

# Gone with the Windfall - Germany's Second LTC Strengthening Act and its Intergenerational Implications

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## Abstract

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Due to the debate about the generosity of LTC insurance benefits the German government decided to increase benefits and widen the circle of LTC beneficiaries with the Second LTC Strengthening Act. In this paper, we evaluate the long-term implications of this recent reform for the German LTC insurance scheme. Using the framework of generational accounting we show that the reform has led to a widening of the short-term gap between revenues and expenditure and that the LTC insurance is not sustainably financed, neither pre- nor post-reform. By the early 2020s there will be fiscal pressure for further reforms. From an intergenerational perspective, the reform can be seen as a windfall to current beneficiaries increasing the intergenerational redistribution through the pay-as-you-go system.

We would like to thank BARMER health insurance for generously providing us with the necessary data to conduct our research. Our study has been conducted independently and all conclusion drawn and opinions stated are solely our own. In addition, we would like to thank Jasmin Kersting for proof-reading and helpful comments. All remaining errors are our own.

**JEL-Classification:** H51, I13, J14

**Keywords:** Generational accounting, long-term care insurance, intergenerational distribution

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# Gone with the Windfall - Germany's Second LTC Strengthening Act and its Intergenerational Implications

## 1 Introduction

In 1995 Germany added a fifth pillar to its social security net – social long-term care (LTC) insurance. Right from the start, this pillar has been designed to grant only a partially comprehensive coverage. Hence, LTC costs are shared by the (social) insurance system and the patient or, in case of poverty, the taxpayer. There is ongoing political debate on how to reform the system, especially in respect to the upcoming demographic transition. On the supply side, the discussion is particularly concerned with the question of how to ensure an adequate level and quality of care in the short and long run. On the demand side, it aims at the generosity and (long-term) financing of benefits provided by LTC insurance.

With respect to the latter, numerous scholars such as Fetzner et al. (2002), Häcker and Raffelhüschen (2006) or Rothgang (2010) have shown that LTC insurance is not and never has been sustainably financed, even at the onset due to the expected demographic changes. Subsequently, a funded element in addition to the pay-as-you-go financing was introduced with the *First LTC Strengthening Act* in 2015. This LTC capital reserve fund aims at partly financing deficits which will occur after 2035.

In course of the debate about the generosity of LTC insurance benefits, the Merkel administration decided to increase benefits significantly and enlarge the number of possible beneficiaries with the *Second LTC Strengthening Act*.<sup>1</sup> In 2017, the act basically changed the classification of care needs from a three-category classification to a five-category classification, allowing for more generous benefits per se and an addition of more diagnoses eligible for LTC benefits. To finance the reform, the contribution rate was raised from 2.35 to 2.55 percent. Additionally, a further increase by 0.5 percentage points in 2019 has been approved by the German Federal Government in October 2018.

Within this paper, we evaluate the long-term implications of this recent LTC insurance reform (*Second LTC Strengthening Act*). Using the methodological framework of generational accounting, we first compute sustainable contribution rates for LTC insurance after the *First* (pre-reform) as well as after the *Second LTC Strengthening Act* (post-reform). This sustainable contribution rate serves as our macroeconomic benchmark and will offer the financial long-term adjustment requirements for LTC insurance under pre- and post-reform conditions. Second, we illustrate the future

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<sup>1</sup> The *First LTC Strengthening Act* increased the benefit level, especially for mentally impaired LTC recipients. In the following, we focus on the effects of the *First* and *Second LTC Strengthening Acts*, with the effects of the *First LTC Strengthening Act* examine on the implementation of the LTC reserve fund and the *Second LTC Strengthening Act* focusing on raising the benefit level. Although there is a *Third LTC Strengthening Act*, it is not going to be discussed in this paper. It strengthened the role of municipalities in the areas of counseling and providing care. In addition, the protection against billing fraud in LTC was significantly improved.

development of the contribution rate (wage tax) given the pre- and post-reform benefit levels. Finally, we calculate the reform-induced intergenerational financial impact on the cohorts born between 1916 and 2016.

As our results will show, there will be a financial pressure for LTC by the 2020s at the latest. As a reaction to this financial pressure, basically four options are possible: a further increase in the contribution rate, a higher level of capital funding, an explicit (or implicit) reduction of benefits or a combination of the three foregoing elements.<sup>2</sup>

However, with respect to the first option, a further increase in the contribution rate, there will be a limit depending on the public acceptance of the level of obligatory social security contributions. A significant worsening of the economic environment would most likely hinder further significant increases to the contribution rate. Similarly, it can be argued that the second option of higher capital funding has to be financed via a short-term increase of the contribution rate or other additional payments, which will reduce the disposable income of Germany's population. Moreover, the topic of an introduction of capital funding elements to ensure an adequate LTC level in the future has different aspects, which we will discuss in our conclusion.

Furthermore, the third option, an explicit cutting of benefits, seems to be a highly unlikely scenario as it would be contrary to the goals of the *LTC Strengthening Acts*, as well as oppose public and political opinion on this topic. Hence, the most likely scenario would be an implicit reduction of benefits. With respect to this option the *Medical Review Board of the Statutory Health Insurance (Medizinischer Dienst der Krankenversicherung - MDK)* plays an essential role within the LTC insurance scheme. After the introduction of the LTC insurance in 1995, the *MDK* began to classify patients quite generously and then steadily moved toward a more expenditure-reducing steady state. Thus, we will present a hypothetical scenario, in which we assume that history will indeed repeat itself and the *MDK* will reduce the current generous post-reform benefit level, by adjusting its assessment practices. Furthermore, we show the impact of such a scenario on long-term financing and intergenerational distribution effects.

Our paper is structured as follows. Chapter 2 presents institutional details of the German LTC insurance and the recent reforms, as well as their impact on LTC financing in the short-term. Chapter 3 presents data and the methodology of our long-term evaluation of LTC insurance financing. Chapter 4.1 then discusses the results for the pre- and post-reform scenarios and Chapter 4.2 shows the results for the hypothetical *MDK* scenario. The paper concludes with an outlook in Chapter 5.

## 2 Long-Term Care Insurance in Germany

### 2.1 Pre-Reform

After 20 years of political debates driven by increasing social assistance expenditures on the municipal level, Germany established mandatory LTC insurance for the entire

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<sup>2</sup> A further option could be to finance parts of LTC insurance via taxes. However, as taxes are affected as well by demographic changes, this option is somehow similar to raising the contribution rate.

population in 1995.<sup>3</sup> With its introduction, members of the statutory health insurance became members of the social LTC insurance and those with private health insurance were legally obliged to get private LTC insurance. Accordingly, there is now mandatory social and private LTC insurance covering 89 percent and 11 percent of the population respectively (BMG, 2018a).<sup>4</sup>

Social LTC insurance is financed by means of income-based contributions in a pay-as-you-go system. The contribution rate is set by law-makers. However, costs for LTC services, either out- or inpatient care, are only partially covered by the LTC insurance. The remainder of costs are out-of-pocket payments by either the patients or their families or in case of poverty, by other tax-financed social assistance systems. The out-of-pocket payment range is around 50 percent of all LTC costs (Breyer, 2016).<sup>5</sup>

Since its introduction, the number of LTC insurance beneficiaries has increased significantly. While in 1996 1.55 million patients received benefits, the number rose to 2.75 million by the end of 2016 (BMG, 2018f).

Before the new benefit scheme of the *Second LTC Strengthening Act* was introduced in 2017, the pre-reform situation from 1995 to 2016 can be described as follows. All persons insured in LTC insurance were eligible for benefits when becoming frail. According to pre-reform § 14 Social Code Book XI, people were considered LTC-dependent in case they required help in their regularly recurring tasks of daily life for at least six months, due to physical, mental or psychological illnesses or disabilities. Thus, based on the time and frequency of help needed, people were classified in one of three care levels.

The responsibility for the LTC assessment falls to the *Medical Review Board of the Statutory Health Insurance (MDK)*, which evaluates whether a person is eligible for LTC insurance benefits.<sup>6</sup> Once eligibility is ascertained the patient was assigned a care level of I to III, which determined the prospective patient could claim to cover their LTC expenses. Additionally, special regulations existed for two categories. First, a special sub-category, commonly called “care level 0”, was introduced in 2008 for people with early dementia who need increased supervision. These benefits were available to patients whose care needs were below care level 1. Second, patients already classified into the LTC dependency categories, but with needs that exceeded care level III received additional compensation as hardship cases (“*Härtefälle*”). Table 1 shows dependency levels and respective benefits per month in 2016.<sup>7</sup>

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<sup>3</sup> More information on the history of German LTC insurance and more recent developments can be found in Cuellar and Wiener (2000), Evers (1998), Geraedts et al. (2000), Götting et al. (1994), Harrington et al. (2002), Nadash and Cuellar (2017), Nadash et al. (2018) and Schneider (1999).

<sup>4</sup> Whenever we speak of LTC insurance, we refer to social LTC insurance. The private LTC insurance is not the topic of our research.

<sup>5</sup> These out-of-pocket payments can comprise of nursing charges, board and lodging, investment costs and possibly a training levy as well as costs for additional services.

<sup>6</sup> The *MDK* is the advisory service for all statutory health insurance funds, which also include the LTC insurance funds. Its function is to give advice and provide expertise on health and LTC issues as well as to ensure high quality, availability and effectiveness of care.

<sup>7</sup> While Table 1 shows the three major types of benefits there are several further types listed in Social Code Book XI.

**Table 1: Definition of dependency and benefits paid for in- and outpatient care 2016**

Care Level	Dependency*	Outpatient Care		Inpatient Care
		Cash Benefits (in Euro p/m)	Benefits in Kind (in Euro p/m)	Benefits in Kind (in Euro p/m)
I	substantially care-dependent; necessity for help at least once a day with at least two basic activities of daily living (ADLs) and multiple times a week with instrumental activities of daily living (IADLs); required time of at least 90 minutes a day, with at least 45 minutes for ADLs	244	468	1,064
II	heavily care-dependent; necessity for help at least three times a day at different times of the day with ADLs and multiple times a week with IADLs; required time of at least three hours a day, with at least two hours for basic ADLs	458	1,144	1,330
III (regular)	most heavily care-dependent; necessity of help around the clock with ADLs and multiple times a week with IADLs; required time of at least five hours a day, with at least four hours for basic ADLs	728	1,612	1,612
III (hardship cases)	approved care level III and the daily care measures must exceed the usual level of basic care	-	1,995	1,995

\* Source: Pre-reform § 15 Social Code Book XI.

Note: Care level 0 was assigned to persons with dementia, whose need for basic care and home care did not reach the extent of care level I. If prerequisites of care level III were met and if there was extraordinary high care maintenance, the hardship case regulation can be claimed. It is required that assistance in basic care takes at least six hours a day, of which at least three times are at night, or that basic care can only be provided jointly by several nurses at night.

The LTC insurance covers expenses up to certain amounts which are set by law. These benefits vary by dependency and institutional status. In general, beneficiaries are allowed to choose between outpatient care and inpatient care. In case of outpatient care, there is a distinction between cash benefits when care is given by private non-professionals (which are mostly close relatives), and benefits in kind, which are granted when care is administered by a professional home health care service.<sup>8</sup> Additionally, cash and benefits in kind can be combined, for example drawing on inpatient care for some days, while otherwise being cared for at home.

The main sources of financing are contributions on labor and pension income. Revenues have increased from 11.90 billion Euro in 1996 to 31.96 billion Euro in 2016. A second further potential financial source are the working assets which can be freely used up to a minimal reserve of one average month of LTC spending. It equals the sum of accumulated surpluses, minus the deficits from previous years. From 1996 to 2010, it ranged between 3 to 5 billion Euro annually and reached a maximum of 9.34 billion in

<sup>8</sup> In accordance with literature and law we speak of cash benefits and benefits in kind. However, economically speaking both types are cash benefits as benefits are fixed in Euro. It would be more precise to speak of payments to patients (cash benefits) and payments to providers (benefits in kind).

2016. As mentioned in the introduction, a third financial source was established with the *First LTC Strengthening Act* in 2015. The LTC capital reserve fund uses ten basis points of the contribution rate from 2015 to 2034 to ensure stable contribution rates in following years and counterbalance the demographic shift. The balance of the LTC capital reserve fund amounted to 2.44 billion Euro in 2016. Assets from this LTC capital reserve fund can only be used up to a certain amount from the year 2035 onward to avoid increases in demographically or medically caused higher expenditures. Financing higher expenditures due to an increase in generosity is explicitly excluded.<sup>9</sup>

## 2.2 Post-Reform

Already prior to the introduction of LTC insurance and in subsequent years, there has been an ongoing debate focusing on the definition of the “need for LTC” and the associated classification. In the field of nursing care, it was criticized that LTC dependency is insufficiently substantiated and primarily oriented to everyday activities regarding mobility, nutrition, personal hygiene and home care. Problems with these activities occur more frequently in people with physical impairments than in people with cognitive or mental impairments (BMG, 2009). Due to the compensatory nature of the benefits, people with cognitive/mental impairments were less likely to attain higher levels of care than people with physical impairments.

One main point in the public debate prior to the *Second LTC Strengthening Act* was the need for specialized care and assessment for patients with forms of dementia, as they require an increasingly individualized care thus generating higher costs for LTC providers.<sup>10</sup> Additionally, the focus was put on aiding relatives who provide LTC at home. In order to increase their social security and ease the burden of care they were provided with expanded social security payments and further assistance in form of short-term care and additional programs.

Subsequently to this debate, the German government passed the three consecutive *LTC Strengthening Acts* between 2015 and 2017, the most extensive reforms since the introduction of LTC insurance in 1995. The *Second LTC Strengthening Act* altered the system most extensively. In general, a new definition of LTC dependency and a fundamental new system to assess the need for LTC have been introduced. With that, LTC insurance has been put on a fundamentally new professional basis. The main factor of the new assessment is the comprehensive coverage of all LTC-relevant aspects, regardless of whether they are due to physical, mental or cognitive impairments. The classification no longer follows a three-care level scheme with a separate assessment of

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<sup>9</sup> The LTC fund constitutes a special asset of the LTC insurance and is expected to stabilize the long-term contribution rate development. According to § 136 Social Code Book XI it may only be used to finance benefit expenditures. It will be saved over a period of 20 years, up to 2034. This period relates to the time the “baby boomer” generations born from 1959 to 1967, will reach the age of 75 and thus being in a highly LTC-relevant age. The annual withdrawal is capped to one-twentieth of the available funds real value on 31<sup>st</sup> December 2034. If there is no withdrawal in a respective year, a designated fund volume can be withdrawn in the following year.

<sup>10</sup> Studies suggest that dementia patients cause higher costs than patients without dementia (Comas-Herrera et al., 2007; Schwarzkopf et al., 2012), as their care needs are vastly time consuming and necessitates advanced nursing staff training. The common consensus was to give nursing professionals more face time with the patient and aiding relatives wanting to nurse by themselves, higher benefits and more choices.



restricted competence in daily matters, but a five care grade scheme uniformly for all patients. Under pre-reform settings, the time needed for LTC was calculated. Now the degree of autonomy restrictions is the relevant factor for classification. In the future, benefits provided by LTC insurance will be based solely on the stated care grade. With that, all LTC-dependent persons within the respective care grades will have access to the same services. Table 2 depicts the post-reform definition of dependency, respective care grades and monthly post-reform benefit entitlements.

**Table 2: Definition of dependency and benefits paid for in- and outpatient care 2017**

Care grade	Dependency*	Outpatient care		Inpatient care
		Cash Benefits (in Euro p/m)	Benefits in Kind (in Euro p/m)	Benefits in Kind (in Euro p/m)
1	Minor impairments of autonomy or skills (points: 12.5 to under 27)	(125)**	(125)**	(125)**
2	Substantial impairments of autonomy or skills (points: 27 to under 47.5)	316	689	770
3	Heavy impairments of autonomy or skills (points: 47.5 to under 70)	545	1,298	1,262
4	Most heavy impairments of autonomy or skills (points: 70 to under 90)	728	1,612	1,775
5	Most heavy impairments of autonomy or skills and special requirements for nursing care (points: 90 to 100)	901	1,995	2,005

Source: Post-reform § 15 *Social Code Book XI*.

Note: \* Based on the person's' level of autonomy the new assessment awards points along six predefined and differently weighted parameters. These parameters are (1) mobility (10 percent), (2) cognitive and communicative skills, (3) behavior patterns and mental problem-situations (together 15 percent), (4) self-support (40 percent), (5) coping with and independently dealing with illness- or therapy-related requirements and burdens (20 percent), and (6) structuring of the daily life and social contacts (15 percent).

\*\* According to post-reform § 45b *Social Code Book XI*, LTC-dependent persons are entitled to a relief benefit of 125 Euro. This benefit is earmarked for relieving informal caregivers and supporting autonomy of the LTC-dependent persons in their daily life.

As one can see by comparing the benefit entitlements between Tables 1 and 2, the reform has led to higher benefit rates. Although pre- and post-reform assessments are not medically comparable, beneficiaries in the new care grade system receive overall larger benefits than in the previous care level system.

In order to ease the transition from care levels to care grades and to avoid reassessing 2.75 million recipients of benefits, rules for the transition were introduced. As of December 31<sup>st</sup>, 2016, patients were reclassified within the new care grades by one or two levels higher than previously. A one-level upgrade would bring a patient from care level I to care grade 2, whereas if the patient was in need of more care due to mental impairment (i.e. dementia) a two-level upgrade would be performed moving the patient from care level I to care grade 3.

Within the new benefit scheme, especially home care benefits (cash benefits and benefits in kind) were raised to a higher degree compared to nursing home care benefits,

therefore incentivizing patients to draw upon home care services.<sup>11</sup> The newly introduced assessment system focuses more intensively on the abilities a patient retains and the help needed in order to perform everyday tasks.

To finance the expansion of benefits, the contribution rate was increased via the *Second LTC Strengthening Act* by 0.2 percentage points in 2017. However, the expansion of benefits and the wider circle of persons eligible to LTC benefits have led to the highest deficit in the history of German LTC insurance, amounting to 2.42 billion Euro at the end of 2017. Thus, for 2019, an additional increase to the contribution rate by 0.5 percentage points has been recently announced by the German Federal Government.<sup>12</sup>

Table 3 gives an overview of the past LTC contribution rate development. It reveals that the contribution rate has already been increased several times, mainly to finance the increase of recipients as well as reform-induced benefit expansions. The first increase by 0.7 percentage points in 1996 goes back to the delayed introduction of benefits for inpatient care. The period between 1996 and 2012 showed a moderate increase by 0.5 percentage points, and the period between 2013 and 2019 has shown a rapid increase of one percentage point which is an increase of nearly 50 percent.

**Table 3: Development of the Contribution Rate**

Year	Contribution rate	Adjustments
1995	1.0	-
1996	1.7	+0.7
2005*	1.7 / 1.95	(0.0 / +0.25*)
2008	1.95 / 2.2	+0.25
2013	2.05 / 2.3	+0.1
2015	2.35 / 2.6	+0.3
2017	2.55 / 2.8	+0.2
2019**	3.05 / 3.3	+0.5

\* In 2005 the contribution rate was divided by surcharging childless people with additional 0.25 percent.

\*\* Announcement from the German Federal Ministry of Health.

In order to better understand the components driving these developments, Table 4 shows pre- and post-reform expenditures and revenues within LTC insurance. In 2016, revenues amounted to 32.02 billion Euro and expenditures to 31.00 billion Euro. This

<sup>11</sup> A further incentive to pursue outpatient care rather than inpatient care has been the introduction of a uniform institutional co-payment for nursing homes, the so called *Einrichtungseinheitlicher Eigenanteil*. Whereas under the previous rules, the sum of co-payment depended on the care level (with generally lower co-payments for lower care levels) it is now independent of the care grade. Each individual nursing home sets its own uniform institutional co-payment rate. This change generally increased co-payments for lower care grades.

<sup>12</sup> Another key factor for an additional financial requirement is the reform in vocational education of nursing staff. While the education used to be divided into a course for geriatric nursing staff and a course for occupational health nursing staff both disciplines now undergo identical training. This leads to graduates of nursing courses being able to choose between working at a hospital or for a nursing home. As hospital work involves less care work and enjoys higher prestige, nursing homes will now have to offer better job benefits in order to retain or hire staff.

resulted in a surplus of 1.03 billion Euro. For 2017, revenues amounted to 36.10 billion Euro while expenditures summed up to 38.52 billion Euro. As mentioned, the resulting deficit of 2.42 billion Euro in 2017 was the highest deficit in the history of German LTC insurance (BMG, 2018b).

As can be seen from Table 4, there has been an increase in expenditures by 24.2 percent from 2016 to 2017, far exceeding the rise in contributions to LTC insurance (12.8 percent). The main expenditures of LTC insurance include cash benefits and benefits in kind, both benefiting people in outpatient care as well as in inpatient care. Within these expenditure items, cash benefits increased disproportionately (46 percent). Mainly due to a more generous cash benefit level and the introduction of the new care grade 1, which includes people who previously were not receiving benefits at all. Moreover, the numbers indicate that the new incentives for an increase of (non-professional) care at home may work as intended, as the position “Social Insurance Family Caregiver” offers the sharpest rise (56 percent) of all expenditure items.

All in all, the numbers of Table 4 reveal that the *LTC Strengthening Acts* (and in particular *Act II*) are not only the most extensive, but also the most expensive reform since the introduction of LTC insurance in 1995. Obviously, the financial consequences were underestimated, which is also indicated by the recently drafted increase of the contribution rate by 0.5 percentage points in 2019.

**Table 4: 2016 and 2017 budgets of the German LTC Insurance**

<b>Revenues (billion Euro)</b>	<b>2016</b>	<b>2017</b>	<b>+/-</b>	<b>Expenditures (billion Euro)</b>	<b>2016</b>	<b>2017</b>	<b>+/-</b>
Contributions (employees, voluntary insured)	23.59	26.71	13.2%	Cash Benefits	6.84	9.99	46.1%
Contributions (pensioners)	5.61	6.28	11.9%	Benefits in Kind	3.83	4.50	17.5%
Contributions (unemployment/welfare)	1.18	1.34	13.6%	Nursing Home Care	12.43	14.71	18.3%
Other Contributions	1.57	1.72	9.6%	Other Care Expenditures	4.21	4.80	14.0%
Other Revenues	0.07	0.06	-14.3%	Social Insurance Family Caregiver	0.99	1.54	56.6%
				Administration & MDK costs <sup>13</sup>	1.41	1.60	13.5%
				Savings for LTC Reserve Fund	1.29	1.36	5.4%
<b>Total revenues</b>	<b>32.02</b>	<b>36.11</b>	<b>12.8%</b>	<b>Total Expenditures</b>	<b>31.00</b>	<b>38.52</b>	<b>24.2%</b>
				Surplus/Deficit	1.03	-2.42	
<b>Assets (billion Euro)</b>	<b>2016</b>	<b>2017</b>					
	Dec. 31st	Dec. 31st					
LTC Working Assets	9.34	6.92					
LTC Capital Reserve Fund	2.44	3.83					

Source: BMG (2018b).

Note: "Other Care Expenditures" include: day-/nightcare ("*Tages- und Nachtpflege*"), short term nursing home care ("*Kurzzeitpflege*"), relief care ("*Verhinderungspflege*"), care counseling ("*Beratungsbesuche*"), assistive equipment ("*Hilfsmittel*"), care focused home improvement ("*Wohnumfeldverbesserung*"), additional outpatient benefits ("*Zusätzliche ambulante Betreuungs- und Entlastungsleistungen*") and other care expenditures ("*Sonstige Leistungsausgaben*").

<sup>13</sup> The LTC insurance bears half of the MDK's expenditures.

## 3 Data and Methodology

### 3.1 Data and Assumptions

The following analysis of long-term financial consequences due to the latest LTC insurance reform is based on the methodological framework of generational accounting developed by Auerbach et al. (1991, 1992, 1994).<sup>14</sup> Our database includes a population projection, the revenues and expenditures of LTC insurance before and after the reform in 2016 and 2017, age- and gender-specific micro profiles for different LTC expenditure and revenue types, a growth rate of productivity as well as a discount rate.

Using a population projection we compute the cohort sizes  $N_{u,t}$ , which is the number of persons at age  $u$  (which we assume between 0 and 100) in the year  $t$  (2016 or later).<sup>15</sup> The German population of 2017 is the base for our population projections. For the future development of the population, we assume a constant birth rate of 1.5 children per woman of reproductive age and an increase in the life expectancy at birth from 83.41 (78.42) in 2016 to 88.80 (84.80) in 2060 for women (men). After 2060, we assume no further increase in life expectancy. For future migration, we assume a long-term net migration of 100,000 persons per year.<sup>16</sup>

Data regarding revenues and expenditures of LTC insurance rests on the statistics from the German Federal Ministry of Health (BMG, 2018b, also see Table 4).<sup>17</sup> For our analysis, we break down the benefit payment positions into three different subcategories for care levels in 2016 and five different subcategories for care grades in 2017 (BMG, 2018c).

Within the framework of generational accounting, LTC insurance expenditures are distributed among the cohorts alive in 2016 and 2017 according to age- and gender-specific micro profiles for each subcategory and budget position. For this purpose, we construct micro profiles from a data set of Germany's second largest statutory health insurance provider, BARMER, which comprises routine data of 3,250,233 insured persons. Hereof, 160,179 received LTC benefits, 92,103 were in home care and 68,077 in inpatient care.<sup>18</sup>

For the distribution of revenues, we distinguish between age- and gender-specific contribution payments of employed persons, retirees and other revenues, for example

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<sup>14</sup> Shortcomings of generational accounting are discussed in Hagist (2008).

<sup>15</sup> For the population projection, we use the cohort component method which goes back to Whelpton (1936). A formal description of our population projection can be found in Bonin (2001).

<sup>16</sup> The assumptions of this population projection are based on the 13th coordinated population projection for Germany (Destatis, 2015) but refer to more recent data taken from Destatis website.

<sup>17</sup> For 2018, we assume a further increase of LTC expenditures in line with the expected increase of LTC beneficiaries. Their number increased from 2.75 million in the pre-reform status quo of 2016 to 3.30 million in 2017 and is expected to be around 3.5 million in 2018 (vdek, 2018). For 2019, we consider additional revenues due to the increase of the LTC contribution rate by 0.5 percentage points.

<sup>18</sup> Data for 2017 covers only the first quarter of 2017. Hence, care grade 1 data cannot be considered to be representative and therefore care grade 1 profiles are calculated with data from BMG (2018c, 2018d, 2018e).

payments for unemployed persons.<sup>19</sup> The micro profiles for these contribution payments stem from the German Sample Survey of Income and Expenditure 2013 and the German pension insurance (Destatis, 2017a; Deutsche Rentenversicherung, 2017).

**Figure 1: Pre- and Post-Reform Average Transfer Receipts and Contribution Payments**

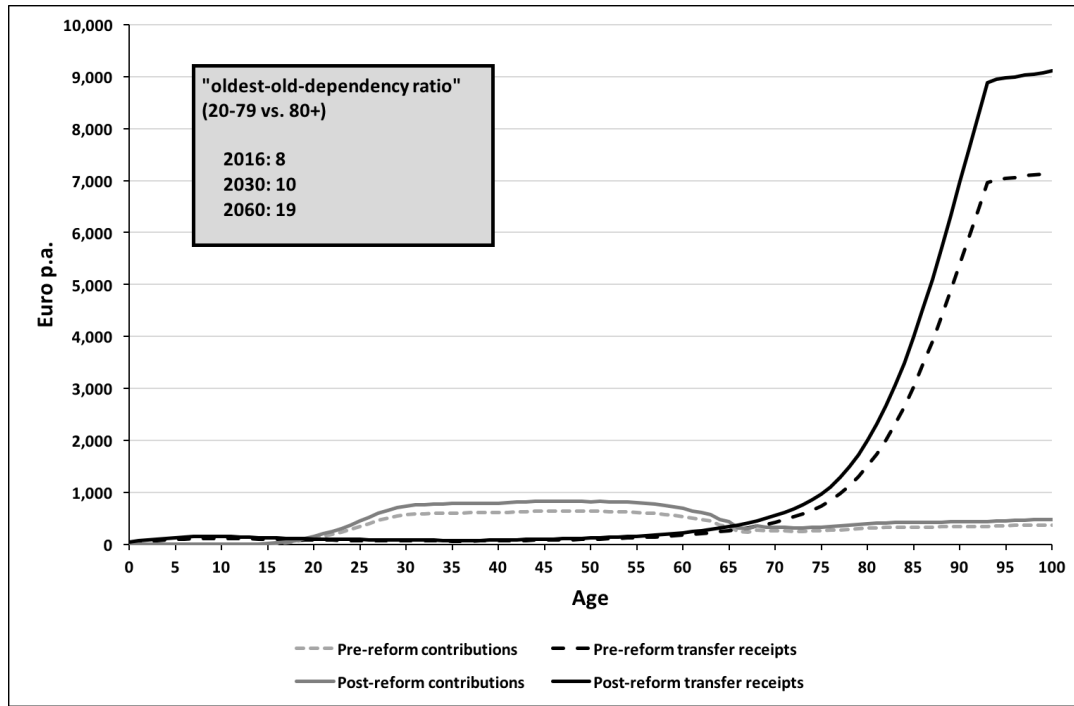


Figure 1 shows the resulting average transfer receipts  $b_u$  and contribution payments  $c_u$  per year for a representative individual of a cohort aged  $u$  in 2016 and after the reform in 2017 respectively. The average post-reform contribution payments  $c_u$  steadily increase for individuals aged 15 to 45 years to a level of 830 Euro per year. With reaching retirement age of 65, the (post-reform)  $c_u$  decline to around 430 Euro. In contrast to this, the average transfer receipts  $b_u$  offer an exponential increase along with increasing age. While 65-year-old individuals receive on average 335 Euro from LTC Insurance, this amount is over twenty-five times higher for individuals aged 90 or older. A comparison of pre- and post-reform payments reveals the reform-induced generosity. While contribution payments incline at maximum by 190 Euro for 45-year-old individuals, the transfers received by individuals aged 95 or older increase from 7,100 to 9,100 Euro per year.

Figure 1 also draws a clear picture of an intergenerational contract inherent in the pay-as-you-go-financed LTC insurance. Individuals older than 67 years show significantly higher transfer receipts than contribution payments. These net transfer receipts are financed by the (net) payments of individuals younger than 67, which at the same time

<sup>19</sup> In the methodological world of generational accounting, the construction of age-specific profiles is accompanied by assumptions regarding the incidence of financial budget positions on age- and gender groups. With respect to this point, we particularly assume, that the employer's contributions are borne by the corresponding employees and that the contributions paid by the statutory pension scheme are borne by pensioners.

acquire their own claims to similar benefits in the future.<sup>20</sup> But, along with the upcoming demographic transition, the population aged 80 and older in relation to the population aged 20 to 79 will increase from 8 in 2016 to 19 in 2060 and therefore more than double (see also the numbers in Figure 1). Hence, in the long term, LTC insurance will face an enormous degree of financial pressure which we will quantify in our analysis in the following chapters.

For this analysis, in general we assume that all age-specific contributions and benefits grow with an annual productivity growth rate  $g$  of 1.5 percent.<sup>21</sup> We assume a different growth for the contributions of pensioners due to the pension reforms in Germany from the early 2000s (Raffelhüschen et al., 2010). With respect to the benefit receipts of LTC insurance, this implies that the benefit entitlements will grow at the same rate as the wages.<sup>22</sup> The projection of benefit receipts also implies a constant age-related LTC prevalence over time.<sup>23</sup> Finally, we use an annual discount rate  $r$  of 3 percent for our calculations (European Commission, 2017). In order to check the robustness of our results we assume two different scenarios in our sensitivity analysis, one with a higher ( $g = 1.0$  percent and  $r = 3.5$  percent) and the other with a lower ( $g = 2.0$  percent and  $r = 2.5$  percent) difference between the annual productivity growth and discount rate.<sup>24</sup>

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<sup>20</sup> Note that the intergenerational distribution is even higher than in the German pension insurance. Whereas the relation of the maximum average contribution payment to maximum benefit receipt in the LTC insurance is 11, the corresponding relation is about 3 in the German pension system.

<sup>21</sup> The Social Code Book XI considers an inflation of benefit levels with reviews based on the cost development of the past three years, with the next review by the federal government in 2020.

<sup>22</sup> It seems unclear, if this assumption is sufficient to ensure the actual level of care provided. LTC is labor intensive and it is difficult to implement technical progress permitting labor cost reductions in step with the rest of the economy. If at the same time the demand for care is inelastic, then this could result in a disproportionate increase of prices for long term care. Baumol (1967) has referred to this phenomenon as “unbalanced growth” and it is particularly relevant to the provision of LTC since demand is highly inelastic and there are few possibilities for technical progress.

<sup>23</sup> There are some empirical findings that postulate a moderate decrease or increase of LTC prevalence in higher age groups when life expectancy increases (Hackmann and Häcker, 2011). As Hackmann and Moog (2009) show, the future development of LTC prevalence depends on various factors such as the relation of mortality of LTC patients to mortality of non-LTC patients, and the future development of LTC incidence rates. Furthermore, we implicitly assume a constant ratio of nursing home and outpatient care. For the impact of a shift to nursing home care on future expenditures, see Comas-Herrera et al. (2006).

<sup>24</sup> Please note the results of generational accounting indicators mainly react to difference of  $g$  and  $r$ .

### 3.2 Methodology

Our analysis of the long-term implications of the recent LTC reforms starts with the calculations of the present value of future contributions,  $PV C (living)$ , and the present value of future benefits,  $PV B (living)$ , for all generations alive in our starting year 2016:<sup>25</sup>

$$PV C (living) = \sum_{t=2016}^{2116} \sum_{u=t-2016}^{100} N_{u,t} \cdot c_u \cdot (ndf)^{t-2016} \quad (1)$$

$$PV B (living) = \sum_{t=2016}^{2116} \sum_{u=t-2016}^{100} N_{u,t} \cdot b_u \cdot (ndf)^{t-2016} \quad (2)$$

$N_{u,t}$  is the number of persons at age  $u$  in year  $t$ . For all years between 2016 and 2116, we compute the present value of contribution payments by multiplying the cohort sizes,  $N_{u,t}$ , with the constant age-specific contribution payment,  $c_u$ , and a net discount factor,  $ndf^{t-2016}$ , whereby  $ndf = \frac{(1+g)}{(1+r)}$ , with productivity growth  $g$  and interest rate  $r$ . The calculations of the  $PV B (living)$  is in principle the same, using constant age- and gender-specific average benefits,  $b_u$ .

To analyze the impact of current reforms on sustainable LTC-financing, we also compute the present value of contributions and benefits for all generations born in 2017 and after:

$$PV C (future) = \sum_{t=2017}^{\infty} \sum_{u=0}^{\min\{100, (t-2017)\}} N_{u,t} \cdot c_u \cdot (ndf)^{t-2016} \quad (3)$$

$$PV B (future) = \sum_{t=2017}^{\infty} \sum_{u=0}^{\min\{100, (t-2017)\}} N_{u,t} \cdot b_u \cdot (ndf)^{t-2016} \quad (4)$$

As an interim step, we compute the so-called intertemporal public liabilities  $IPL$  as the difference of future benefits ((2) and (4)) and future contributions ((1) and (3)). In addition, we consider the LTC insurance's current assets,  $LTC Asset_{2016}$ , which comprises the working assets at the end of the year and the LTC fund:

$$IPL = PV B (living) + PV B (future) - PV C (living) - PV C (future) - LTC Asset_{2016} \quad (5)$$

Fiscal sustainability requires  $IPL$  to equal zero, thus we compute a necessary increase of the contributions  $\theta$ :<sup>26</sup>

$$\theta = \frac{IPL}{PV C (living) + PV C (future)} \quad (6)$$

<sup>25</sup> In our calculations, we further distinguish between men and women. We skip this in the notification for convenience reasons.

<sup>26</sup> This indicator reacts less sensitively to variations of the net discount factor than other sustainability indicators, for example the sustainability gap, see Benz and Fetzner (2006). For the topic of this study this seems adequate as in the following we will discuss the impact of current LTC insurance policy on the future development of the LTC insurance contribution rate.



Finally, we derive our benchmark for a stable LTC-financing, the “sustainable contribution rate”,  $SCR$ , by multiplying the initial contribution rate,  $CR_{2016}$  with  $1 + \theta$ :<sup>27</sup>

$$SCR = CR_{2016} \cdot (1 + \theta) \quad (7)$$

In the next step, we further show the consequences of the reform on the contribution rate over time. For this purpose, we compute yearly contributions  $C_t$  and benefits  $B_t$  for all years after 2016:

$$C_t = \sum_{u=0}^{100} N_{u,t} \cdot c_u \cdot (1 + g)^{t-2016} \quad (8)$$

$$B_t = \sum_{u=0}^{100} N_{u,t} \cdot b_u \cdot (1 + g)^{t-2016} \quad (9)$$

After that, we are able to compute the necessary yearly adjustment by closing the yearly deficits,  $B_t - C_t$ , via an increase of all contributions in this year,  $\alpha_t$ . Here, we also consider temporarily available financial reserves, i.e. the working assets and the LTC fund that will be used from 2035 onward and which are labelled  $TAFR_t$ :

$$\alpha_t = \frac{B_t - C_t - (-TAFR_t)}{C_t} \quad (10)$$

The development of the contribution rate over time results from multiplying the initial contribution rate  $CR_{2016}$  with  $1 + \alpha_t$ :

$$CR_t = CR_{2016} \cdot (1 + \alpha_t) \quad (11)$$

In a third step, we want to measure intergenerational distribution effects of the reform. For this purpose, we compute generational accounts for all cohorts alive in 2016. The generational account,  $ga_{\bar{u},2016}$ , represents the average present value of future net payments (contribution rate minus benefits) for a cohort member of age  $\bar{u}$  in 2016 over his remaining lifetime. We hereby consider the future development of the contribution rate:

$$ga_{\bar{u},2016} = \frac{\sum_{u=\bar{u}}^{100} N_{u,2016+u-\bar{u}} (c_u \cdot (1 + \alpha_{2016+u-\bar{u}}) - b_u) \cdot (ndf)^{u-\bar{u}}}{N_{\bar{u},2016}} \quad (12)$$

Generational accounts cannot be compared between different cohorts, as for younger cohorts the remaining lifetime is longer than for older cohorts. Thus, we compute

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<sup>27</sup> There are various ways to make the current situation in LTC insurance more sustainable. The most straightforward way is to adjust the contribution rate. However, it is difficult to gauge the scale of adjustment necessary to achieve sustainability. The  $SCR$  serves as a benchmark indicator in our analysis of the long-term implications of the reform. It would be the constant rate required each year that would hinder a buildup of debt in the long term. Implementing such a  $SCR$  would mean a shift from a pure pay-as-you-go system to a mixed system of funded and pay-as-you-go elements.

annuities from differences between pre- and post-reform generational accounts  $ga_{\bar{u},2016}^{pre}$  and  $ga_{\bar{u},2016}^{post}$ . This computation shows the reform-induced burden or relief per remaining life year,  $bly_{\bar{u},2016}$ , for the cohort  $\bar{u}$ :

$$bly_{\bar{u},2016} = (ga_{\bar{u},2016}^{pre} - ga_{\bar{u},2016}^{post}) \frac{r \cdot (1+r)^{LE_{\bar{u},2016}}}{(1+r)^{LE_{\bar{u},2016}-1}} \quad (13)$$

The term  $\frac{r \cdot (1+r)^{LE}}{(1+r)^{LE}-1}$  functions as the annuity factor, in which  $r$  denotes our interest rate and  $LE$  denotes the (unconditional) life expectancy for the average cohort member with age  $\bar{u}$  in 2016, taken from Destatis (2017b).

## 4 Results

### 4.1 Pre- and Post-Reform Situations

#### 4.1.1 Contribution Rate Development

Following our definition of sustainability, with  $IPL$  equaling zero, contributions have to be adjusted by  $\theta$ . Starting from the pre-reform contribution rate of 2.35 percent in 2016, an additional 1.37 percentage points are necessary to achieve sustainability under pre-reform conditions. Thus, our pre-reform benchmark, the sustainable contribution rate,  $SCR$ , amounts to 3.72 percent. As mentioned in Chapter 2, the LTC contribution rate increased by 0.2 percentage points in 2017 via the *Second LTC Strengthening Act* and for the year 2019, a further increase by 0.5 percentage points is planned. Our calculations reveal that under post-reform conditions the 2019 post-reform contribution rate of 3.05 percent has to be increased by 1.83 percentage points to reach the post-reform benchmark, a  $SCR$  of 4.88 percent. Table 5 gives an overview.

**Table 5: Pre- and post-reform contribution rates and necessary adjustments**

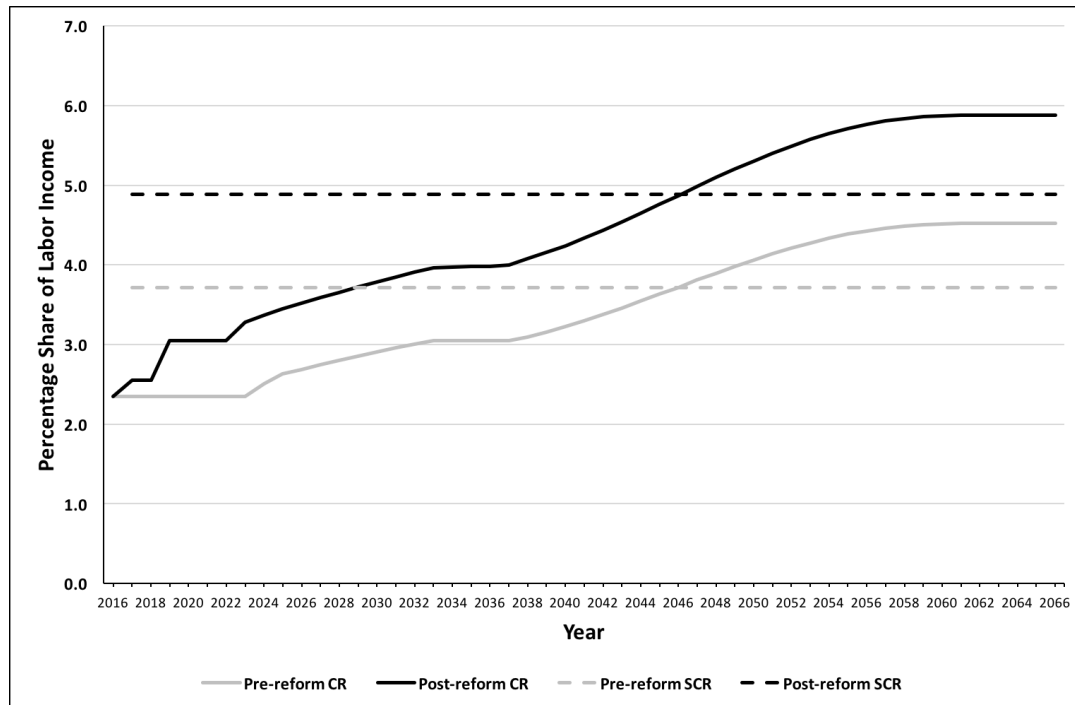
	Pre-reform	Post-reform
Contribution rate	2.35%	3.05%
$SCR$	3.72%	4.88%
$\theta$	0.58	0.60
Necessary adjustment	1.37%	1.83%

A first finding of our analysis is that the necessary relative increase of the contribution rates ( $\theta$ ) does not change significantly under pre- and post-reform conditions. In other words, the reform does not change the leverage effect which demographic transition exerts on LTC insurance. In light of this, the announced contribution rate increase of 0.5 percentage points for 2019 could be interpreted as a restoring of the pre-reform leverage ratio. Nonetheless, the generous reform leads to a significant absolute increase in the  $SCR$  of 30 percent compared to the pre-reform level. These results are also robust under

different assumptions for the annual growth and discount factor (see Table 6 in the Appendix).<sup>28</sup>

Our theoretical benchmark, the *SCR*, comes along with the implicit assumption of an immediate removal of any long-term financial imbalance in LTC insurance and therefore a spike in the short-term burden of private households. At least in the short-term, this assumption seems to be unrealistic.<sup>29</sup> A more realistic scenario is the (pay-as-you-go-inherent) assumption of a future increase in the contribution rate in a particular year in which the LTC expenditures ( $B_t$ ) exceed LTC revenues ( $C_t$ ) plus other temporarily available financial reserves (*TAFR*). The development of such a (annually adjusted) contribution rate over time is drawn in Figure 2 – again under pre- and post-reform conditions.<sup>30</sup> For reasons of comparability the pre- and post-reform *SCR* are also depicted.

Figure 2: Contribution rate projections until 2066



<sup>28</sup> Under a different discount factor *ndf* of 0.976 (0.995) the value of  $\theta$  is 20 percent lower (higher) than with the baseline assumption of a *ndf* of 0.985, whereas the sustainable contribution rate *SCR* only varies by 8 percent. However, the main results, a constant demographic leverage effect under pre- and post-reform conditions and an increase in the *SCR* by 30 percent, remain the same.

<sup>29</sup> Please note, our “model” of a *SCR* implies also the assumption of a new capital funding scheme in LTC insurance. As in the first years the resulting revenues under an *SCR* exceed expenditures (together with the current assets) a capital stock will be generated which will be used later to finance yearly deficits in LTC insurance. The underlying mechanism is very similar to the current LTC fund, however the amount of our intertemporal compensation via the *SCR* is even larger. We assume 3 percent which can in some scenarios be considered optimistic.

<sup>30</sup> Note, that LTC projections and their sensitivity depend above all on underlying demographic assumptions (Costa-Font et al., 2008; Rothgang, 2003). In contrast to this, the different assumed growth rate and discount factor (a *ndf* of 0.976 and 0.995 instead of the baseline *ndf* of 0.985) do not change the results of LTC contribution rate projection. The maximum deviation merely amounts to -0.1 percentage points in the pre-reform scenario in the year 2073 with a *ndf* of 0.976 instead of the baseline *ndf* of 0.985.

Our calculations reveal that under pre-reform conditions the working assets ensure a stable contribution rate of 2.35 percent until the year 2022. After that, the contribution rate rises to 3.05 percent by 2034, the onset of the LTC fund. The fund's assets ensure this contribution rate level until 2038. Afterwards, the contribution rate steadily increases, reaching a level of 4.52 percent in 2060. Under post-reform conditions, our calculations offer a different picture. After the contribution rate increases in 2017 and 2019 up to 3.05 percent, this level will be stable for only three further years with the help of available working assets. Due to the benefit expansions and the widened circle of beneficiaries induced by the *Second LTC Strengthening Act*, the contribution rate increases to 3.97 percent between 2023 and 2034. Financial resources of the LTC fund stabilize the contribution rate until 2036. In later years, the contribution rate rises to 5.88 percent in 2060 and afterwards.

However, the political enforcement of higher levels regarding the LTC contribution rate strongly depends on public acceptance (which in turn depends on the specific economic situation). Here a limited view to the LTC insurance falls short. Both the pension insurance and health insurance will face financial pressure due to the upcoming demographic transition (Hagist et al., 2009). Recent calculations modeling the impact of the demographic change on the contribution rate for all three social insurances under the conditions of status quo legislation (for LTC pre-reform conditions) offer a necessary increase from 36.65 percent at present by a further 20 percentage points within the next 40 years (Breyer, 2016).<sup>31</sup> Such high contribution rates are implausible as the resulting tax-induced wedge (the sum of tax payments and social security contributions) would immensely reduce working incentives, as well as the global competitiveness of the German economy.

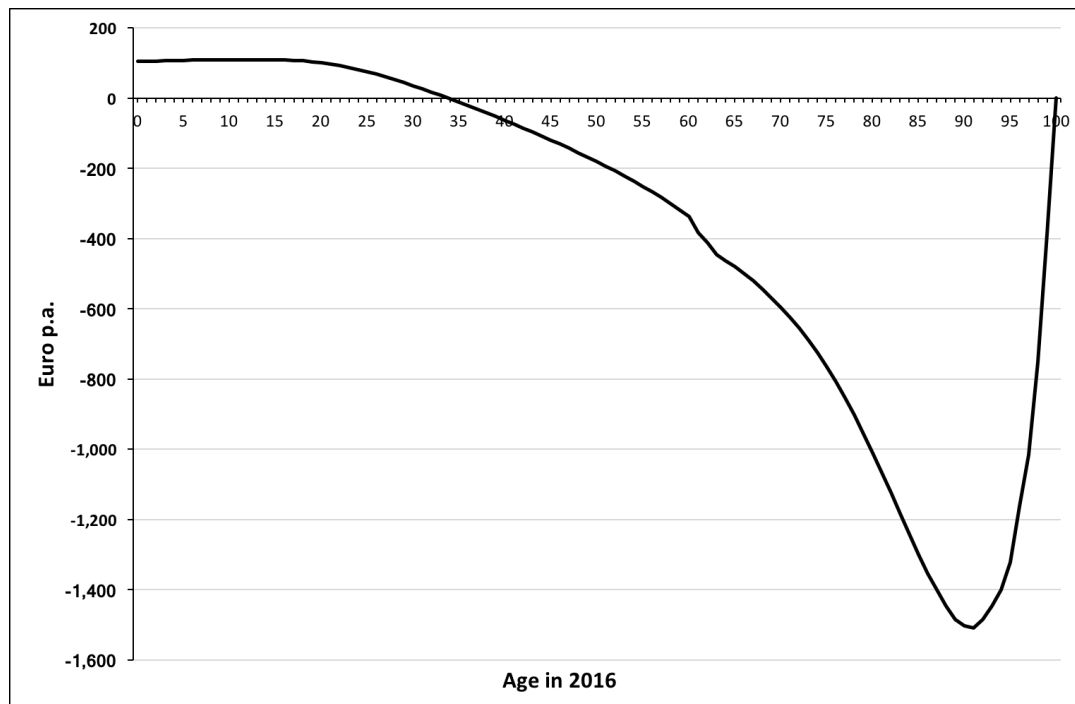
#### 4.1.2 Additional Burden

Beside the reform-induced impact on sustainability and the contribution rate development, our research question concerns the intergenerational distributional effects of the reform. Figure 3 shows the reform-induced burden or relief per remaining life year ( $bly_{\bar{u},2016}$ ) for cohorts of age  $u$  in 2016.

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<sup>31</sup> Under pre-reform conditions, the contribution rates of respective insurances are 18.7 percent (pension), 14.6 percent (health) and 2.35 percent (LTC). Additionally, health insurance has an additional contribution rate of an average of 1.0 percent, depending on the choice of statutory health insurance provider. Substantial expenditure increases are expected in particular for the pension insurance which could amount to additional 2.6 percentage points of GDP (European Commission, 2018).

**Figure 3: Reform-induced burden as annuities**



All cohorts younger than 33 in 2016 will face an average additional burden due to the reform, at a maximum of 110 Euro per year over their remaining life. Due to the discount rate, their higher contribution payments in the near future outweigh their higher benefit receipts in the distant future. In contrast to this, all cohorts older than 33 on average benefit from the reform. The reform-induced reliefs increase up to a maximum of 1,509 Euro per remaining life year for the 91-year-old average cohort member in 2016. Older cohorts face declining reliefs as their remaining life expectancy declines. This goes along with a shorter time of benefiting from the generous reform level (the widening circle of beneficiaries of care grade 1 and the higher to higher amounts of benefits, especially cash benefits). These numbers remain at about the same level even under different assumptions regarding the annual growth rate and discount factor (see Figure 7 in the Appendix).<sup>32</sup>

From an economic perspective in the tradition of Samuelson (1958), the reform-induced reliefs can be interpreted as a (second) windfall gain. The first windfall gain occurred with the introduction of the pay-as-you-go-financed LTC insurance in 1995. Until then, LTC beneficiaries had never paid contributions. However, they were receiving benefits, or more generally speaking, the older generations paid significantly lower contributions compared to the benefits they received. Following Feldstein and Liebman (2002), the widening of the benefit level involves windfall gains for those already or close to becoming LTC-dependent and losses for current and future contributors. The dimension of this second windfall can be shown, for example, by the 1926 born individual. According to Fetzner et al. (2002), this individual experienced a windfall gain of approximately 1,700

<sup>32</sup> A *ndf* of 0.976 instead of 0.985 leads to a slightly higher burden of about 20 Euro per remaining life year and a shift of the “break-even age” from 33 to 40 in 2016. In contrast to this a *ndf* of 0.995 leads to a lower burden of about 30 Euro per remaining life year and to the conclusion that all generations older than 26 years (instead of 33) will benefit from post-reform conditions.

Euro (in prices of 2016) from the introduction of LTC insurance. The second windfall gain amounts to 1,500 Euro due to the current reform. Hence, this second windfall gain is almost 90 percent of the first one.

## 4.2 Effects of Adjustment in the MDK Assessment Structure

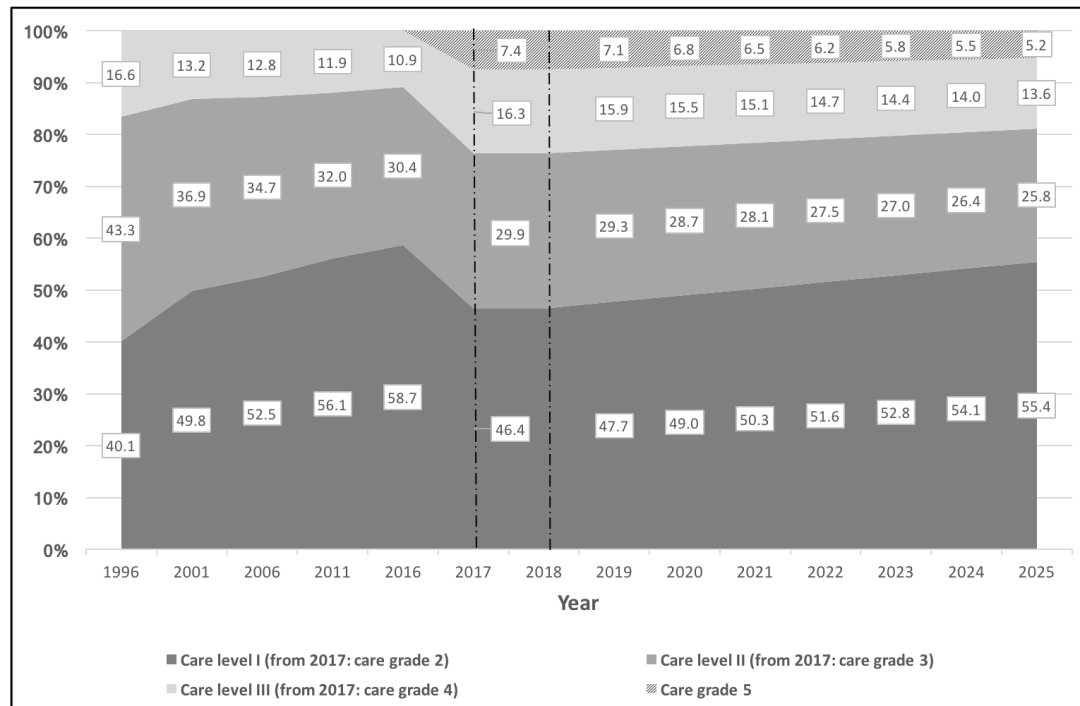
As discussed in Chapter 4.1.1, an unlimited increase in the LTC contribution rate seems to be implausible. The most likely mid-term opportunity to stabilize finances is an implicit cut in generosity. As described in Chapter 2, the *MDK* plays a key role as it is responsible for the LTC assessment and thus for the structure of beneficiaries.<sup>33</sup> By looking at the *MDK*'s assessment data, we detect a similarity in the classification structure after the introduction of LTC insurance and after the latest reform. From the introduction of LTC insurance assessments tended towards overall higher care levels, while the following years until 2016 showed a more and more conservative classification. In 2017, however, with its new classification scheme, the reform led to a higher number of persons in higher care grades, similar to the early post-introduction phase. Figure 4 depicts the assessment structure from 1996 to 2017.

Therefore, we introduce a hypothetical scenario in which we assume that history repeats itself and the assessment structure will again tend towards a more expenditure-reducing steady state. In trying to model this scenario, we assume that care grade 2 is comparable to care level I, care grade 3 to care level II and care grades 4 and 5 are comparable to care level III. Care grade 1 can be regarded as a novelty since it was introduced to widen the group of people eligible for LTC benefits. We now further assume that after the transitional period due to the new assessment system, the *MDK* will return to the pre-reform expenditure-reducing assessment. Hence, we postulate that from 2019 to 2025 each year the assessment structure will shift towards lower care grades. In the following we will therefore use the past shift in care level II as our benchmark. From 1996 to 2016 the share of care level II decreased by 30 percent. Consequently, in our scenario 30 percent of cases will move from care grade 5 to care grade 4, 30 percent of current care grade 4 to care grade 3 and 30 percent from care grade 3 to care grade 2. Returning to an assessment structure closer resembling the pre-reform structure by 2025 will change the situation as shown in Figure 4.

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<sup>33</sup> In contrast to pension and health insurance, for LTC insurance there is the possibility to use this institution to cover up necessary explicit changes to a certain extent.

**Figure 4: Pre-reform and hypothetical post-reform LTC assessment structure**



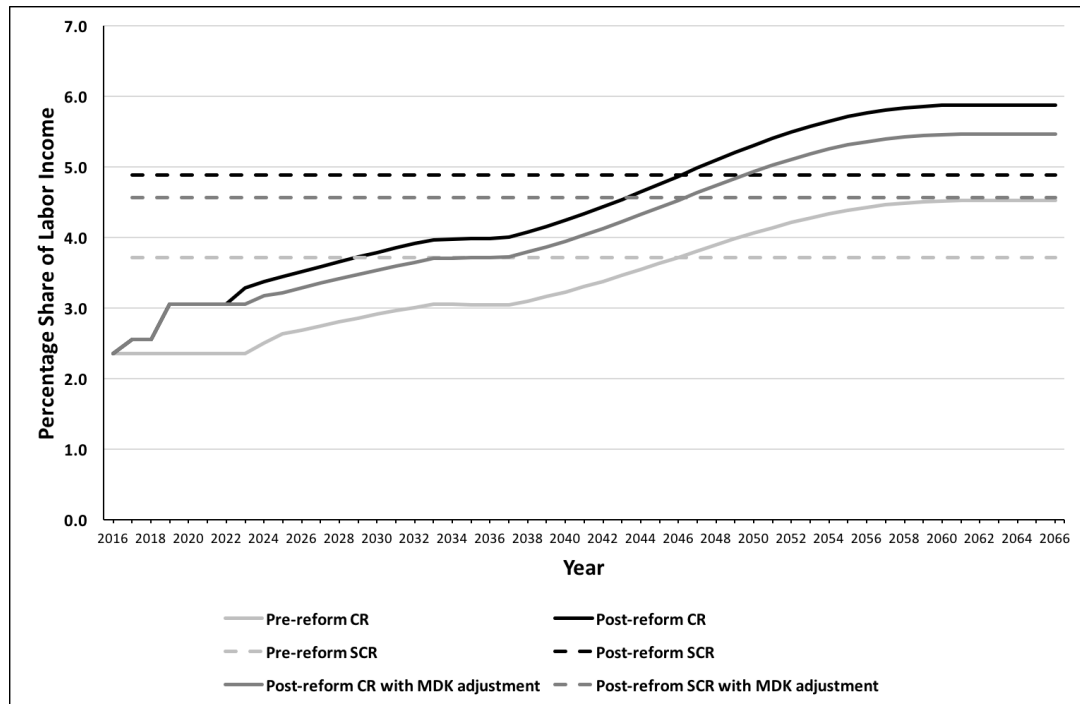
Note: Care grade 1 is not included. The dashed lines mark a break point in scaling and divide our data from the hypothetical scenario.

Source: BMG (2018a, 2018f).

If the structure gradually moves toward the direction of the 2016 structure, we can expect a dampening effect on the expenditures of LTC insurance. In consequence, this effect would lead to a smaller gap in financing. In case the assessment structure seen in 2017 does not persist and the *MDK* follows our assumption returning to a more conservative assessment, the *SCR* amounts to 4.57 percent. Due to the introduction of care grade 1 and the on average higher benefits this is still much higher than the pre-reform *SCR* of 3.72 percent.<sup>34</sup> At the same time, if the contribution rate has to be adjusted to close the gap between revenues and expenditures, adjustments will not be as massive as outlined in Chapter 4.1.1. As Figure 5 shows, given our hypothetical scenario the contribution rate will rise at a slower pace compared to the post-reform contribution rate.

<sup>34</sup> See Table 6 in the Appendix for the value of  $\theta$  and the necessary increase in the contribution rate. It also depicts that results are robust under different assumptions for  $g$  and  $r$ .

Figure 5: Contribution rate projections until 2066

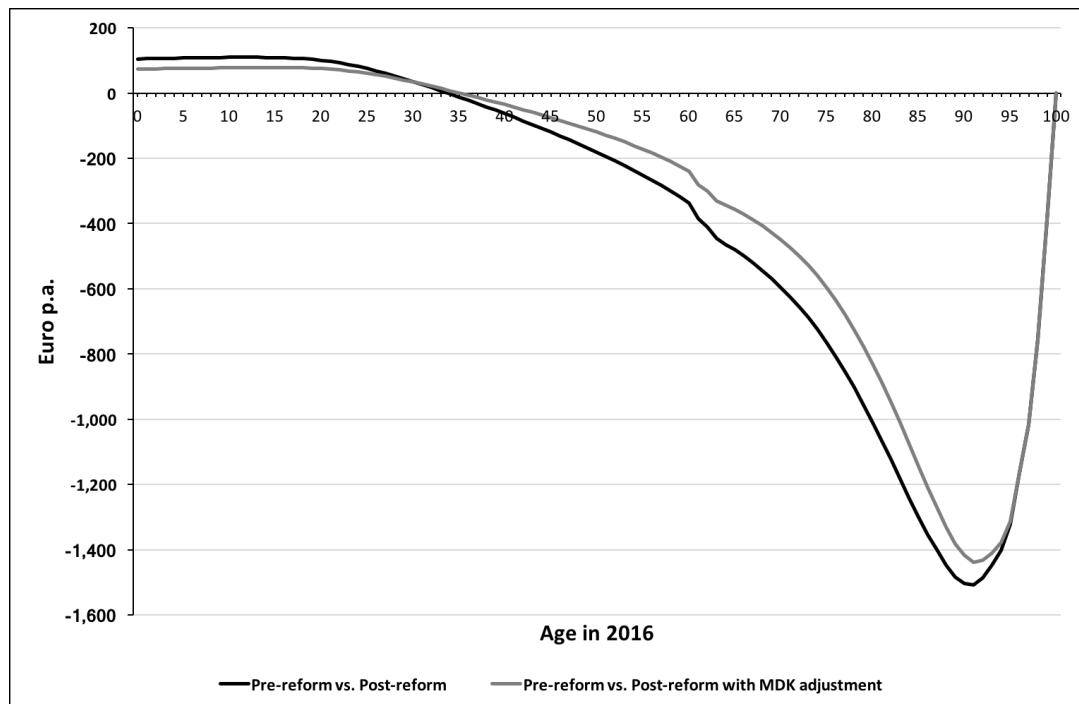


Under these conditions, the contribution could be kept stable one year longer, until 2023 when the working assets will deplete. With the onset of the LTC fund the contribution rate would still be at a level of 3.71 percent. The LTC fund resources could keep the contribution rate stable for four years. In the years afterwards further increases are necessary, reaching the *SCR* of 4.57 percent in 2046 and stabilizing again from 2060 on at 5.46 percent.

Lower contribution rates will also have an impact on the intergenerational redistribution. The effect on the reform-induced burden or relief is depicted in Figure 6.



**Figure 6: Reform-induced burden as annuities**



Even when assuming a more conservative assessment and an expenditure-reducing steady-state, all cohorts younger than age 35 in 2016 will face an additional average burden with a maximum of 78 Euro per year over their remaining life. At the same time, all cohorts older than 35 still benefit from the reform, however less than if the *MDK* retained its assessment structure of 2017. It can be seen, that such a measure as an implicit cut can only slightly cushion the long-term effects. Until this cut unfolds its full effect, those who have benefitted from the windfall gain most may already be dead or have indirectly transferred the windfall to their heirs. All in all, with implicit cuts the negative reform-induced impact could at least be reduced. However, a windfall gain still remains. As shown in Figure 8 of the Appendix, this result persists (with a deviation of +/- 20 Euro) even under varied assumptions regarding the annual growth rate and discount factor.

## 5 Conclusion and Outlook

The *Second LTC Strengthening Act* in 2017 led to a significant and above all, partly unforeseen widening of the short-term gap between revenue and expenditure in LTC. This in turn has led to the drafted increase of the contribution rate by 2019 in order to balance the finances of LTC insurance.

Our long-term analysis shows that due to an upcoming demographic transition, LTC financing is not sustainable. The reform has not influenced the effect of the demographic leverage effect, but has raised the level of unsustainable financing by 30 percent through a higher generosity of the LTC system.

From an intergenerational perspective, the reform can be seen as a second windfall gain with an extent almost 90 percent of the windfall gain induced by the introduction of LTC insurance in 1995. Concerning the annual development of the contribution rate under the assumption of a constant benefit level, our analysis showed that the current working assets as well as the LTC capital reserve fund will be able to stabilize contribution rates for only a few years. In the long-term, our analysis reveals contribution rates to LTC insurance of almost 6 percent, which does not seem feasible.

Thus, it is our belief, that – in the medium-term – financing problems will be tackled through implicit cuts in generosity by returning to the practice of assessment of the previous years. In contrast to the national pension scheme, the *MDK* enables the government to conceal changes in generosity in LTC insurance. However, even such an intervention will only be able to cushion the long-term effects on the budget for a short while. Furthermore, such interventions will take some time to be implemented and in this time the windfall gains can be scooped by the current older LTC recipients, or their heirs.

So the question arises how to proceed with the German LTC system in light of the upcoming demographic transition. German economists have been proposing the option of (a broader) capital funding of the LTC system since the beginning of LTC insurance in 1995.

With respect to this option, one has to distinguish at least two possibilities of a supplementary capital funding.<sup>35</sup> One possibility would be the expansion of the collective capital fund. This option would involve an immediate significant rise in contribution rate and/or taxes which would then be used to stabilize the future contribution rate. In this respect, the current LTC capital reserve fund can be seen as a first step toward this option. However, the existing rules for the LTC capital reserve fund can be criticized for at least three reasons. First, as our analysis shows, the volume of the LTC capital reserve fund is far too small to balance the problem of the increasing beneficiary-contributor-ratio.<sup>36</sup> Second, and in light of the steadily increasing “oldest-old dependency ratio” from today until at least 2060, the “disbursement-timing” of the LTC capital reserve fund under the current rules seems to be chosen fortuitously.<sup>37</sup> Setting the starting point of payouts

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<sup>35</sup> A further possibility is the complete transition from the pay-as-you-go financing to a capital funded LTC-system. See Felder and Fetzer (2008) for the intergenerational effects of such a reform.

<sup>36</sup> Already prior to its establishment, the LTC fund was criticized for being too small to have a considerable impact on the future contribution rate (Bowles and Greiner, 2015).

<sup>37</sup> In this context Breyer (2016) points out the need for cohort specific saving accounts. From a theoretical point of view the LTC capital reserve funds function is a compensation for the (future)

to stabilize the contribution rate as the year 2035 to stabilize the contribution rate does not seem expedient. And third – the existing rules of the investment policy for the current LTC capital reserve fund allow only few investments in equities, capping them at a maximum of ten percent, and thus hinder the chance of a better return on the invested capital. A 90 percent investment in government bonds could also be seen as just another form of pay-as-you-go financing, this time by taxpayers. Furthermore, the option of collective capital funding in social security systems is regarded skeptically by the German population because there are limited possibilities for legislation to ensure the initial purpose of the fund and hinder politicians to use the financial means for other purposes i.e. avoiding a new public debt in a recession.

The other possibility to implement a broader capital funding of the LTC system is the extension of private capital reserves to finance LTC-expenditures. This supplementary capital reserve should balance a coverage gap between the total expenditure of long-term care and the benefits paid by LTC insurance.

Interestingly the design of a system of private capital reserves involves the question of intragenerational distribution. With or without LTC-specific savings, the affluent part of the population would be willing and able to use more of their own assets to pay for a high-quality level of long-term care they will want, thereby decreasing the assets they bequeath to their heirs. Furthermore, since 2013 voluntary private assets, in form of a supplementary private LTC insurance are subsidized by the state through the so-called “Pflege-Bahr”.<sup>38</sup> As can be seen from statistics above many persons with high incomes take out supplementary private LTC insurance. If in the future politicians decide in favor of an explicit cut of LTC insurance benefit level (i.e. to avoid an increasing contribution rate) the resulting increase of the coverage gap will lead to a two class-LTC system. Without additional legislation, the financially stronger part of the German population will be able to afford an adequate quality level of care due to their private savings. The financially weaker members of society will get only the most essential care level, which will be paid by LTC insurance and tax-financed social assistance systems. Hence, from an equity perspective a system of mandatory supplementary private LTC insurance appears to be superior. In such a system persons with a lower income would be compensated for their supplementary premiums by the government. However, such a system would involve a massive expansion of the private insurance companies, an option that does not enjoy popularity in the German social policy debate and again raises questions concerning the caps for equities in insurance regulations.

Thus, a further interesting and necessary topic of research would be the precise analysis of intragenerational distributional effects resulting from the design of capital funding. Furthermore, the measurement of the impact of the reform on different socio-economic groups probably could give interesting points with respect to intragenerational distributional effects. Given a possible positive correlation between income and the consumption of long-term care, the reform would for example lead to a long-term shift in generosity and a difference in the qualitative level of care between the richer and the poorer, as well as to widening the gap between those with the highest level of care and

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contributors that are not born yet. Hence, it would be consequent that financial resources paid by a specific cohort into the LTC capital reserve funds should only be used to finance the LTC-benefits of the same cohort later.

<sup>38</sup> For further information on the „Pflege-Bahr“, see Nadash and Cuellar (2017).

those with the lowest. In this case the reform maybe developed a third windfall for the richer parts of the current working generations, as they would benefit disproportional from the raise in generosity of the system and the stately subsidization of the premiums of their supplementary private LTC insurance by the same time.

In conclusion, one can state that changes to the quality of care, as well as to the levels of benefits will only attain the desired effect of an equal level of care for all members of society if they are combined with a well-constructed and sustainable long-term solution to the financing of LTC insurance.

## References

- Auerbach, A. J., Gokhale, J. and Kotlikoff, L. J. (1991). Generational accounts: a meaningful alternative to deficit accounting, *Tax Policy and the Economy*, 5, 55-110.
- Auerbach, A. J., Gokhale, J. and Kotlikoff, L. J. (1992). Generational Accounting: A New Approach to Understanding the Effects of Fiscal Policy on Saving, *Scandinavian Journal of Economics*, 94(2), 303-318.
- Auerbach, A. J., Gokhale, J. and Kotlikoff, L. J. (1994). Generational Accounts: A Meaningful Way to Evaluate Fiscal Policy, *Journal of Economic Perspectives*, 8(1), 73-94.
- Baumol, W. (1967). Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis, *American Economic Review*, 57(3), 415-426.
- Benz, U. and Fetzner, S. (2006). Indicators for Measuring Fiscal Sustainability: A Comparison of the OECD Method and Generational Accounting, *FinanzArchiv: Public Finance Analysis*, 62(3), 367-391.
- BMG (2009). Bericht des Beirats zur Überprüfung des Pflegebedürftigkeitsbegriffs, Berlin.
- BMG (2018a). Zahlen und Fakten zur Pflegeversicherung, Berlin.
- BMG (2018b). Die Finanzentwicklung der sozialen Pflegeversicherung: Ist-Ergebnisse ohne Rechnungsabgrenzung, Berlin.
- BMG (2018c). Soziale Pflegeversicherung - Leistungsempfänger nach Altersgruppen und Pflegegraden am 31.12.2017 - Frauen, Berlin.
- BMG (2018d). Soziale Pflegeversicherung - Leistungsempfänger nach Altersgruppen und Pflegegraden am 31.12.2017 - Männer, Berlin.
- BMG (2018e). Soziale Pflegeversicherung - Versicherte der gesetzlichen Krankenversicherung (GKV) und der sozialen Pflegeversicherung (SPV) nach Altersgruppen und Geschlecht am 1.7.2017, Berlin.
- BMG (2018f). Leistungsempfänger der sozialen Pflegeversicherung am Jahresende nach Pflegestufen, Berlin.
- Bonin, H. (2001). Generational Accounting: Theory and Application, Springer, Berlin.
- Bowles, D. and Greiner, W. (2015). Kollektiv-ergänzende Kapitaldeckung in der sozialen Pflegeversicherung – Wirkungen des Pflegevorsorgefonds auf die Beitragssatzentwicklung, *Zeitschrift für Sozialreform*, 61(2), 199-224.
- Breyer, F. (2016). Die Zukunft der Pflegeversicherung in Deutschland: Umlage und Kapitaldeckung, *Zeitschrift für die gesamte Versicherungswissenschaft*, 105(5), 445-461.
- Comas-Herrera, A., Wittenberg, R., Costa-Font, J., Gori, C., Di Maio, A., Patxot, C., Pickard, L., Pozzi, A. and Rothgang, H. (2006). Future long-term care expenditure in Germany, Spain, Italy and the United Kingdom, *Ageing & Society*, 26(2), 285-302.

- Comas-Herrera, A., Wittenberg, R., Pickard, L. and Knapp, M. (2007). Cognitive impairment in older people: Future demand for long-term care services and the associated costs, *International Journal of Geriatric Psychiatry*, 22(10), 1037-1045.
- Costa-Font, J., Wittenberg, R., Patxot, C., Comas-Herrera, A., Gori, C., Di Maio, A., Pickard, L., Pozzi, A. and Rothgang, H. (2008). Projecting Long-Term Care Expenditure in Four European Union Member States: The Influence of Demographic Scenarios, *Social Indicators Research*, 86(2), 303-321.
- Cuellar, A. E. and Wiener, J. M. (2000). Can social insurance for long-term care work? The experience of Germany, *Health Affairs*, 19(3), 8-25.
- Destatis (2015). Bevölkerung Deutschlands bis 2060 - Ergebnisse der 13. koordinierten Bevölkerungsvorausberechnung, Wiesbaden.
- Destatis (2017a). Einkommens- und Verbrauchsstichprobe - Aufgabe, Methode und Durchführung - 2013, Fachserie 15, Heft 7, Wiesbaden.
- Destatis (2017b). Kohortensterbetafeln für Deutschland - Ergebnisse aus den Modellrechnungen für Sterbetafeln nach Geburtsjahrgang 1871 - 2017, Wiesbaden.
- Deutsche Rentenversicherung (2017). Statistik der Deutschen Rentenversicherung - Rente 2016 – Rentenzugang, Rentenwegfall, Rentenänderung und Rentenbestand, Band 209, Berlin.
- European Commission (2018). The 2018 Ageing Report – Economic & Budgetary Projections for the 28 EU Member States (2016-2070), Institutional Paper 079, Brussels.
- European Commission (2017). The 2018 Ageing Report – Underlying Assumptions & Projection Methodologies, Institutional Paper 065, Brussels.
- Evers, A. (1998). The New Long-Term Care Insurance Program in Germany, *Journal of Aging & Social Policy*, 10(1), 1-22.
- Feldstein, M. and Liebman, J. B. (2002). Social Security, in: Feldstein, M. and Auerbach, A. J. (Eds.), *Handbook of Public Economics*, Elsevier, 2245-2324.
- Felder, S. and Fetzter, S. (2008). Wenn nicht jetzt, wann dann? Zur Reform der Pflegeversicherung, *Zeitschrift für die gesamte Versicherungswissenschaft*, 97(2), 144-161.
- Fetzter, S., Moog, S. and Raffelhüschen, B. (2002). Zur Nachhaltigkeit der Generationenverträge: Eine Diagnose der Kranken- und Pflegeversicherung, *Zeitschrift für die gesamte Versicherungswissenschaft*, 91(3), 279-302.
- Geraedts, M. Heller, G. V. and Harrington, C. A. (2000). Germany's Long-Term-Care Insurance: Putting a Social Insurance Model into Practice, *Milbank Quarterly*, 78(3), 375-401.
- Götting, U., Haug, K. and Hinrichs, K. (1994). The Long Road to Long-Term Care Insurance in Germany, *Journal of Social Policy*, 14(3), 285-309.
- Hackmann, T. and Häcker J. (2011). LOS(T) in Long-term Care: Empirical Evidence from German Data 2000-2009, *Health Economics*, 21(12), 1427-1443.

Hackmann, T. and Moog, S. (2009). Die Auswirkungen der steigenden Lebenserwartung auf die Prävalenz der Pflegebedürftigkeit in Deutschland, *Zeitschrift für die gesamte Versicherungswissenschaft*, 98(1), 73-89.

Häcker, J. and Raffelhüschen, B. (2006). On the Inclusion of Dementia Patients into Compulsory Long-term Care Insurance - A Sustainable Step?, *Swiss Journal of Economics and Statistics*, 142(V), 113-116.

Hagist, C. (2008). Demography and Social Health Insurance: An International Comparison Using Generational Accounting, Nomos, Baden-Baden.

Hagist, C., Moog, H., Raffelhüschen, B. and Vatter, J. (2009). Public Debt and Demography. An International Comparison Using Generational Accounting, *CESifo DICE Report*, 4, 29-36.

Harrington, C. A., Geraedts, M. and Heller, G. V. (2002). Germany's Long Term Care Insurance Model: Lessons for the United States, *Journal of Public Health Policy*, 23(1), 44-65.

Nadash, P. and Cuellar, A. E. (2017). The emerging market for supplemental long term care insurance in Germany in the context of the 2013 Pflege-Bahr reform, *Health Policy*, 121(6), 588-593.

Nadash, P., Doty, P. and von Schwanenflügel, M. (2018). The German Long-Term Care Insurance Program: Evolution and Recent Developments, *Gerontologist*, 58(3), 588-597.

Raffelhüschen, B., Müller, C. and Weddige, O. (2010). Using pension data for policy making - the case of the German pension reforms, ECB/Eurostat Workshop on Pensions, 29-30 April 2009, Frankfurt.

Rothgang H. (2003). Providing Long-term Care for the Elderly in Germany. Projections on Public Long-term Care Insurance Financing, in: Hullen, G. (ed.), *Living Arrangements and Households – Methods and Results of Demographic Projections*, 95-112. Wiesbaden: Materialien zur Bevölkerungswissenschaft. Bundesinstitut für Bevölkerungsforschung.

Rothgang, H. (2010). Social Insurance for Long-term Care: An Evaluation of the German Model, *Social Policy & Administration*, 44(4), 436-460.

Samuelson, P. A. (1958). Aspects of Public Expenditure Theories, *Review of Economics and Statistics*, 40(4), 332-338.

Schneider, U. (1999). Germany's social long-term care insurance: Design, implementation and evaluation, *International Social Security Review*, 52(2), 31-74.

Schwarzkopf, L., Menn, P., Leidl, R., Wunder, S., Mehlig, H., Marx, P., Graessel, E. and Holle, R. (2012). Excess costs of dementia disorders and the role of age and gender - an analysis of German health and long-term care insurance claims data, *BMC Health Services Research*, 12, 165.

vdek (2018). Pflegeversicherung teurer als erwartet, *ersatzkasse magazin*. 7./8.2018.

Whelpton, P. K. (1936). An empirical Model of Calculating Future Population, *Journal of the American Statistical Association*, 31(195), 457-473.

## Appendix

**Table 6: Sensitivity Analysis of the Indicator SCR**

	Pre-reform		Post-reform		Post-reform with MDK adjustment
<b>ndf = 0.985 (baseline)</b> (g = 1.5 % p.a., r = 3 % p.a.)					
Contribution rate	2.35%		3.05%		3.05%
SCR	3.72%		4.88%		4.57%
$\theta$	0.58		0.60		0.50
Necessary adjustment	1.37%		1.83%		1.52%
<b>ndf = 0.976</b> (g = 1 % p.a., r = 3.5 % p.a.)					
Contribution rate	2.35%		3.05%		3.05%
SCR	3.44%	-7%	4.55%	-7%	4.27%
$\theta$	0.47	-20%	0.49	-18%	0.40
Necessary adjustment	1.09%	-20%	1.50%	-18%	1.22%
<b>ndf = 0.995</b> (g = 2 % p.a., r = 2.5 % p.a.)					
Contribution rate	2.35%		3.05%		3.05%
SCR	4.01%	8%	5.22%	7%	4.87%
$\theta$	0.71	21%	0.71	19%	0.60
Necessary adjustment	1.66%	21%	2.17%	19%	1.82%

**Figure 7: Sensitivity Analysis Reform-induced burden post-reform as annuities**

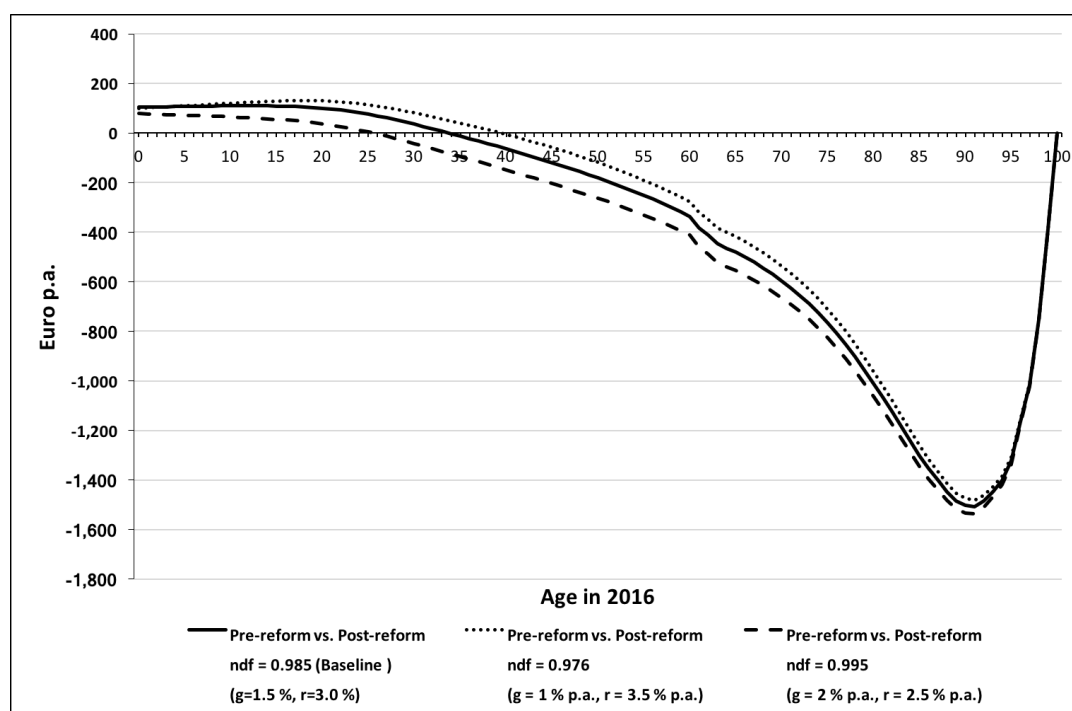




Figure 8: Sensitivity Analysis Reform-induced burden MDK scenario as annuities

