure 2: Pension adjustments due to different bases in (western) Germany 1983-2010 (1983-1990: western Germany, 1991-2010: Germany as a whole)



Sources: DRV 2012, p. 244, and present author's own calculations

3.3 IGWA elements

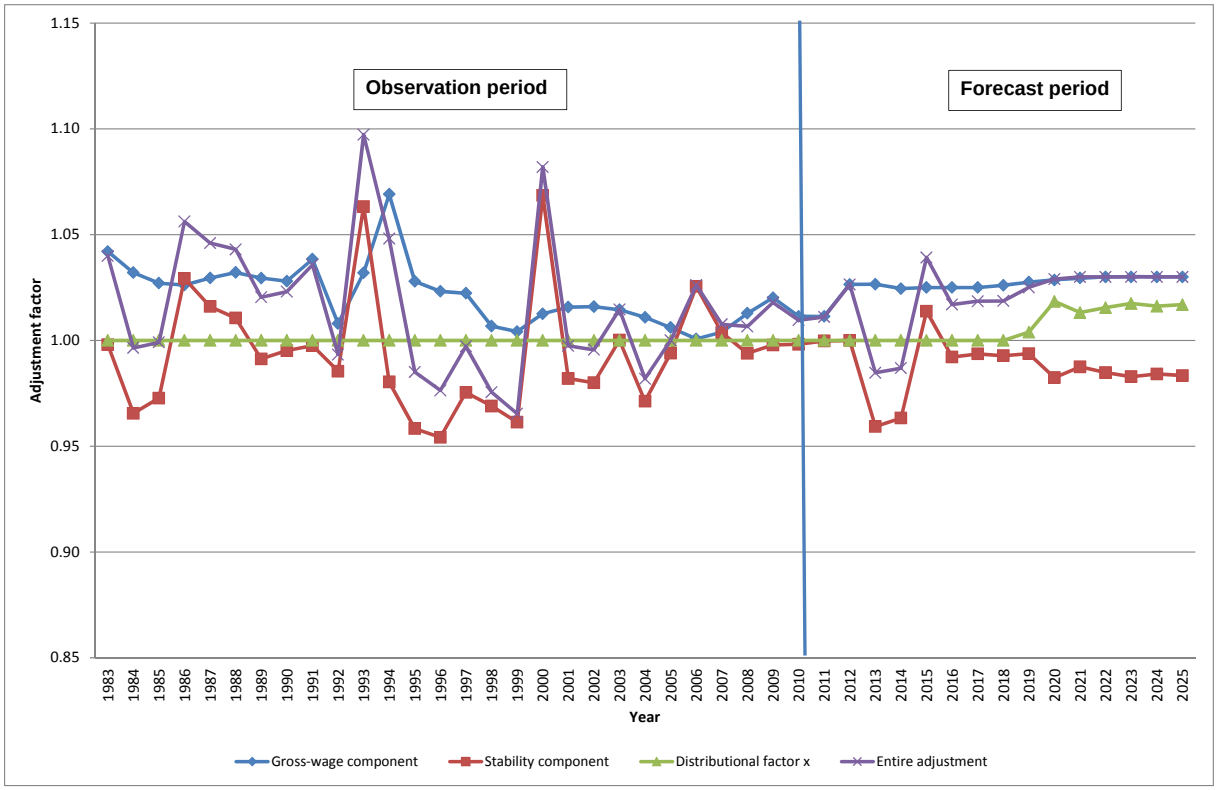
Figure 3 reveals the development of the three IGWA elements over time (exemplarily for the static case[10]). It becomes evident that the distributional component x_t is inoperative during the observation period from 1983 to 2010, and for the first time it becomes effective within the forecast period in the year 2019.[11] Another striking pattern of Figure 3 is that the amplitudes of the general adjustments by IGWA are mainly influenced by the stability factor (particularly visible in the years 1993 and 2000 during the observation period and in the years 2014-2016 during the forecast period).

[9] This comparison of both IGWA versions only comprises the period 1984-2010 since in the starting year 1983 both adjustment models have led to the same amount of adjustment which is due to the technical design of both models. By the way, Figure 2 and some of the further figures are truncated on the ordinate, for purposes of clarity.

[10] The dynamic case can be cancelled here since its patterns (and structures) concerning the three elements are qualitatively very similar to the corresponding patterns (and structures) in the context of the static case (see Table A.1 in Appendix 1).

[11] By the way, for the forecasts, data of the German Federal Ministry of Labour and Social Affairs is used (see BMAS 2011; see also Appendix 2 for more details).

Figure 3: Development of the IGWA elements in (western) Germany 1983-2022 (static case; 1983-1990: western Germany, 1991-2010: Germany as a whole)



Source: Present author's own calculations

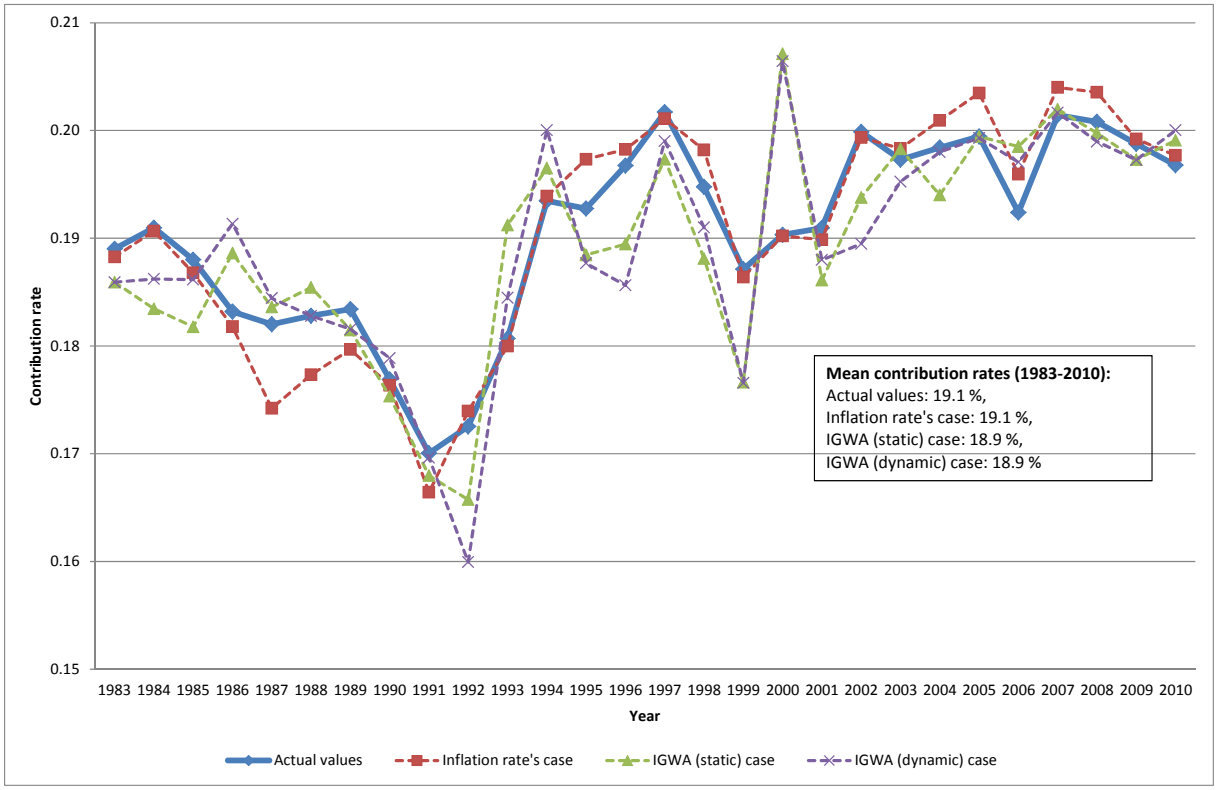
3.4 Consequences on contribution rates

As was sketched in Section 3.1, higher (lower) expenditures lead to higher (lower) contribution rates. Hence, higher (lower) pension adjustments – increasing the expenditures of the pension system – generate aligned changes of the contribution rates.

In this sense, Figure 4 shows the corresponding (fictive) consequences on the contribution rates of different adjustment rules: adjustments by inflation rates, by IGWA (static) and by IGWA (dynamic). Each of these rules is compared with the real consequences on the contribution rates of the actual pension adjustments in Germany 1983-2010.

Figure 4 reflects that in the years with higher (lower) adjustment rates the contribution rates are higher (lower) in the cases of inflation-based and adjustments by IGWA compared to the actual adjustments. These outcomes simply follow from the equilibrium condition stated in Equation (2). In the case of IGWA (dynamic), additionally, the time-lagged impacts of the adjustments on the contribution rates must be considered. However, this latter mechanism does not change the qualitative results obtained by the static IGWA case.

Figure 4: Effects on contribution rates of different kinds of adjustments for (western) Germany 1983-2010 (1983-1990: western Germany, 1991-2010: Germany as a whole)



Source: Present author's own calculations (on the basis of Equation (2))

4. Empirical redistributive findings for Germany

4.1 Preliminary remarks

The adjustment of pensions reflects the redistribution of economic resources between the elderly and the younger people in a society. The higher the adjustments are, the higher the amount of redistribution in favour of the elderly is (ceteris paribus). This is because of a direct effect of rising pensions (increasing the relative well-being position of the elderly) and because of an indirect influence caused by growing contribution rates (reducing the relative well-being position of the younger people). In the dynamic IGWA case rising adjustment rates also lead to a higher amount of unemployment and to lower gross wages so that in this variant the relative well-being positions of the young people still further decline via these additional effects. Contrary causalities hold in the case of decreasing adjustment rates.

In the following, the welfare levels of three generations (up to 29 years, 30-59 years, 60 years and older) are analyzed by the arithmetic mean values of these groups concerning equivalent household net incomes. The group-specific mean values are divided by the overall means which defines the relative well-being positions of the several age classes. As an equivalence scale, the modified OECD scale[12] is used. All equivalent household net incomes are weighted by the corresponding number of household members. Furthermore, the definition of household income includes imputed rents, and as an income variable annual income

[12] The modified OECD scale is as follows: first household's person: 1.0, further household members aged 15 years and over: 0.5, and further household members until the age of 15 years: 0.3 (see http://www.oecd.org/dataoecd/61/52/35411111.pdf, access at 2012-04-17).

of the previous year is used. Therefore, the observation period on the basis of SOEP data is 1983-2009. Additionally, forecasts are presented in the following; they correspond to the (forecast) period of time from 2010 to 2025.

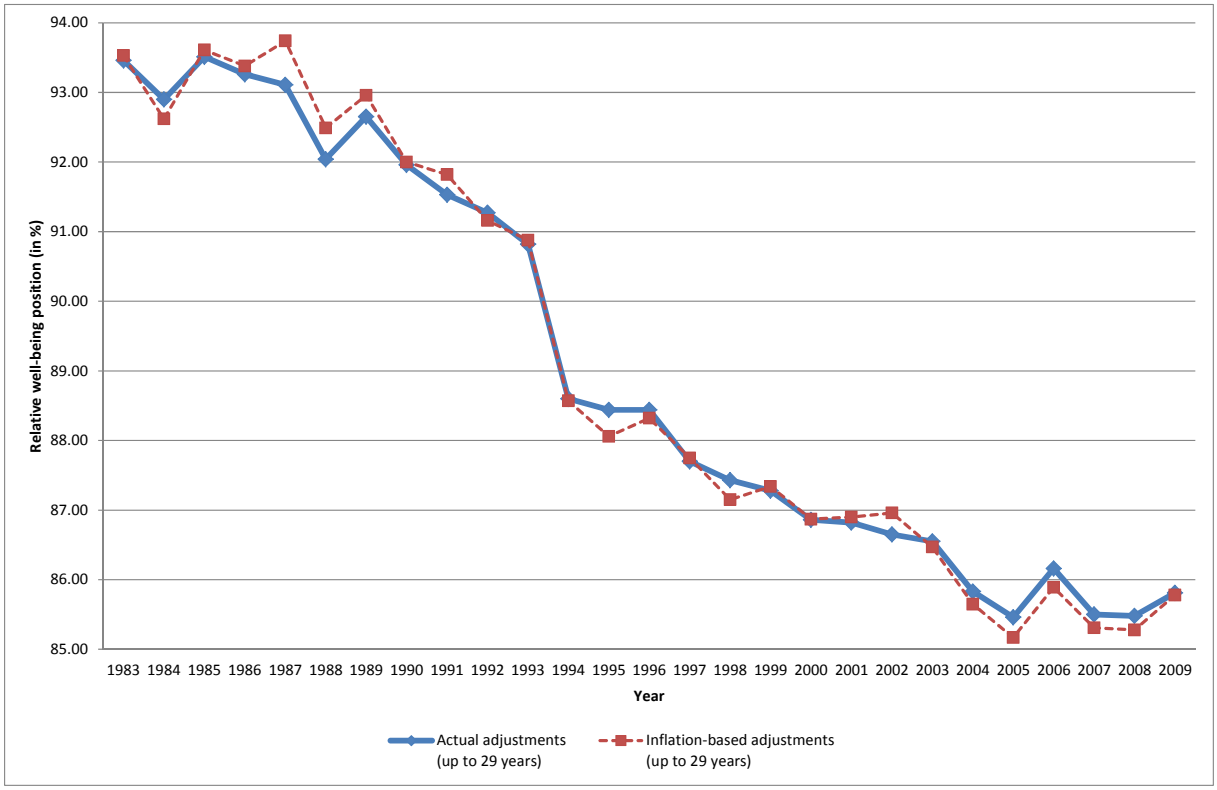
4.2 Observation period 1983-2009

4.2.1 Actual versus inflation adjustment

Figures 5a-5c compare the consequences on the group-specific well-being positions of the actual adjustments versus the (fictive) adjustments by the inflation rates of the previous year with each other. Expectedly, the variant with higher pension adjustments and corresponding higher contribution rates produces higher relative well-being positions of the elderly (60 years and older) and lower positions of the younger people (up to 29 years and 30-59 years), at least by tendency. However, on average the percentage differences between both kinds of adjustment are very small for the period 1983-2009 (in the following the case of actual adjustments is mentioned first): up to 29 years: 89.09 % versus 89.10 %, 30-59 years: both 108.49 %, and 60 years and older: 99.08 % versus 99.02 %.

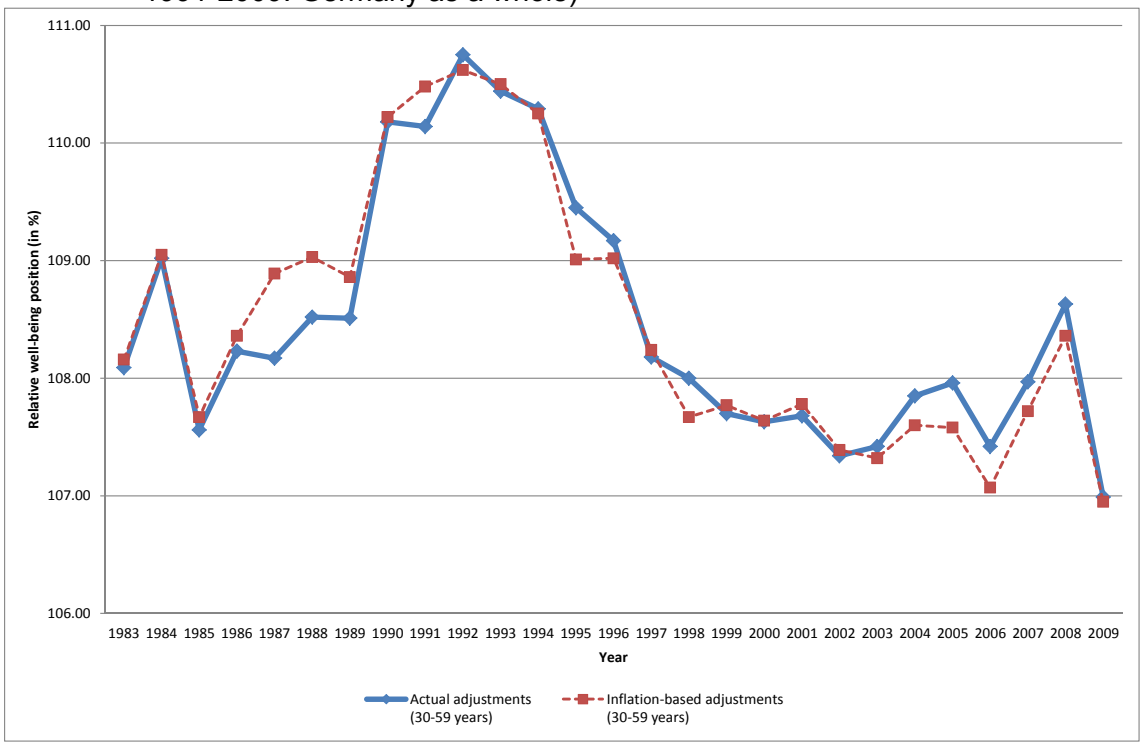
For both variants, a clear-cut negative tendency becomes obvious for the persons aged up to 29 years; the opposite shows up for the elderly (at least since 1993), and for the persons aged between 30 and 59 years a polynomial tendency occurs.

Figure 5a: Well-being positions (up to 29 years): Actual adjustments versus (fictive) adjustments by the inflation rates of the previous year
for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



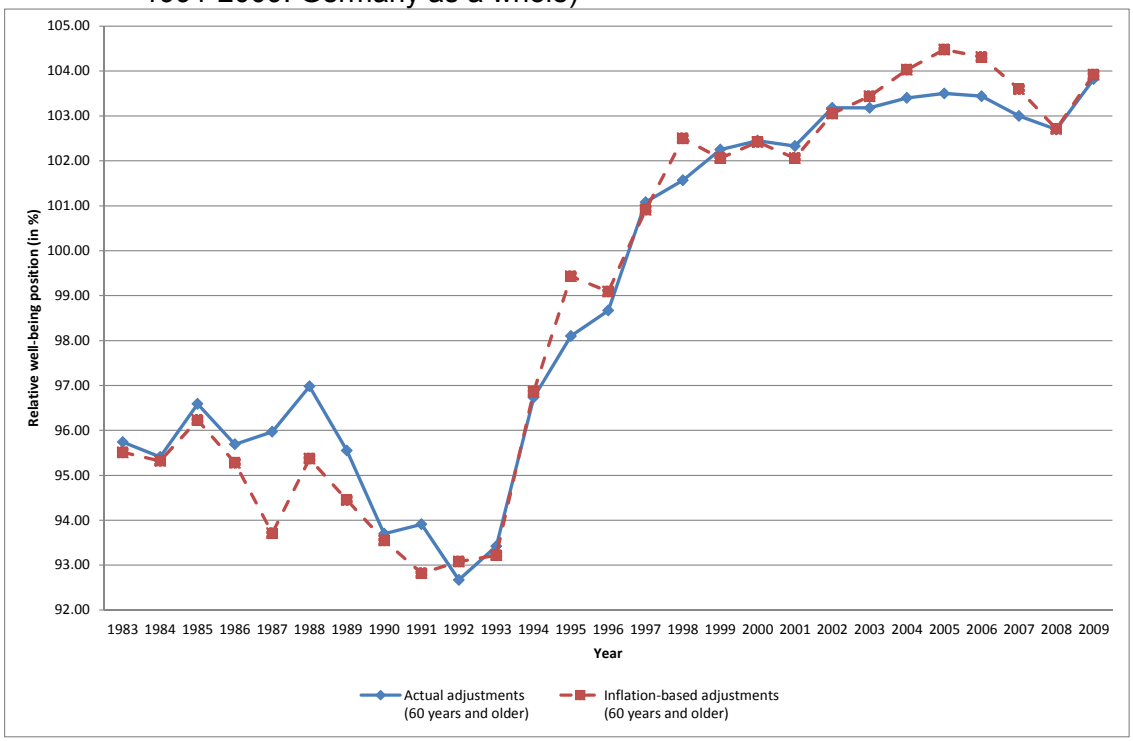
Source: Present author's own calculations

Figure 5b: Well-being positions (30-59 years): Actual adjustments versus (fictive) adjustments by the inflation rates of the previous year for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



Source: Present author's own calculations

Figure 5c: Well-being positions (60 years and older): Actual adjustments versus (fictive) adjustments by the inflation rates of the previous year for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)

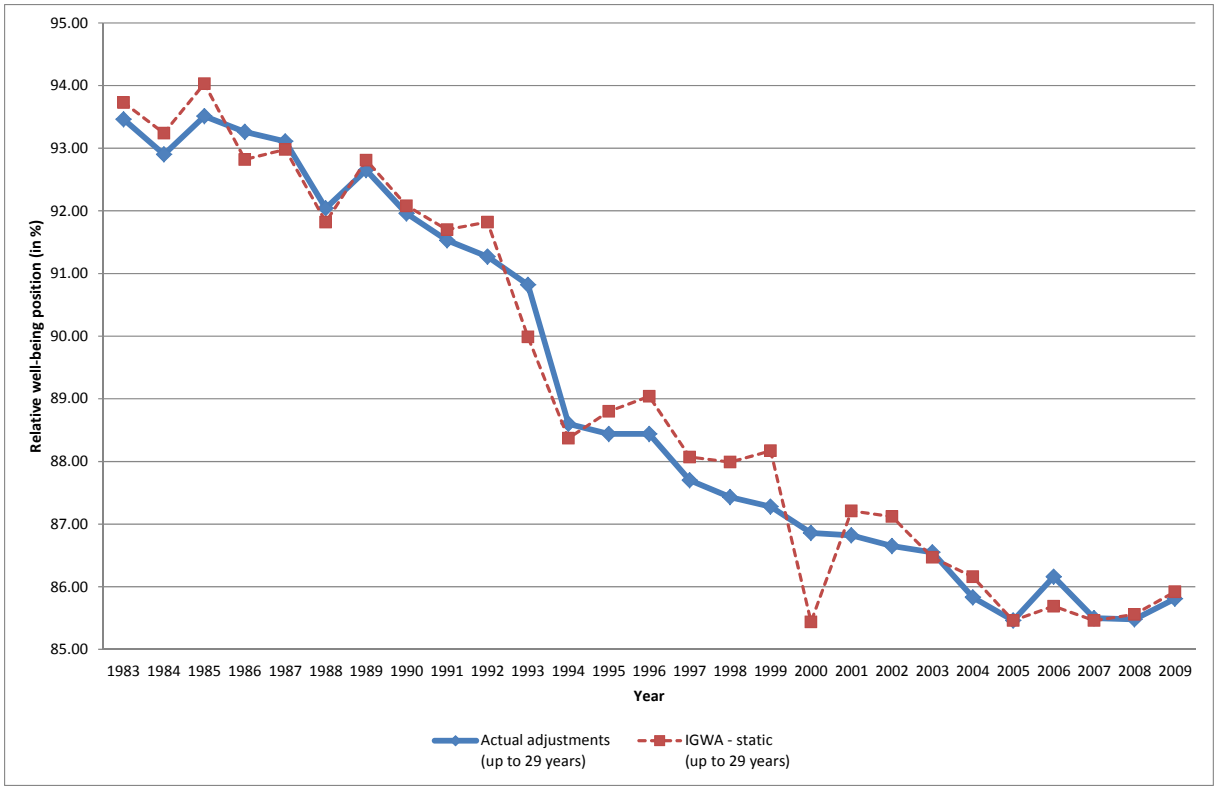


Source: Present author's own calculations

4.2.2 Actual adjustment versus IGWA

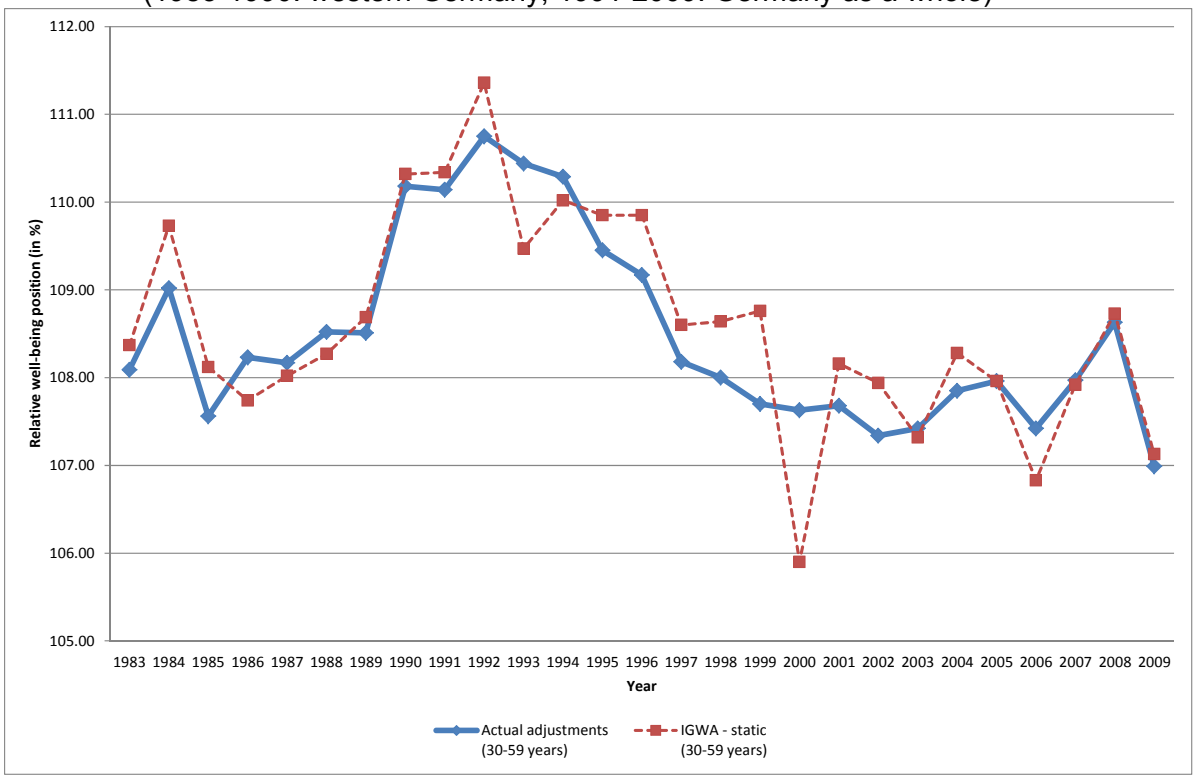
Figures 6a-6c show the consequences on the group-specific well-being positions of the actual adjustments versus IGWA (static). On average, the comparison between both variants of adjustment reveals slightly higher relative well-being positions for the younger age groups up to 29 years (89.18 % versus 89.09 %) and 30-59 years (108.60 % versus 108.49 %), and marginally lower relative well-being positions for the elderly aged 60 years and older (98.71 % versus 99.08 %) in the case of IGWA (static) compared to the actual adjustments.

Figure 6a: Well-being positions (up to 29 years): Actual adjustments versus (fictive) IGWA (static) for (western) Germany 1983-209 SOEP
(1983-1990: western Germany, 1991-2009: Germany as a whole)



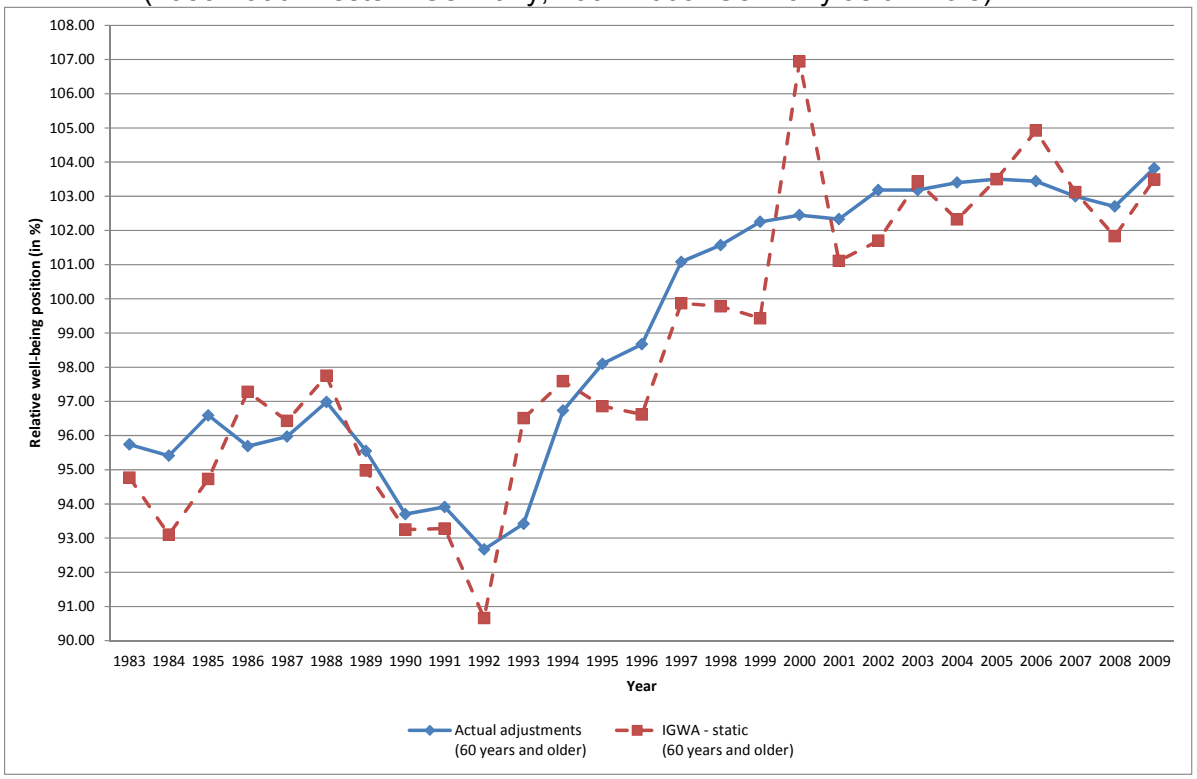
Source: Present author's own calculations

Figure 6b: Well-being positions (30-59 years): Actual adjustments versus (fictive) IGWA (static) for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



Source: Present author's own calculations

Figure 6c: Well-being positions (60 years and older): Actual adjustments versus (fictive) IGWA (static) for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



Source: Present author's own calculations

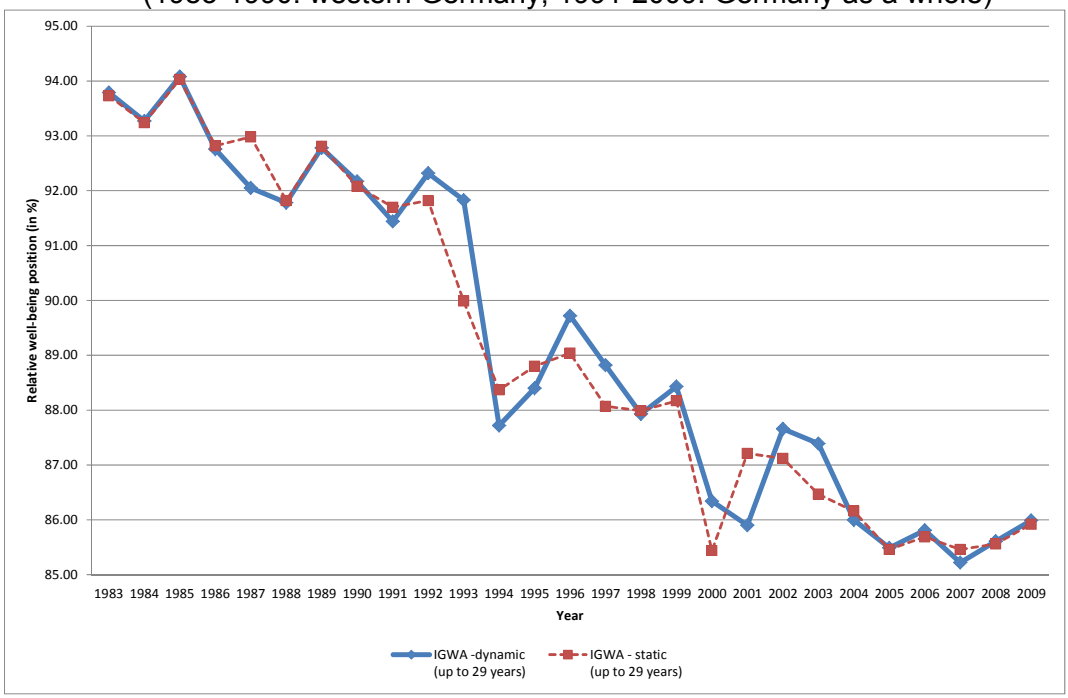
4.2.3 Static versus dynamic IGWA

Figures 7a-7c compare the distributional implications of both IGWA variants for the three age groups differentiated from each other in this paper. It becomes obvious that, on average, the relative well-being positions of the young people aged until 29 years (89.29 % versus 89.18 %) and 30-59 years (108.73 % versus 108.60 %) are slightly higher in the dynamic case and, therefore, still higher than in the case with actual adjustments. The opposite holds for the elderly (98.37 % versus 98.71 % versus 99.08 %).

That means that the dynamic model's mechanisms sketched above averagely lead to a greater redistribution in favour of the young people compared to the static case (and to the case with actual adjustments). Hence, especially from the beginning of the 1990s on, the lower adjustment rates in the dynamic case than in the static variant generate, on average, marginally higher relative well-being relations of the young persons in IGWA (dynamic), resulting from lower unemployment levels and higher (gross) wages.

Compared with that, since 1990 only in 1991, in 1994, in 1995, in 2001, in 2004, and in 2007 – i. e., in six out of 20 cases – the relative income position of the elderly has been higher in the IGWA (dynamic) variant than in the IGWA (static) variant. Thereby, in 1991, in 1994, and in 2001 there have been clear-cut effects of model's dynamics on pension adjustment rates, contribution rates, unemployment levels, and gross wages which point to higher relative well-being levels of the elderly in IGWA (dynamic) than in IGWA (static). In 1995 and in 2007 the relatively high relative well-being position of the elderly in IGWA (dynamic) compared to IGWA (static) was caused by stronger relative disadvantages of the young people concerning unemployment and gross-wage levels in relation to their relative advantages with respect to pension adjustment rates and contribution rates' changes. Ultimately, the opposite holds for the relative better-off of the elderly in 2004 since in that year the relative advantages of the elderly concerning pension adjustment rates and with respect to contribution rates' changes have overcompensated the negative systemic impacts for the elderly on unemployment and wage levels.[13]

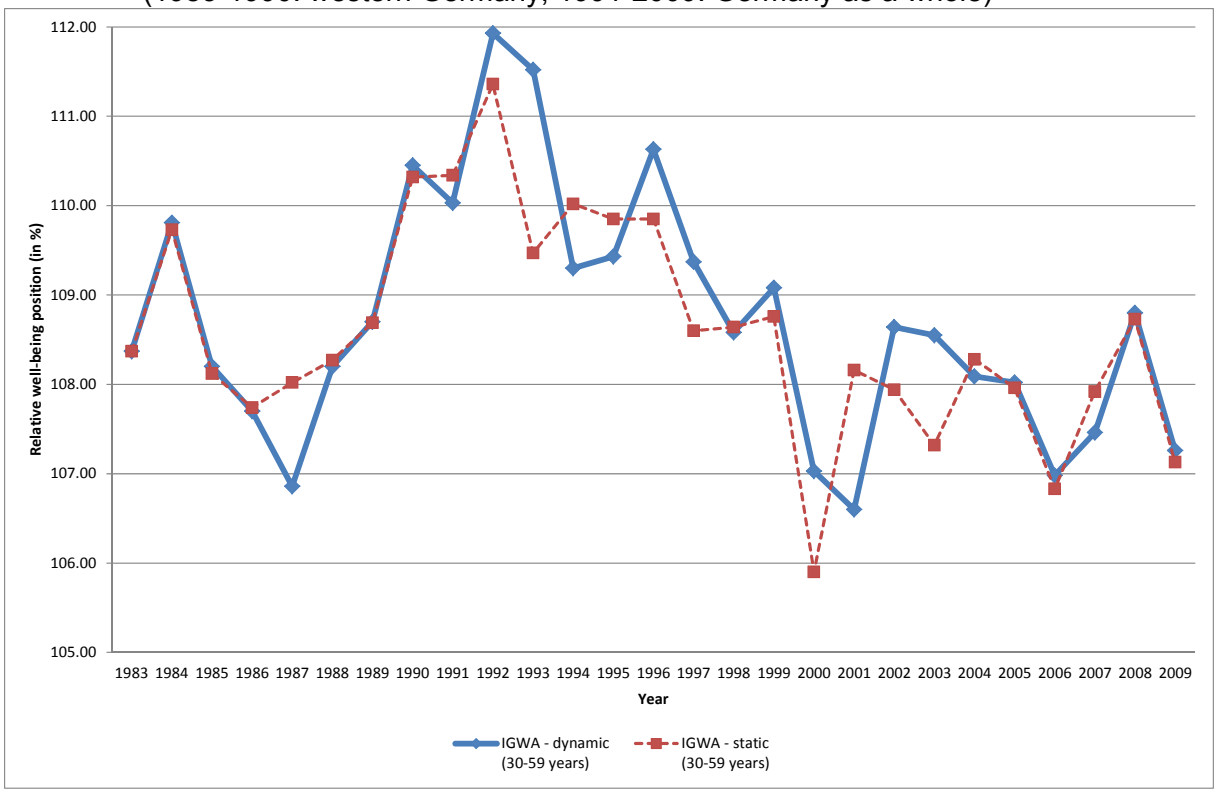
Figure 7a: Well-being positions (up to 29 years): IGWA (static) versus IGWA (dynamic) for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



Source: Present author's own calculations

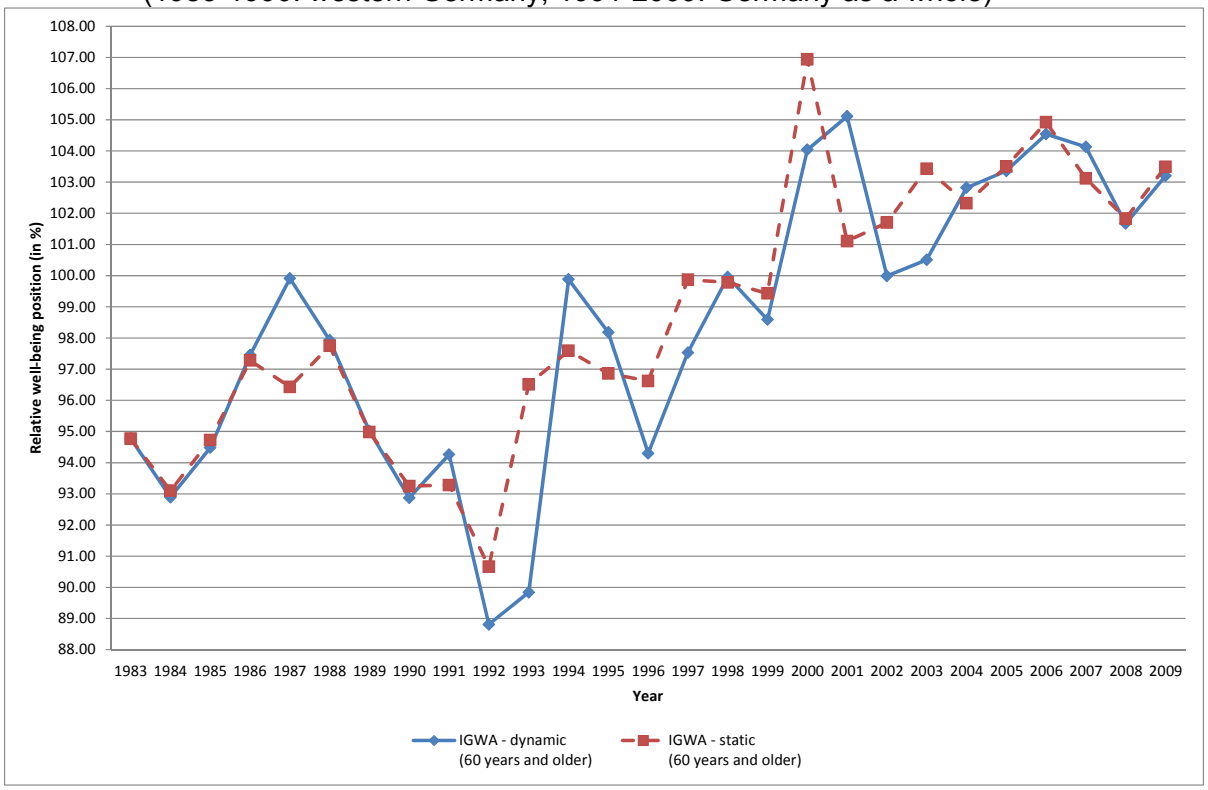
[13] See Table A.2 in Appendix 1.

Figure 7b: Well-being positions (30-59 years): IGWA (static) versus IGWA (dynamic) for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)



Source: Present author's own calculations

Figure 7c: Well-being positions (60 years and older): IGWA (static) versus IGWA (dynamic) for (western) Germany 1983-2009 SOEP (1983-1990: western Germany, 1991-2009: Germany as a whole)

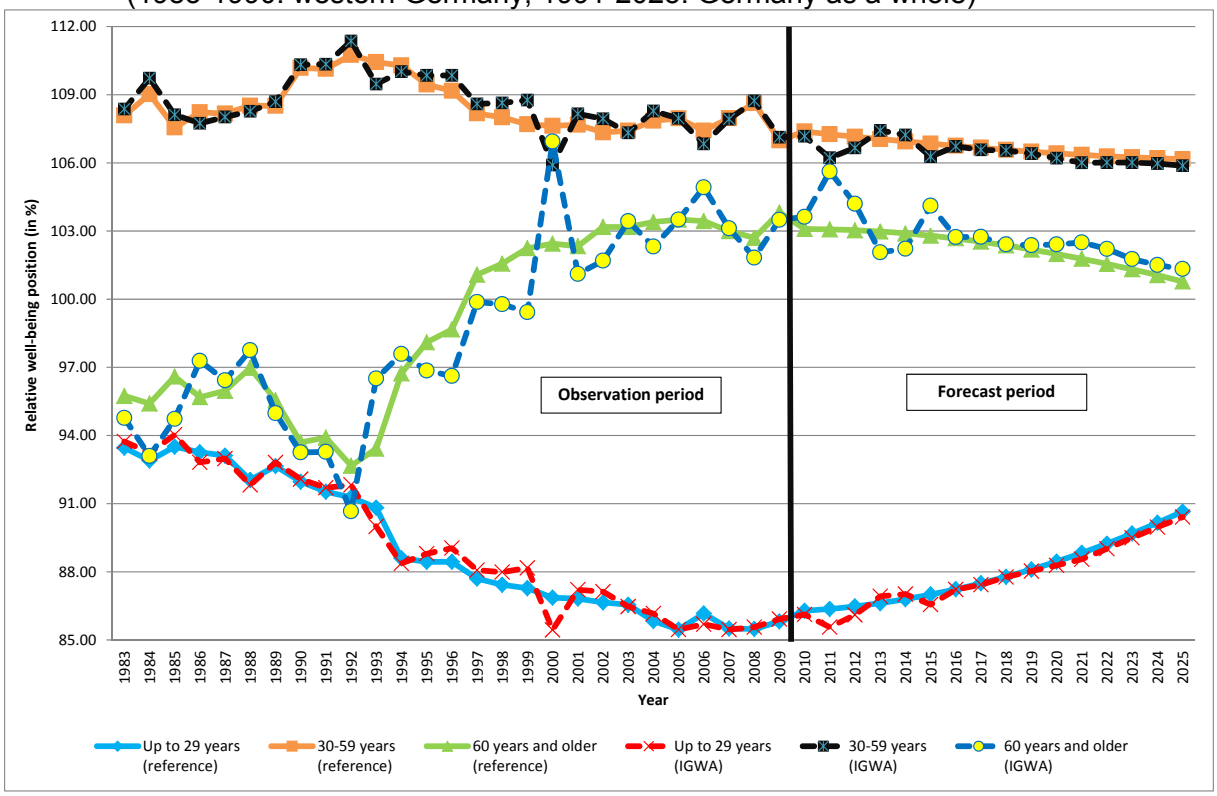


Source: Present author's own calculations

4.3 Forecast period 2010-2025

In Figure 8 a forecast model, sketched in Appendix 2 (Tables A.3-A.6), is applied. As one result, decreasing tendencies concerning well-being positions emerge for persons aged from 30 years upwards while the opposite is the case for the youngest group (until 29 years). However, some differences exist between "actual" adjustments and IGWA.[14] Within nearly all segments of the forecast period the relative well-being positions of the elderly would be higher in the IGWA than in the reference case, especially from 2019 on when the distributional IGWA factor (x_t) will be at work. The latter underlines the importance of a distributional component within a pensions' adjustment formula since this secures the living standard of the elderly to a higher degree than it would be otherwise the case (in an "ageing" society which uses a pay-as-you-go system). Consistent with that, between 2019 and 2025 a mean adjustment rate in the amount of +2.9 % is estimated for IGWA as opposed to +2.0 % in the case of "actual" adjustments (for the entire forecast period 2010-2025 the mean values are +1.1 % – "actual" adjustments – versus +2.0 % – IGWA –).

Figure 8: Well-being positions (three age classes): "Actual" adjustments versus IGWA for (western) Germany 1983-2025 based on 1983-2009 SOEP data (1983-1990: western Germany, 1991-2025: Germany as a whole)



Source: Present author's own calculations (on the basis of the values stated in Appendix 2)

5. Concluding remarks

The paper has shown the distributional consequences of different pension adjustment procedures. Concerning the new IGWA formula it became evident that in the past no distributional corrections by the IGWA factor x_t would have been necessary, but for the future such corrections appear – in a socio-political perspective – helpful. The (fictive) implementation of the IGWA formula for 1983-2009 SOEP would have caused only small intergenerational well-being effects in Germany: small well-being gains for the young people and small well-being losses for the elderly. For the future, welfare losses of the older age groups are expected but applying the IGWA formula would damp those losses.

[14] The IGWA values belong to IGWA (static).

Appendix 1: A dynamic IGWA model

Scheme A.1: Estimates and other equations in the dynamic IGWA case:

(A1) $\hat{b}_t = \frac{R_t}{Z_t} \cdot \frac{\hat{Q}_t}{\hat{L}_t} \cdot \frac{1-\gamma_t}{1-ß_t}$

(A2) $\hat{U}_{t+1} = \left[\frac{66{,}977.65^{***} - 10{,}027.64^{***} \cdot \hat{b}_t}{\frac{\hat{U}_{t+1}}{U_{t+1}}} \right]$

(A3) $\hat{ET}_{t+1} = EP_{t+1} - \hat{U}_{t+1}$

(A4) $\hat{NI}_t = -979.84^{***} + 0.066^{***} \cdot ET_t$

(A5) $\hat{NI}_t^{(2)} = -979.84^{***} + 0.066^{***} \cdot \hat{ET}_t$

(A6) $\hat{L}_t = \frac{L_t}{NI_t} \cdot \hat{NI}_t^{(2)} \cdot \frac{NI_t}{\hat{NI}_t} = \frac{L_t}{\hat{NI}_t} \cdot \hat{NI}_t^{(2)}$

(A7) $\hat{L}_t^{(n)} = \hat{L}_t \cdot \frac{L_t^{(n)}}{L_t}$

=> (A8) $\hat{ARW}_t = \hat{ARW}_{t-1} \cdot \left(\frac{\hat{L}_{t-1}}{\hat{L}_{t-3}} \right)^{0.5} \cdot \frac{\frac{R_{t-2}}{Z_{t-2}}}{\frac{R_{t-1}}{Z_{t-1}}} \cdot \hat{x}_t$,

where: $x_t = \frac{0.64 \cdot \frac{\hat{L}_t^{(n)}}{\hat{L}_t}}{ARW^*_t \cdot 45 \cdot 0.9}$

and: $\hat{x}_t \geq 1.00$

[with: t = annual index, b = contribution rate, L = average gross wage, $L^{(n)}$ = sum of net wages, Z = number of contributors, Y = other revenues than contributions – especially governmental transfers –, γ = proportionality factor for other revenues, Q = average pension, R = number of pensioners, B = other expenditures than pension payments, ß = proportionality factor for other expenditures, U = number of unemployed people, ET = employed people, EP = sum out of unemployed and employed persons, NI = national income, $NI^{(2)}$ = national income estimated by fictive numbers of employed people, ARW = pension's base value, ARW* = pension's base value without considering the distributional element x, x = distributional component; ^ indicates an estimation variable, *** = statistically significant at the 1-percent level].

Table A.1: IGWA elements in western Germany 1983-2010 (dynamic versus static case; 1983-1990: western Germany, 1991-2010: Germany as a whole)

	Dynamic case				Static case			
Year	Gross-wage component	Stability component	Distributional factor x	Entire adjustment	Gross-wage component	Stability component	Distributional factor x	Entire adjustment
1983	1.042	0.998	1.000	1.040	1.042	0.998	1.000	1.040
1984	1.046	0.966	1.000	1.010	1.032	0.966	1.000	0.996
1985	1.049	0.973	1.000	1.021	1.027	0.973	1.000	0.999
1986	1.039	1.029	1.000	1.070	1.026	1.029	1.000	1.056
1987	1.034	1.016	1.000	1.050	1.030	1.016	1.000	1.046
1988	1.019	1.011	1.000	1.030	1.032	1.011	1.000	1.043
1989	1.030	0.991	1.000	1.021	1.029	0.991	1.000	1.020
1990	1.046	0.995	1.000	1.041	1.028	0.995	1.000	1.023
1991	1.047	0.998	1.000	1.045	1.038	0.998	1.000	1.036
1992	0.977	0.985	1.000	0.963	1.008	0.985	1.000	0.993
1993	1.000	1.063	1.000	1.063	1.032	1.063	1.000	1.097
1994	1.086	0.980	1.000	1.065	1.069	0.980	1.000	1.048
1995	1.024	0.958	1.000	0.981	1.028	0.958	1.000	0.985
1996	1.005	0.954	1.000	0.959	1.023	0.954	1.000	0.976
1997	1.030	0.975	1.000	1.005	1.022	0.975	1.000	0.997
1998	1.020	0.969	1.000	0.988	1.007	0.969	1.000	0.975
1999	1.004	0.961	1.000	0.965	1.004	0.961	1.000	0.965
2000	1.010	1.069	1.000	1.079	1.013	1.069	1.000	1.082
2001	1.024	0.982	1.000	1.006	1.016	0.982	1.000	0.997
2002	0.997	0.980	1.000	0.977	1.016	0.980	1.000	0.996
2003	1.002	1.000	1.000	1.002	1.015	1.000	1.000	1.015
2004	1.028	0.971	1.000	0.998	1.011	0.971	1.000	0.982
2005	1.006	0.994	1.000	0.999	1.006	0.994	1.000	1.000
2006	0.995	1.025	1.000	1.020	1.001	1.025	1.000	1.026
2007	1.003	1.004	1.000	1.006	1.004	1.004	1.000	1.008
2008	1.009	0.994	1.000	1.003	1.013	0.994	1.000	1.007
2009	1.020	0.998	1.000	1.018	1.020	0.998	1.000	1.018
2010	1.015	0.998	1.000	1.013	1.011	0.998	1.000	1.010

Source: Present author's own calculations

Table A.2: Relations and differences between IGWA cases (dynamic and static) and the case with actual adjustments in western Germany 1983-2010 (dynamic versus static case; 1983-1990: western Germany, 1991-2010: Germany as a whole)

	Dynamic case				Static case	
Year	Pensions' ratio	Contributions' difference	Unemploy-ment's ratio	Gross-wages' ratio	Pensions' ratio	Contributions' difference
1983	0.985	-0.0031	1.0000	1.0000	0.9849	-0.0031
1984	0.977	-0.0047	0.9213	1.0154	0.9637	-0.0075
1985	0.991	-0.0018	0.8850	1.0225	0.9700	-0.0062
1986	1.040	0.0081	0.9518	1.0088	1.0264	0.0054
1987	1.012	0.0024	1.2433	0.9560	1.0077	0.0016
1988	1.000	0.0000	1.0747	0.9866	1.0127	0.0026
1989	0.991	-0.0019	0.9995	1.0001	0.9907	-0.0019
1990	1.010	0.0020	0.9451	1.0076	0.9923	-0.0016
1991	0.998	-0.0004	1.0732	0.9933	0.9893	-0.0021
1992	0.936	-0.0126	0.9794	1.0023	0.9656	-0.0068
1993	1.019	0.0038	0.4486	1.0752	1.0514	0.0105
1994	1.030	0.0066	1.1225	0.9819	1.0137	0.0030
1995	0.977	-0.0051	1.1503	0.9786	0.9802	-0.0043
1996	0.950	-0.0111	0.8822	1.0184	0.9672	-0.0073
1997	0.988	-0.0027	0.7637	1.0411	0.9810	-0.0044
1998	0.984	-0.0038	0.9484	1.0084	0.9712	-0.0066
1999	0.952	-0.0106	0.9163	1.0124	0.9526	-0.0105
2000	1.072	0.0161	0.7179	1.0388	1.0755	0.0168
2001	0.987	-0.0030	1.3967	0.9481	0.9787	-0.0048
2002	0.956	-0.0104	0.9279	1.0105	0.9745	-0.0061
2003	0.991	-0.0020	0.7930	1.0341	1.0042	0.0010
2004	0.998	-0.0004	0.9571	1.0074	0.9819	-0.0044
2005	0.999	-0.0001	0.9916	1.0016	1.0000	0.0000
2006	1.020	0.0047	0.9972	1.0005	1.0261	0.0061
2007	1.001	0.0002	1.1095	0.9841	1.0022	0.0005
2008	0.992	-0.0018	1.0041	0.9995	0.9957	-0.0010
2009	0.994	-0.0015	0.9643	1.0046	0.9940	-0.0015
2010	1.013	0.0032	0.9692	1.0035	1.0096	0.0023

Source: Present author’s own calculations

Appendix 2: A forecast model concerning IGWA and relative well-being positions in Germany until 2025

Table A.3: IGWA forecasts for Germany 2011-2025

Year	(1) Work force (in 1,000)	(2) Gross wages (in 10^9 €)	(3) L (in 10^9 €)	(4) $L^{(n)}$ (per month & per employee; in €)	(5) IGWA gross-wage factor	(6) Relation pensioners / insured persons	(7) IGWA "pensioners factor"	(8) IGWA without x	(9) ARW* (per month; in €)	(10) x	(11) x, normalized	(12) ARW (per month; in €)	(13) Final IGWA (including x)
2011	40,375	1,300	1,051	1,410	1.0113	0.7100	0.9997	1.0110	23.72	0.9170	1.0000	23.72	1.0110
2012	38,842	1,281	1,035	1,444	1.0264	0.7402	1.0000	1.0264	24.34	0.9152	1.0000	24.34	1.0264
2013	37,534	1,268	1,025	1,480	1.0265	0.7684	0.9593	0.9847	23.97	0.9517	1.0000	23.97	0.9847
2014	38,227	1,324	1,070	1,517	1.0245	0.7579	0.9633	0.9869	23.66	0.9884	1.0000	23.66	0.9869
2015	38,137	1,354	1,095	1,555	1.0250	0.7639	1.0138	1.0392	24.58	0.9750	1.0000	24.58	1.0392
2016	38,121	1,387	1,121	1,594	1.0250	0.7688	0.9921	1.0169	25.00	0.9827	1.0000	25.00	1.0169
2017	38,106	1,424	1,151	1,637	1.0250	0.7744	0.9936	1.0185	25.46	0.9890	1.0000	25.46	1.0185
2018	38,184	1,467	1,186	1,682	1.0260	0.7792	0.9928	1.0186	25.94	0.9971	1.0000	25.94	1.0186
2019	37,832	1,496	1,209	1,731	1.0275	0.7932	0.9937	1.0211	26.48	1.0039	1.0039	26.59	1.0250
2020	37,685	1,535	1,241	1,783	1.0285	0.8033	0.9824	1.0104	26.86	1.0184	1.0184	27.36	1.0290
2021	37,452	1,571	1,270	1,837	1.0295	0.8157	0.9875	1.0166	27.81	1.0132	1.0132	28.18	1.0300
2022	37,173	1,606	1,298	1,892	1.0300	0.8299	0.9848	1.0143	28.58	1.0155	1.0155	29.02	1.0300
2023	36,962	1,645	1,330	1,948	1.0300	0.8433	0.9828	1.0123	29.38	1.0174	1.0174	29.89	1.0300
2024	36,744	1,684	1,361	2,007	1.0300	0.8576	0.9841	1.0136	30.30	1.0162	1.0162	30.79	1.0300
2025	36,448	1,721	1,391	2,067	1.0300	0.8742	0.9834	1.0129	31.19	1.0169	1.0169	31.71	1.0300

Comments:

(1) Transformed values of (equivalent) contributors for 2011-2025 according to BMAS 2011, p. 56; transformations on the basis of the actual value for the actual work force in 2010

(2) Calculation as product out of (1) and average gross wages according to BMAS 2011, p. 48

(3) Normalized values of (2) on the basis of the relative change of actual gross wages in 2010 and in 2009

(4) 0.65 times the corresponding values of (3) (as an empirically meaningful share of gross wages) and divided by (1) and by 12 (to obtain a per-month value)

(5) See “square root’s” factor in Equation (1)

(6) Transformed values of (equivalent) relations for 2011-2025 according to BMAS 2011, p. 56; transformations on the basis of the actual value for the relevant actual ratio in 2010

(7) See “pensioners’ factor” in Equation (1)

(8)-(13): See Equation (1)

Source: Present author’s own calculations on the basis on the references mentioned among “comments”

Table A.4: Ex-ante values for contribution rates' and "actual" pension adjustments' elements, Germany 2011-2025

Year	(1) Total revenue (in 10^6 €)	(2) Contributions (in 10^6 €)	(3) Gross-wage basis for contributions (in 10^6 €)	(4) Other revenues (in 10^6 €)	(5) Total expenditures (in 10^6 €)	(6) Pensions expenditures (in 10^6 €)	(7) Other expenditures (in 10^6 €)	(8) Contribution rate, calculated	(9) "Actual" contribution rate	(10) "Actual" adjustment rate
2011	249,100	184,334	926,302	64,766	244,700	220,230	24,470	0.194	0.199	0.9663
2012	252,400	186,776	952,939	65,624	249,800	224,820	24,980	0.193	0.196	1.0049
2013	254,400	188,256	980,500	66,144	254,200	228,780	25,420	0.192	0.192	1.0017
2014	258,100	190,994	1,005,232	67,106	258,100	232,290	25,810	0.190	0.190	0.9995
2015	264,800	195,952	1,031,326	68,848	265,900	239,310	26,590	0.191	0.190	1.0141
2016	271,500	200,910	1,057,421	70,590	274,400	246,960	27,440	0.193	0.190	1.0158
2017	278,100	205,794	1,083,126	72,306	282,800	254,520	28,280	0.194	0.190	1.0145
2018	285,300	211,122	1,111,168	74,178	292,400	263,160	29,240	0.196	0.190	1.0178
2019	294,300	217,782	1,140,220	76,518	303,400	273,060	30,340	0.199	0.191	1.0214
2020	313,800	232,212	1,166,894	81,588	314,600	283,140	31,460	0.200	0.199	1.0207
2021	323,900	239,686	1,198,430	84,214	324,700	292,230	32,470	0.201	0.200	1.0160
2022	335,800	248,492	1,230,158	87,308	335,700	302,130	33,570	0.202	0.202	1.0177
2023	346,400	256,336	1,262,739	90,064	348,200	313,380	34,820	0.204	0.203	1.0210
2024	360,400	266,696	1,294,641	93,704	361,200	325,080	36,120	0.207	0.206	1.0211
2025	374,300	276,982	1,325,273	97,318	373,900	336,510	37,390	0.209	0.209	1.0190

Comments:
(1), (5) See BMAS 2011, p. 40 (variant of mean employment's development)
(2) 0.74 times the corresponding values of (1) (0.74 as an empirically meaningful share of contributions)
(3) Values of (2) divided by values of (9)
(4) Difference between values of (1) and values of (3)
(6) 0.90 times the corresponding values of (5) (0.90 as an empirically meaningful share of pension expenditures)
(7) Difference between values of (5) and values of (6)
(8) Calculated on the basis of Equation (2)
(9) See BMAS 2011, p. 38
(10) Calculated out of the value changes of (6)

Source: Present author's own calculations on the basis on the references mentioned among "comments"

Table A.5: Adjustment rates and differences in contribution rates according to "actual" adjustments and to IGWA, Germany 2011-2025

Year	(1) "Actual" adjustment rate	(2) IGWA adjustment rate	(3) Relation "IGWA / actual"	(4) Difference of contribution rates according to "actual" adjustments and IGWA
2011	0.9663	1.0110	1.0463	0.0110
2012	1.0049	1.0264	1.0215	0.0051
2013	1.0017	0.9847	0.9830	-0.0040
2014	0.9995	0.9869	0.9874	-0.0029
2015	1.0141	1.0392	1.0247	0.0057
2016	1.0158	1.0169	1.0011	0.0003
2017	1.0145	1.0185	1.0040	0.0009
2018	1.0178	1.0186	1.0008	0.0002
2019	1.0214	1.0250	1.0036	0.0009
2020	1.0207	1.0290	1.0081	0.0020
2021	1.0160	1.0300	1.0138	0.0034
2022	1.0177	1.0300	1.0121	0.0030
2023	1.0210	1.0300	1.0088	0.0022
2024	1.0211	1.0300	1.0087	0.0022
2025	1.0190	1.0300	1.0108	0.0028

Source: Present author's own calculations

Table A.6: Estimated equations (OLS) in the context of well-being relations[a)] on the basis of SOEP data for (western) Germany 1983-2009

Dependent variable	Until 29 years	30-59 years	60 years and older
Share of labour income related to gross income	-0.0037 t*** + 0.9029*** (R^2 = 0.8961)	-0.0022 t*** + 0.8950*** (R^2 = 0.7664)	0.0002 t^2*** – 0.0059 t*** + 0.2703*** (R^2 = 0.4980)
Share of capital income related to gross income	0.0009 t*** + 0.0608*** (R^2 = 0.8774)	0.0009 t*** + 0.0442*** (R^2 = 0.6859)	0.0026 t*** +0.0932*** (R^2 = 0.8964)
Share of transfer income related to gross income	0.0029 t*** + 0.0680*** (R^2 = 0.8774)	0.0013 t*** + 0.0609*** (R^2 = 0.6808)	0.0002 t^2*** – 0.0023 t + 0.6412*** (R^2 = 0.6886)
Share of net income related to gross income	-0.0001 t^2** – 0.0022 t** + 0.7351*** (R^2 = 0.2514)	-0.0006 t** +0.7108*** (R^2 = 0.1758)	-0.0001 t^2*** +0.0019 t** + 0.8933*** (R^2 = 0.2974)
Labour income	300.17 t*** + 12,901*** (R^2 = 0.9394)	529.45 t*** + 14,710*** (R^2 = 0.9788)	131.04 t*** + 2,536.7*** (R^2 = 0.9061)
Capital income	37.79 t*** + 471.84*** (R^2 = 0.9144)	60.13 t*** + 670.98*** (R^2 = 0.9187)	119.14 t*** + 802.46*** (R^2 = 0.9673)
Transfer income	103.48 t*** + 675.05*** (R^2 = 0.9584)	85.48 t*** + 882.54*** (R^2 = 0.9344)	312.37 t*** + 7,211.6*** (R^2 = 0.9814)

Comments:

[a)] Population shares of the three age groups according to the 12th consolidated population's forecast of the German Statistical Office; t = time period – 1983; R^2 = determination coefficient; all incomes are equivalent incomes (scaled-up by the modified OECD scale); gross income:= labour income + capital income + transfer income; net income:= net income's share (estimated) multiplied by gross income (calculated); *** = statistically significant at the 1-percent level; ** = statistically significant at the 5-percent level

Source: Present author's own calculations

References

Bundesministerium für Arbeit und Soziales (BMAS; 2011): Rentenversicherungsbericht 2011, Berlin.

Deutsche Rentenversicherung (DRV; 2012): Rentenversicherung in Zeitreihen, Berlin.

Faik, J., and T. Köhler-Rama (2009a): Gesetzliche Rentenversicherung: Für eine Rentenanpassung mit Sicherungsziel. Wirtschaftsdienst, 89, pp. 601-609.

Faik, J., and T. Köhler-Rama (2009b): Zur Frage der Rentenanpassung: Probleme und Lösungsansätze, FaMa Discussion Paper #3-2009, Frankfurt (Main).

Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (2010): Chancen für einen stabilen Aufschwung, Jahresgutachten 2010/11, Paderborn.

Wagner, G. G., J. R. Frick, and J. Schupp (2007): The German Socio-Economic Panel Study (SOEP) – Scope, Evolution and Enhancements. Schmollers Jahrbuch, 127, pp. 139-169.

Folgende FaMa-Diskussionspapiere sind bisher erschienen (Stand: 17.04.2012):

FaMa-Diskussionspapier 1/2009: Is the Overall German Personal Income Distribution Constant or Variable over Time? Cross-section Analyses for Germany 1969-2003 *(Jürgen Faik).*

FaMa-Diskussionspapier 2/2009: Alternative Verfahren zur Messung von Armut: Ganzheitliche Methode versus Zerlegungsansatz *(Jürgen Faik)*.

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