The redistributive effects of a parent support co-payment

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Abstract

The main threat to the sustainability of public finance in the Netherlands is the very high level of long-term care (LTC) expenditures. Therefore, this research focuses on the redistributive effects and the governmental revenues stemming from the implementation of a German LTC financing system in the Netherlands, the so-called "Elternunterhalt", or "parent support co-payment (PSCP)". In this system, adult children of LTC users contribute to the LTC expenditures of their parents by financing a co-payment, while the LTC users themselves finance an additional co-payment on top of their current one. The implementation is replicated by using calculation rules from the German Elternunterhalt and unique data that combines LTC use and wealth/income of the Dutch population. The results indicate that the PSCP system can increase revenue; however, they also show that it often leads poorer parents and children to pay a higher co-payment, relative to their income and assets, than their richer counterparts.

Keywords: co-payment, parent support co-payment (PSCP), Elternunterhalt, long-term care (LTC), fiscal sustainability of LTC services, the Netherlands, redistributive effects.

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1. Introduction

1.1 Introduction

Long-term care (hereinafter LTC) expenditures have been rising in most OECD countries in the past few decades. They are projected to continue to do so by rising from an average of 1.7% of GDP in 2013 to an average which is double or more in 2050 (Colombo et al., 2011; De La Maisonneuve and Oliveira Martins, 2015; OECD, 2015). Three reasons underlie this expected rise. Firstly, ageing and subsequent higher disability ratios will increase demand for LTC services in all societies. Secondly, changes in society - such as smaller families and rising female labor participation - decrease the availability of informal caregivers and increase the need for formal care, while productivity gains are difficult to achieve in a labor-intensive sector. Thirdly, increased wealth leads to demand for higher quality LTC services, which are more expensive (Colombo et al., 2011; De La Maisonneuve and Oliveira Martins, 2015). Because of this expected increase in LTC expenditures (hereinafter LTCE), the OECD sees the balancing of an appropriate LTC protection while ensuring long-term fiscal sustainability[1] of the LTC system as one of the main future challenges in many OECD countries (OECD, 2015; Schut en Van den Berg, 2010).

1.2 Focus on the Netherlands

This balancing is especially challenging for the Netherlands as it has the highest LTCE of all OECD countries at 4.3% of the Gross Domestic Product (GDP) in 2013 (or nearest year), which is more than two and a half times higher than the OECD average (see figure 1) (OECD, 2015). Furthermore, the European Commission (2015) expects the LTCE in the Netherlands to rise to 7.5% of GDP in 2060. In contrast, the projected average in the other EU countries will rise from 1.6% in 2013 to 2.8% of GDP in 2060 (European Commission, 2015). This growth could pose a threat to the fiscal sustainability of LTC services in the Netherlands (De Meijer et al., 2015; CPB 2014).

An additional reason for concern is the view of the European Commission (2015) that the expected growth of LTCE's is the main threat to the sustainability of public finance in the Netherlands. However, this threat may be overstated, as recent cost containments by the Dutch government and higher tax income from increased retirement benefits have not been included in the European Commission's calculation (CPB, 2014). Next to these two reasons, another

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[1]Fiscal sustainability is a multi-dimensional concept that incorporates an assessment of solvency, stable economic growth, stable taxes and intergenerational fairness (Colombo et al., 2011).

reason for focusing on the Netherlands is that there is data on LTC use and wealth/income of the parents and children for the whole Dutch population, which is not available for any other country.

Figure 1: LTC expenditure as a share of GDP in 2013
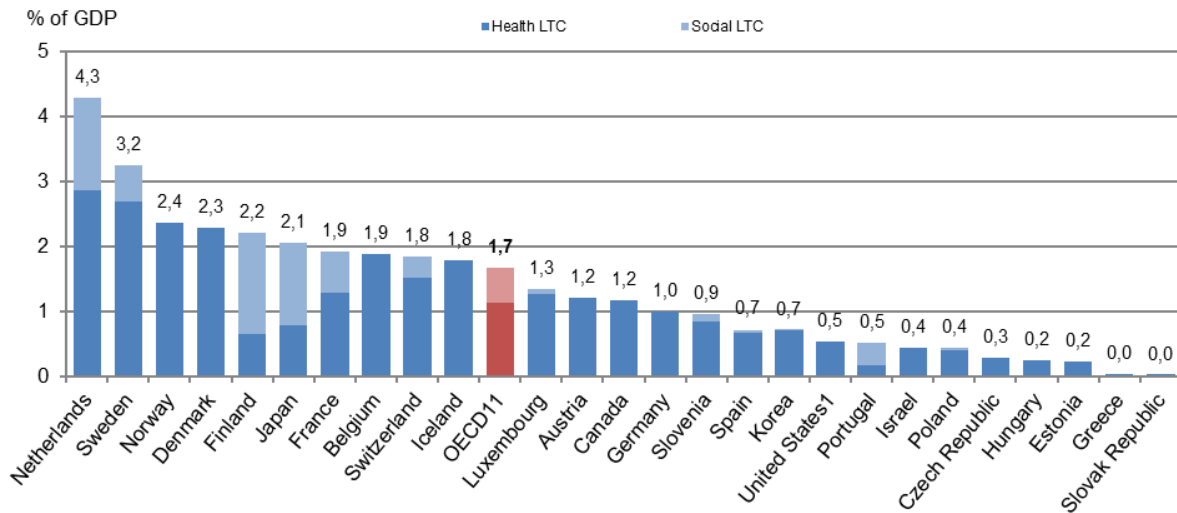
Note: The information is from 2013 or the nearest year. The OECD average only includes the eleven countries that report health and social LTC. Figures for the United States refer only to institutional care. Reference: OECD (2015).

Therefore, the Netherlands forms an interesting case to see how to attain a desirable trade-off between LTC protection and fiscal sustainability. To do so, two trends have to be taken into account. Firstly, a demographic trend, as the size of the older cohorts in the population will generally be larger than the younger cohorts in the population. Secondly, an economic trend, in which an increasing part of the total disposable income resides with the older part of the population. To make sure that LTC financing models are sustainable in the long run, either trend requires LTC financing by multiple generations and or tax broadening (i.e. financing beyond revenues earned by the working-age population) (Colombo et al., 2011). This might make it interesting for policymakers in countries with high LTCE's to look at "new" LTC financing options.

1.3 Parent support co-payment: "Elternunterhalt"

The parent support co-payment (hereinafter PSCP) is an example of such a new LTC financing option. It is a financial contribution paid for by adult children of parents using LTC when the parents themselves cannot pay for their LTC use, provided that these children have enough

income/wealth to do so (Schausten, 2015). In 2002[2] Germany institutionalized this contribution when the German Supreme Court (BGH) ruled that the social welfare agency can ask the child for a financial contribution when the parent lacks the means to pay for their LTC use. They call this contribution "Elternunterhalt", meaning parent support. Next to the PSCP paid by the children, this German financing scheme also asks an additional co-payment from the parents on top of the current one. The combination of the additional co-payment paid by the parents and the PSCP paid by their children will be further referred to in this study as the PSCP system.

1.4 Possible advantages and disadvantages

The implementation of the PSCP system could lead to the following advantages for the Netherlands. Firstly, by generating higher revenue, the Dutch government may have to contribute less to make up for the financial shortfalls, which originated in the years prior to 2014 (Tweede Kamer der Staten-Generaal, 2014). Secondly, it could mitigate the reallocation of wealth to avoid paying for LTC use. This reallocation is expected as parents want to reduce their co-payment (CPB 2015a). As the contribution uses the income/wealth of children to pay for their parents' LTCE, it is therefore no longer attractive for parents to reallocate their wealth to their children in order to avoid paying a (higher) co-payment themselves, as it will lead to a higher co-payment by the children. Thirdly, while the importance of moral hazard is not known, it seems likely to play a role in some forms of LTC (Mot, 2010). In the case of the PSCP, it could mitigate the moral hazard of the parents as they might forego care that they would normally use, because they will use more care and thus have higher expenditures than their amount of current co-payments. However, as with the PSCP, the parents have an additional co-payment and their children have a PSCP. This makes that if the parents have higher LTCE's than their current and additional co-payments, then their children have to pay a PSCP. Therefore, the parents have an incentive to lower their LTCE. Because of this, it could be that the implementation of the PSCP mitigates the moral hazard of the parents. Fourthly, it could also mitigate the moral hazard of the child, as he/she will be more inclined to give informal care instead of resorting to formal care (Bakx et al., 2015b). This could be beneficial if we assume that formal LTC is more expensive than informal care. Zweifel and Strüwe (1996) illustrate a similar point with their example for bequests. In their study, the parent does not have a long-term care insurance (hereinafter LTCI) and pays for his/her LTCE himself. This will lower the level of the future bequest for their children, which stimulates the children to give informal care, and subsequently mitigates the child's moral hazard.

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[2]See BGH verdict XII ZR 266/99 on 23-10-2002.

There are three expected disadvantages if the PSCP would be introduced in the Netherlands. Firstly, it could lead to a so-called "sandwich situation," where adult children need to take care of their own family and their parents simultaneously, which could lead to financial problems (Meier-Greve, 2015). However, this might not be a problem when individuals or households under a certain income threshold are not required to pay the PSCP. Secondly, because of weakening family ties in the last decades, Meier-Greve (2015) indicates that a PSCP is less obvious from a social perspective. Thirdly, the PSCP might also lead to income shocks when parents suddenly start using a lot of LTC, and since there is no insurance to pool the risks when these shocks occur, this might lead to financial problems for the children. This is also true for the parents as they will have to pay a (much) higher co-payment than the current co-payment.

1.5 This research

The possible benefits make it interesting to study the PSCP. Surprisingly, hardly any German literature and no English literature on its workings could be found, as well as no literature on the financial and redistributive effects of its implementation on the income and assets of the LTC users and their children. Our research could lead to valuable insights for policymakers in countries concerned with rising LTCE in general, and for the Netherlands in particular.

In view of the above, this research will examine: 1) The possibilities of adult Dutch children to financially contribute to the LTCE of their parents. 2) The redistributive effects for Dutch LTC users and their adult children on their income/wealth and of costs/benefits of LTC that stem from the implementation of this system. This is achieved by replicating the implementation of the PSCP system in the Netherlands. Because the German "Elternunterhalt" is used as an example for the implementation of a PSCP system in the Netherlands, frequent comparisons with the German LTC situation will be made. To replicate the PSCP system in the Netherlands, calculation rules found in German literature on the Elternunterhalt, and the unique data stemming from Statistics Netherlands, is combined. This will make it possible for our study to address the following research questions:

1) *How much can adult Dutch children of parents that use LTC contribute financially if their parents are unable to pay for their LTC?*

2) *How does the PSCP system affect the distribution of income/wealth and of costs/benefits of LTC users and their adult children in the Netherlands?*

2. Long-term care in the Netherlands

2.1 High long-term care expenditures

As mentioned in the introduction, the level of Dutch LTCE's are the highest of all the OECD countries at 4.3% of GDP. In contrast, other OECD countries like Estonia, Poland and Israel allocate less than 0.5% of their GDP to LTC. When expressed in Purchasing Power Parity, the Netherlands spends USD 1431 per capita per year on LTC in 2008, while the OECD average was USD 543 per capita per year (OECD, 2015). This difference could be contributed to demographic differences, but probably more important are the divergent views on what is part of the government's responsibility with regard to LTC. In Southern Europe, Switzerland and Eastern Europe the family is expected to take responsibility for giving LTC. In Belgium, Germany, France and Austria the responsibility is divided between family and government. In the Scandinavian countries and the Netherlands, the government takes up a bigger role (OECD, 2015). This consequently leads to higher LTCE in the latter countries as figure 1 in the Introduction has shown.

A closer inspection of the high level of LTCE's in the Netherlands reveals that it is driven by two trends: Firstly: an increase in the percentage of the population that is more than 80 years old. As LTC needs rise exponentially from the age of 80, it causes higher LTCE's (Cremer, Pestieau & Ponthiere, 2012; Cremer & Pestieau, 2013 and CPB, 2014). It could be a concern to policy makers that the percentage of this group will rise from 4.3% in 2015 to 10.8% in 2060 (CBS Statline, 2016a). Secondly: high levels of care comprehensiveness (CPB, 2014; Schut en Van den Berg, 2010). The OECD (2015) indicates that the proportion of the Dutch population that receives LTC is higher (4.5%) than that for Germany (3.3%), while Germany has a higher share of 80 year olds than the Netherlands. This could indicate that individuals in the Netherlands have better or easier access to LTC services, or that, as previously described; the family takes up a bigger role in Germany. As illustrated by the solid line in figure 2, this means that the Netherlands spend more on LTC than could be expected on the basis of the part of the population which has an age of 80 or higher. This can be seen when comparing with Sweden, as Their share of the population aged 80 or higher is 1.5% lower than in the Netherlands, while they spend a similar amount on LTC.

Figure 2: share of the population aged over 80 and percentage of GDP spent on LTC
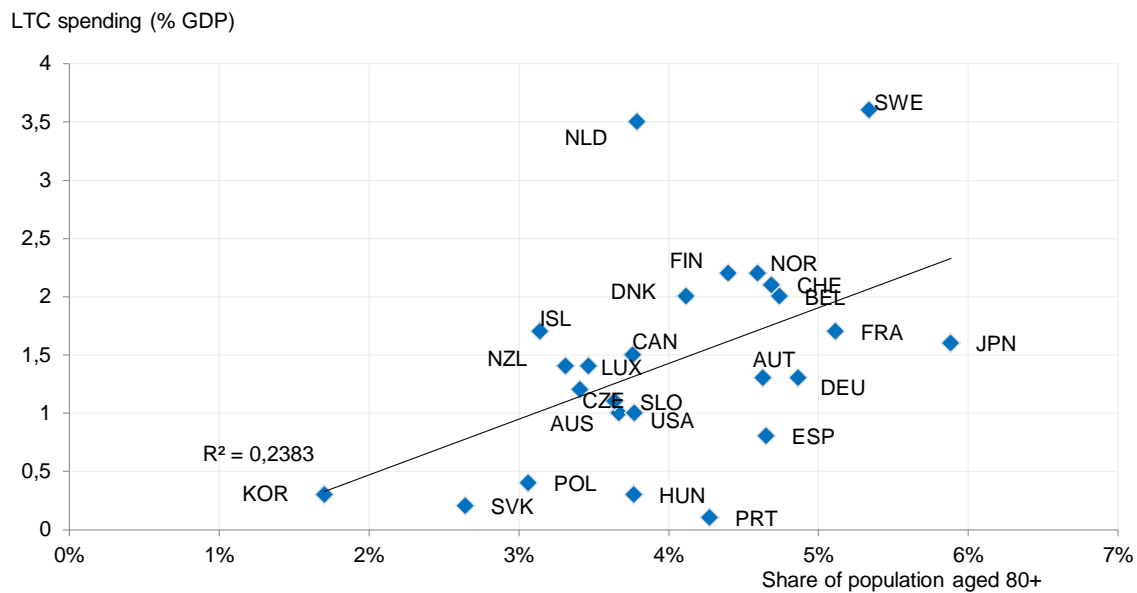
Note: Data is from 2008 or nearest available year and includes both public and private LTC spending. Expenditure data for Austria, Belgium, Canada, Denmark, Hungary, Iceland, Norway, Portugal, Switzerland and the United States include only LTC nursing care, and therefore exclude social LTC spending. Reference: Colombo et al., 2011.

2.2 Long-term care financing and reforms

Until 2007 LTC was financed solely by the compulsory AWBZ scheme. This scheme was funded through income-dependent contributions (AWBZ premium), while additional financing was provided by co-payments with an out-of-pocket ceiling which were collected by the central administration office (CAK). The co-payments were based on the income of an individual. The insured person paid 8.5% up to 12.5% (depending on the income) of his/her income, but the payment had a maximum level (Schäfer et al., 2010; CPB, 2015a). However, because of the high and rising LTCE's, the Dutch government in 2007 took action to reform the AWBZ to try and lower its expenditures.

The reform shifted the responsibility of providing LTC from the central government to the municipalities and health insurance companies (CPB, 2010; Schäfer et al., 2010). These municipalities received a budget which should stimulate efficiency in the delivering of home help which was transferred from the AWBZ to the newly created WMO (CPB, 2010). The reform was intended to reduce both the use of intramural care and the municipal budget for household support, of which the latter was supposed to be replaced by informal care (Schäfer et al., 2010). However, the AWBZ expenditure stayed higher than its revenue, leading to financial shortages paid for by the Dutch government, which resulted in a worsening of its EMU-balance. Over the

years these shortages counted up to an amount of €19 billion in 2014 (Tweede Kamer der Staten-Generaal, 2014).

The Dutch government, confronted with this shortage, implemented another round of reforms on January 1, 2015. This so-called "long-term care reform" (HLZ) was introduced with the hope of making the LTC services better and cheaper, by trying to induce people to continue to live at home (Rijksoverheid, 2015; CPB, 2015a). The reform rescinded the AWBZ and in turn arranged the financing of LTC via the long-term care act (Wlz). The Wlz covers less health care services than the AWBZ and therefore the Ministerie VWS (2013) expected that the Wlz-premium would be lower than the AWBZ-premium, even with the AWBZs' exploitation shortages in mind. The financing of long-term care is mainly based on an income/wealth contribution [vermogensinkomensbijtelling] (VIB) which is 8% for both. This contribution is means tested and it is based on the gross income, on top of which a fixed percentage (8%) originating from savings and investments is added. The maximum contribution is 2249 euro per month (high contribution) or 819 euro per month (low contribution), while the maximum co-payment cannot be higher than the actual costs (CPB 2015a). The European Commission (2015) expects that the HLZ reform will result in a saving of 1.3% of GDP in 2060; in spite of this, the LTCE's are still forecasted to account for 7.1% of GDP in 2060.

2.3 Long-term care provision and financing compared to other countries

As previously described, the provision of LTC in the Netherlands has a high level of comprehensiveness and the share of LTC in the population is high, but also the provision and financing of LTC in the Netherlands differs in comparison to other countries such as Germany. Next to a well-developed provision of formal care, the Netherlands also has a high level of informal care provision. In a report by the SCP (2007) ten countries were analyzed and they found that the availability of informal care was largest in the Netherlands. This result was confirmed by the findings from OECD (2015), which showed that the part of the Dutch population that identifies itself as an informal carer is 15.9%, which is slightly higher than the OECD 17 average of 14.7%, and higher than the German level of 14.4%. However, this is somehow in contrast with the social-cultural perspective found by Van den Berg et al (2010), who states that the Dutch consider the care for elderly people to be the responsibility of the state, which makes the formal care highly accepted. This contrast is due to a large availability, but a low take-up. In turn, it might be explained by the finding that elderly people prefer to stay

independent by resorting to formal care and also might not want to trouble their children by asking for informal care (CPB, 2010).

When looking at the LTC financing in the Netherlands it is noticed that it is funded by 9.5% government revenue, 90.4% by social security, while 0.1% is funded by other financial sources. This means that in the Netherlands there are no out of pocket payments (OOP) to be paid by LTC users, which could be considered as positive as there are not many older persons – even in high income countries – who have enough means to finance their LTC (Scheil-Adlung, 2015). In comparison, in Germany 12.5% is funded by general government revenue, 54.7% by social security funds, 1.7% by private insurance, 30.4% by OOP and 1.4% by other means (Colombo et al., 2011). Finally, the co-payments in the Netherlands are among the lowest in the OECD countries. This makes that, in comparison with six other affluent countries, the Netherlands reported the smallest percentage of residents (1%) and people with chronic illnesses (3%) who forego visits to the doctor for financial reasons (Van den Berg et al., 2010).

2.4 Scope for a parent support co-payment?

When discussing the possible implementation of the PSCP system in the Netherlands, at least two aspects have to be taken into account. A) A financial aspect: is it possible for Dutch LTC users and their adult children to pay higher additional co-payments and/or a PSCP? B) The social aspect: might Dutch LTC users and their adult children be willing to pay more for the use of LTC.

The financial aspect cannot be fully answered as there has been little to no research on the financial consequences of the implementation of the PSCP system – hence this study. However, in the Netherlands there has been a financial mechanism for paying for LTC that was similar to the additional co-payment financed by the parent. In the Wet ouderen oorden (elderly homes act) (WOO) the co-payment for the use of LTC was derived from the level of the income of the LTC user, but in the case that the home care expenses were higher than their income (the LTC user retained a minimum income), they also needed to finance their LTC expenditure by using their wealth, up to a threshold (Wolterink, 1994). However, Bockarjova et al. (2014) showed that Dutch individuals with high LTCE have the lowest income and wealth and therefore cannot pay higher co-payments. In addition, income and wealth dependent co-payments are already quite substantial in the Netherlands (CPB, 2015a). Therefore, it is interesting to see if this study

finds that LTC users and their children have the financial scope for an additional co-payment or a PSCP, or not.

The social aspect of the implementation of the PSCP system is also expected to lead to discussion. This is because the Dutch see LTC as the responsibility of the state, so they might not be willing to pay more for their LTC. Also, parents do not want to be a burden to their children, while the PSCP might entail exactly this. Furthermore, when asked if the children should contribute to the LTCE of their parents, only 22% of the Dutch respondents agreed, while 48% of the respondents in the EU 27 countries agreed (European Commission, 2007). This research will not address the views of the Dutch population on the PSCP system; however, it is important for policymakers to know that its implementation might result in social discussions.

3. The parent support co-payment in Germany

3.1 Long-term care

In 1995 Germany introduced a universal social LTCI and a private LTCI which have the same benefit package and together cover 90% of the population. The long-term care system in Germany is comparable to that of the Netherlands with respect to financing and organizing universal coverage for LTC. There are however differences between the two countries; in the Netherlands, the spouse's ability to provide informal care is taken into account when determining eligibility for publicly funded LTC, and the Netherlands has a higher level of comprehensiveness of public LTC coverage than Germany (Bakx, 2015a). In Germany, the benefits from the LTCI for home-care services cover the costs of personal care, but the insurance benefits for institutional care cover only half the total costs of nursing homes. When an insured person is not able to cover their additional costs (which include costs for care, accommodation and meals), which vary substantially but are on average about €580 per month in 2007, they are entitled to means-tested social assistance. The social assistance amounted to €3.2 billion in 2007 (Schulz, 2010). These costs led to the implementation of the PSCP system in Germany, so that the expenditures could (partly) be recovered from the children of the LTC user.

In 2008 the German LTCI system was reformed to improve LTC for people requiring LTC, their relatives and care givers. This was achieved by increasing the benefits from the LTCI from 2012 onwards and by expanding the number of people that were entitled to these benefits.

Furthermore, several measures were introduced to improve the quality of LTC in institutions and at home. These reforms were financed by a 0.25% higher contribution rate as of 1 July 2008 (Schulz, 2010). Since the introduction, these contribution rates have increased from 1% in 1995 to 1.95% for people with children and 2.20% for people without children in 2009 (Colombo et al., 2011).

Another round of reforms to the LTCI system was implemented in 2013. It introduced the private cash-benefit supplementary LTCI (Pflege-Bahr), which is fiscally subsidized by the German government. The benefits of this insurance consist of nominal amounts, triggered by a medical indication of the loss of independence (Spoor, 2013). This insurance can be seen as a renunciation from the solidarity contributory funding that was common for LTCI in Germany, because the insurance premiums do not depend on income, can be differentiated according to age, and are paid without the employer's participation. This renunciation of the solidarity contributory funding has led to a lot of criticism by politicians, experts and social associations (Schubert, Villota, & Kuhlmann, 2016). However, the reform failed to implement a new definition of frailty, while there was broad consensus in the German society that the new concept was defined too narrowly (Schulz 2010; Bönker, 2013). Moreover, according to Bönker (2013) it will not solve the financial problems regarding the funding facing the LTCI in the long term.

3.2 Formal parent-child relationship

Another unique aspect of the German LTC system is the formal relationship between parents and children which is incorporated in law in § 1601[3] of the Bürgerlichen Gesetzbuches [German Civil Code] (BGB), which states that lineal relatives (child-parent) are under an obligation to maintain each other. This entry in the BGB also serves as the legal underpinning on which the PSCP has been formalized. For the PSCP however, only a person who is incapable of maintaining himself is entitled to maintenance (§ 1602 |BGB Abs.1). Also, when a person is unable to pay maintenance, taking into account his/her other obligations, without endangering his/her reasonable entitlement to maintenance, he/she has no obligation to maintain a relative (§ 1603 |BGB Abs.1). Another example of the formalization of the relationship between parent and child is that there is a 0.25% higher LTCI contribution for childless insured persons. This surcharge was introduced in 2005 because there was a belief generally held in German society that there

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[3]See for example https://www.gesetze-im-internet.de/englisch_bgb/englisch_bgb.html#p5577 for a translation of § 1601 BGB. On this page there are also other translations of civil codes which serve as a legal background for the PSCP.

should be a reward for parents that make pay as you go systems work, by giving birth to future contributors (Bönker, 2013).

3.3 The parent support co-payment in practice

The need to pay a PSCP often arises when a parent goes to a nursing home. A stay in such an institution will entail costs that are often higher than a retiree's pension- and LTCI benefits[4]. This leads to a payment gap, which is normally financed by the social welfare agency [Sozialamt]. However, this will only function as an advance payment for a potential maintenance debtor - a spouse, child or grandchild. The maintenance law guidelines describe that a debtor needs to retain a minimum amount, a so-called "Selbstbehalt", when calculating the maintenance obligation. If there are siblings, the PSCP can be collected from any, or all of them, that have incomes exceeding the Selbstbehalt deductible. When this total figure is higher than the nursing home costs then a pro-rated amount will be taken from each child. The PSCP will only arise when the spouse is no longer alive or when the spouse does not have enough financial resources (Deutschen Akademie der Naturforscher Leopoldina, 2009; Löhr, n.d.).

To assert the amount of PSCP that has to be paid, the social welfare office asks the family members who are potential debtors, to disclose information on their income and assets. When the potential debtor is married, their spouse must do the same. If the request for information is denied the social welfare office can enforce the disclosure with coercive measures such as a penalty payment. Objections to this request normally do not have a suspensive effect once the welfare office declares it enforceable with immediate effect. When the information is disclosed completely, the welfare office will calculate the amount of PSCP, of which the debtor will be notified. If the debtors do not agree with the level of PSCP they can first convey their objections to the welfare office. When no amicable settlement is reached, the welfare agency must bring the payment request before the family court to enforce the maintenance claim, which will then decide on the amount (Löhr, n.d.).

3.4 The need of the parents

As previously described, the need for a PSCP only exists if the income and assets of a parent are not sufficient to cover their nursing home costs (Löhr, n.d.). As these parents are of old age their income primarily consists of basic security benefits and pension - and health care insurance benefits. To ensure that these parents retain enough income and assets to adequately cover for

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[4] The LTCI only covers basic long-term care needs and all insurance benefits are capped (Schulz, 2010).

their position in life several deductibles were established. There is an increased personal deductible (Selbstbehalt), and a maintenance obligation towards a spouse which is deducted from the income. Furthermore, a parent should at least retain a minimum income that is of the amount of the minimum subsistence level. The "Düsseldorfertabelle" states that this is €880 per month for unemployed persons and €1080 for employed persons (Oberlandesgericht Düsseldorf, 2016). To this amount are added the expenses on health- and nursing care insurance (Schausten, 2015).

Next to the parents' income, their assets also determine their need. The asset concept revolves around their protected assets, a so-called "nest egg", which is used for the fulfillment of a sudden special need of the parent. The social assistance law (§90 SGB XII) states that the level of this nest egg is €2600 and that a person's assets should not be taken into account when they are under the age of 60, when they are permanently incapacitated, or when they use care services that cost more than €2600 per year (Deutschen Akademie der Naturforscher Leopoldina, 2009; Kornexl, 2016). When the parent has a spouse, this amount is further increased with €614 (a €1534 increase for the higher care level III). However, these are minimum amounts and the BGH is free to define specifications of the height of the level. The view represented in the legal literature (three monthly salaries consisting of a total sum of €10,000 - €25,000), is not adopted by the Supreme Court (BGH), as it stressed that the level of the "nest egg" is dependent on the circumstances of the case (such as the income levels and other maintenance obligations) (Kornexl, 2016).

3.5 The financial capacity of children to contribute

Similar to the parents, the children's capacity to financially contribute to the LTC use of his/her parents is checked, to warrant that they have enough resources to adequately cover for their position in life. The maintenance obligation is cancelled when it compromises this position (§ 1603 |BGB Abs.1). However, according to the Deutschen Akademie der Naturforscher Leopoldina (2009) this concept of capacity to pay is an unsettled legal concept which needs to be further substantiated by the legislator. Therefore, there is a lack of an explicit and predictable determination of the load limits for the debtors. Furthermore, depending on the place of residence, the regulatory and legal practice can differ greatly with concern to the PSCP (Deutschen Akademie der Naturforscher Leopoldina, 2009). But in general, the procedure to calculate the level of the PSCP is based on the so-called "maintenance law guidelines" which the Oberlandesgerichte (Higher Regional Court) has developed for the standardization of the

maintenance law for divorced families. Further regulation followed when the BGH specifically developed case law for the PSCP. This limited the maintenance obligation of children towards their parents in the form of an increased personal deductible, which is established in the Düsseldorfer table (maintenance tables) and in the guidelines of the Higher Regional Courts (OLG), and by the recognition of many deductibles that do not play a role in the "normal" maintenance law (for example contributions for a health- and nursing care insurance and for an adequate pension). These deductibles will not be described or included in this study.

3.6 Income

In principle, in Germany the PSCP is calculated on the basis of the net-income, which is the gross-income minus the taxes and the social security contributions (health- and nursing care insurance, pension insurance and unemployment insurance) (Löhr, n.d.). When calculating the level of the PSCP the pension provision takes precedence over the care for parents. Therefore, if necessary, PSCP payers may save 5% of their total gross income of the previous year as a supplementary pension provision, in addition to the regular benefits from the statutory pension scheme. The sum of these pension provisions is deducted from their income. Self-employed persons, which are not part of a statutory pension scheme, can apply a deductible of approximately 25% as a pension provision (Deutschen Akademie der Naturforscher Leopoldina, 2009; Schausten, 2015). Lastly, for income from employment, a fixed rate of 5% for occupational expenses amounting to at least €50, but not more than €150 per month, can be deducted, without need of proof, from the net income (Löhr, n.d.).

3.7 Assets

When the current income of the debtor (child) is not sufficient to cover the need of the creditor (parent), the question arises whether the need is coverable by the use of assets and what the appropriate load limits to its use would be. All assets can be used for the PSCP, except when they are needed to ensure the debtors own reasonable living requirements in the future. Assets that are spared include the owner-occupied home, own car, household equipment, savings for property maintenance, but also other assets which are primarily reserved for retirement, a "nest egg" and assets to ensure the education of children (Deutschen Akademie der Naturforscher Leopoldina, 2009; Kornexl, 2016). Based on the guidelines of the German Association for Public and Private Welfare and the recommendations of the Supreme Court (BGH) an amount of €25,000 is exempted when they own a house and €75,000 when they do not. However, these guidelines are not binding; therefore, the level of the established protected

assets may differ depending on the individual situation (Deutschen Akademie der Naturforscher Leopoldina, 2009; Schausten, 2015). See example 1 for a general indication of how assets are used to pay for the PSCP.

> **Example 1:** A child has a maintenance obligation of €300 per month, which has been calculated on basis of his income. In addition, he has unprotected assets totaling €15,000. The unmet need of his father is €800 per month. In this case, the son would need to pay €300 per month out of his income and €338 per month originating from his unprotected assets, to cover the maintenance costs of his father.
>
> In this example, the father is 66 years old. His child has unprotected assets of €50,000. Based on the life table predictions the father has a remaining life expectancy of 16.53 years (for simplicity: 17 years). Assuming an interest rate of 4%, the child needs to pay an amount of €338 per month (6.76 x 50) out of its assets (50 is €50,000/€1000, while 6.76 corresponds to a life expectancy of 17 years, see appendix B).

Reference: Schausten (2015).

3.8 Further deductibles

When calculating the PSCP the first deductible which is subtracted from the income after taxes is a spousal maintenance obligation which is 50% of the income after taxes. Subsequently, the aforementioned Selbstbehalt deductible is subtracted, which is the minimum amount that the maintenance law guidelines prescribe that needs to remain for the normal spending by the child (Löhr, n.d.). With the PCSP the children have a deductible of €1800 in 2016, of which an amount of €480 is included for rent. For the spouse of the debtor the deductible is €1.440, of which an amount of €380 is included for rent (Oberlandesgericht Düsseldorf, 2016). When the child and spouse form a household the deductible will thus be €3240. The case law further describes that the deductible is not a fixed amount, but only a minimum, which can be increased based on the assessment of a judge. For example, the deductible can be increased when the actual renting costs are higher than the standard estimation of €480.

In the first years after the introduction of the PSCP the entire income above the deductible could be used for the PSCP. However, the Supreme Court (BGH) concluded in a verdict that the level of all of these deductibles together only allowed for a rather meager standard of living. Thus, the Supreme Court declared that it was necessary to further reduce the obligation of the children towards their parents, and exempted 50% of the income that exceeds the deductible (Deutschen Akademie der Naturforscher Leopoldina, 2009). See example 2 for an explanation on how the PSCP is calculated.

Reference: Schausten (2015).

4 Data

4.1 Overview datasets

To answer our research questions nine datasets from Statistics Netherlands (CBS) have been used, which were numerated for conciseness and renamed for better understanding (see appendix C for a description). For datasets Home care use (1), Residential care use (2), Identifiers for households and household members (4), Partner information (7), Personal information of Dutch residents (8) and Parents and their children (9), the survey year 2014 has been taken because it is the most recent information on LTC use. The other datasets give further information on the LTC users in the Home care use and Residential care use datasets. Datasets Household and household members (3), Household type (5) and Household assets (6) were taken from the survey year 2012 as the CAK calculates the co-payments on the basis of income and assets from t-2. It should be noted that the data from dataset Identifiers for household and household members is taken not only from the year 2014 (4), but also from the year 2012 (3). The 2014 dataset (4) was used to link individuals to their household identifier. In turn, the 2012 dataset (3) was used as it also included the personal income per household member, and it has been found by CBS (2012) that personal income results in a more accurate level of the co-payments than the household income. Finally, it is important to note that we do not have information about the assets on a personal level, but only on a household level. Therefore, all our calculations are done on the level of the household.

4.2 Selection subpopulation

Hereafter, the data from the datasets described above is cleaned and prepared for the analysis. To do so, the home care and residential care use of Dutch persons was multiplied with the respective tariffs of these types of care. It should be noted that for LTC users which are living with their partner in the residential home, no tariff has been defined. Therefore, the LTC expenditures of these users cannot be calculated because of which these users were discarded (1409 observations). This is also done for LTC users of who it is unknown which type of care they have used (5512 observations). Furthermore, for LTC users that use care defined as restorative treatment by nursing and care version B the tariff of care for restorative treatment by nursing and care[5] has been used as there is no tariff for version B (3829 changes). Hereafter the LTC use and expenditure per person were linked to their household identifier and summed so that use and expenditure is expressed per household. Hereafter, 1,507,504 households that contain a person under the age of 65 were discarded as the PSCP is meant for the support of parents that use LTC (see PSCP chapter). Next, the income and assets were linked to the households of the LTC users. Subsequently, households which, next to the parents, contain household members that could potentially contribute to the assets of a household[6] were also discarded (146,239 households).

The subsequent selection involved the linking of the children and their households to their parents' households. First, missing children (1 child) and children without an identified mother (639,306 children) were discarded. Hereafter, because of validity concerns, mothers with more than 15 children were discarded (439 mothers). This same procedure was followed for fathers, thus discarding missing children (1 child), children without an identified father (2,639,541 children) and fathers with more than 15 children (631 fathers). Finally, parents who were registered as both a father and mother were discarded (1054 fathers and mothers). Subsequently, the children in this dataset were linked to their parents. which was followed by discarding (6,586,251 children) all children who were 18 years or younger, as children under 18 do not have to pay a PSCP. Again, certain types of households were discarded (1,749,926) because they could influence the level of assets. Finally, the children's households were linked to their parents' households. In appendix D more detailed information can be found on the selection of the subpopulation. This process results in the following descriptive statistics.

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[5] See: https://www.cbs.nl/NR/rdonlyres/64336C62-2A10-4477-A339
A2B154B8ED47/0/integraalhuishoudensinkomenmicrodata.pdf
[6] Household types 4, 5, 7, 8, 11, 12, 14, 15, 16, and 99 were discarded, see appendix H.

Table 1: descriptive statistics of the household of the LTC users and their adult children

Households of	LTC users		Children	
Variable	**Mean**	**Standard error**	**Mean**	**Standard error**
Gross income	25,183.8	19.6	74,732.5	62.6
Net assets	78,886.5	544.1	112,542.4	1025.3
Net housing wealth	76,751.3	193.1	72,384.9	208.2
Age	81.1	0.0	52.6	0.0
Spouse (%)	31.3%	-	60.9%	-
Residential care expenditure	12,475.2	32.6	-	-
Home care expenditure	7504.3	15.1	-	-
Amount of observations (households)	596,329		745,597	

Note, the means of the variables are in euros, except for the age and the percentage of households of which the household members have a spouse.

The table shows that the households of LTC users have a much lower average gross income (€25,183.8) in comparison to the households of their children (€74,732.5). Their average net assets (€78,886.5) are also lower than the average net assets of their children (€112,542.4). However, the average net housing wealth (€76,751.3) of the households of LTC users is a little higher than the average net housing wealth of the children (€72,384.9). The table also indicates that the household members of the households of LTC users are on average 81.1 years old, while the household members of the households of their children are on average 52.6 years old. Of the household members in the households of the children, 60.9% have a spouse, while only 31.3% of the household members of the households of LTC users have a spouse. Finally, the table further shows that the average household residential care expenditure is €12,475.2, which is higher than the average home care expenditure of €7594.3.

4.3 Variables

In this section the variables used and created in this study are explained:
- **Gross income:** the gross income of the household of the parent or the child.
- **Net assets:** the net assets (wealth minus debt) of the household of the parent or the child.
- **Net housing wealth:** the net housing wealth (value house minus mortgage) of the household of the parent or the child.
- **Residential care expenditure:** the amount of residential care expenditures per household.
- **Home care expenditure:** the amount of home care expenditures per household.

- **LTC expenditure:** the summation of the residential care expenditure and the home care expenditure per household.

- **Residential care co-payment:** the level of the residential care co-payment. Calculated on basis of the calculation rules (see appendix A, residential care).

- **Home care co-payment:** the level of the home care co-payment. Calculated on basis of the calculation rules (see appendix A, home care).

- **Current co-payment:** the summation of the calculated residential care and home care co-payments per household.

- **LTCE minus current co-payment:** the LTC expenditure per household minus the current co-payment per household.

- **Maximum usable income for the additional co-payment financed by parents:** the maximum level of the disposable income of the household of the parent that could potentially be used for the additional co-payment. Calculated on basis of the calculation rules (see appendix A, additional co-payment).

- **Maximum usable assets for the additional co-payment financed by parents:** the maximum level of the assets of the household of the parent that could potentially be used for the additional co-payment. Calculated on basis of the calculation rules (see appendix A, additional co-payment).

- **Additional co-payment:** the level of the additional co-payment. Calculated on basis of the level of the maximum usable income and wealth for the additional co-payment financed by parents (see appendix A, additional co-payment).

- **LTCE minus current and additional co-payment:** the LTC expenditure minus the current and additional co-payment.

- **Financial capacity of children to contribute:** the level of the maximum financial capacity of the household of the child when calculated with the pension asset exemption. Calculated on basis of the income and assets of the children (see appendix A, PSCP).

- **Financial capacity of children to contribute without pension asset exemption:** the level of the maximum financial capacity of the household of the child when calculated without the pension asset exemption.

- **PSCP:** the level of the PSCP according to the level of the financial capacity of children to contribute and the LTCE minus current and additional co-payment. Calculated on basis of the calculation rules (see appendix A, calculation of the PSCP).

- **PSCP without pension exemption:** the level of the PSCP according to the level of the financial capacity of children to contribute without pension asset exemption and the LTCE minus current and additional co-payment.

5 Methods

This chapter will describe how our research will use the data from the selected subpopulation to try to formulate an answer to our two main questions: Firstly, how much can adult Dutch children of parents that use LTC contribute financially if their parents themselves are unable to pay for their LTC? Secondly, how does the PSCP affect the distribution of income/wealth and of costs/benefits of LTC users and their adult children in the Netherlands?

To answer the first question, three steps need to be executed. A) The level of the current co-payments needs to be calculated. This is done by formulating calculation rules on the basis of information from the CAK (2016), which are depicted in appendix A. B) Hereafter, the additional co-payments are calculated on the basis of composed calculation rules, in which the level of the asset deduction stems from German literature. Instead of the minimum retained income that is used in Germany (i.e. €880 per month for unemployed persons and €1080 for employed), we use the Dutch minimum social welfare levels ranging from €301.26 per month for a person living in an institution to €1437.02 for a retired couple (see appendix A, additional co-payment). C) Finally, the PSCP itself can be calculated. This is done on the basis of German literature which led to the formulation of the calculation rules. In the German PSCP system there is a deductible for both income and assets to ensure that the children can maintain a decent living while contributing to the LTCE of their parents. The level of the income exemption in our research is the same as in the German system (i.e. €1800, and a minimum of €3240 if the person has a spouse), while the asset exemption is based on owning a home or not. The amount of assets that are used to finance the PSCP depends on the level of the annuity of the person, which is in turn based on the life expectancy of the parent. Therefore, it is necessary to calculate the level of the annuity, which is done according to the following calculation, of which the results are shown in appendix B:

$$Annuity = 1000 * \frac{Monthly\ interest}{(1 - \ 1 + monthly\ interest\ ^{-Months})}$$

$$Monthly\ interest = \ 1 + yearly\ interest\ * \left(\frac{1}{Months}\right) - 1$$

The findings from the first research question make it possible to answer the second research question. This will be done by comparing the level of the additional co-payment that richer and poorer LTC using parents have to pay relative to their income and wealth. The same procedure will be followed for the children, thus comparing the level of the PSCP of richer and poorer children relative to their income and wealth.

Finally, our study will also make a distinction between two ways of calculating the level of the PSCP. Firstly, the PSCP, which is calculated strictly in accordance with the German calculation rules. This means that a pension asset exemption based on income (see appendix A, PSCP), that is used to save for the pension of the children of the LTC using parents, is included in the calculation rules. Secondly, the PSCP without pension exemption. This alternative has been modeled because in the Netherlands it is common to have a second pillar pension scheme (91% of the employees have one), and therefore most people do not privately save for their pension, while this is normal in Germany (Van der Smitte, 2013). The exclusion of the pension asset exemption leads to a lower asset exemption and thus to a higher co-payment by the children than when calculated with the inclusion of the exemption.

6. Results

This chapter will first describe the level of the total expenditures for home care and residential care, followed by an analysis of the level of the co-payments for both types of care. As explained later, it is found that our calculated co-payments are higher than the figures published by Statistics Netherlands; hence, the implications of this difference for our research will also be outlined. With this information, we will formulate an answer to research question 1. Next, an analysis of the characteristics of the households of the parents is performed, which is followed by an in depth analysis of the characteristics of the households of the children. Herewith, an answer to research question 2 will be formulated. Finally, we will make a comparison between the PSCP and the PSCP without pension exemption.

6.1 Total expenditures and co-payments

Table 2 shows the levels for home and residential care in 2014 as published by Statistics Netherlands, when calculated for this study with the whole population and when calculated for this study with only the subpopulation. The whole population is all users of home and residential care in the Netherlands in 2014.

Table 2: home and residential care expenditures and co-payments in 2014

Home care	Total expenditure	Total co-payments (% of total expenditure)	Residential care	Total expenditure	Total co-payments (% of total expenditure)
Statistics Netherlands	6230*	396** (6.4)	Statistics Netherlands	14,808***	1973**** (13.3)
Our findings whole population	6118	-	Our findings whole population	14,700	-
Our findings subpopulation	3660	428 (11.7)	Our findings subpopulation	6620	1280 (19.3)

*Note, the data is in millions of euros. It is based on our calculations and on the following references * (CBS Statline, 2016b) & (MLZ Statline, 2016) ** (CBS Statline, 2016c) & (CBS Statline, 2016d) *** (MLZ Statline, 2016) **** (CBS Statline, 2016e).*

The table depicts that our calculated total home care expenditures for the whole population are €112 million (1.80%) lower than the total expenditure stated by Statistics Netherlands. Our residential care expenditures for the whole population are €108 million (0.73%) lower than the total expenditure published by Statistics Netherlands. The difference between these findings is due to the dropping of observations in our data cleaning procedure. For the subpopulation, the levels of the total expenditures are much lower because we discard households which, next to the parents, contain household members that could potentially contribute to the assets of a household. Finally, our calculations show that based on our subpopulation the co-payments differ substantially with those of Statistics Netherlands. Our home care co-payment is higher in absolute terms: €32 million but also in relative terms to the total expenditures: 11.69% compared to 6.36% found by Statistics Netherlands. Three reasons can be attributed to explain this difference:

1) The asset concept of the parents is on a household level instead of on a personal level. It is assumed that this difference leads to an overestimation of the level of the assets of the LTC user(s) and a possible partner, which in turn leads to a higher co-payment. The reason for assuming this overstatement is that other household members, besides the LTC user and a possible partner, can contribute to the assets of the household, making the level of these assets potentially higher than when only the assets of the LTC user and

a possible partner would be used. This suggestion is supported by a rapport by Statistics Netherlands (CBS, 2012). Because certain households in our dataset had household members that could contribute to the assets of the household, these observations were discarded during our data cleaning procedure. To see if this led to the right level of the assets a comparison was made between personal income and household income while deleting the same household types. As this still led to a higher income than the personal income, it is fairly certain that the asset concept is still too high after the deleting of certain household types[7].

2) Some households at the social minimum get discounts on their co-payments, or pay no co-payment at all, as the municipality pays the co-payment and hence our estimation of the level of the home care co-payment is likely to be overstated (CBS, 2012).

3) The maximum price of the personal care (WMO) differs per municipality, while in our calculations the maximum price was always taken, which again makes it likely that this leads to an overestimation (CBS, 2012).

Similar to the co-payments for home care, our calculations find that based on our selection of data, the residential care co-payment also differs substantially with findings from Statistics Netherlands. Our co-payment is lower in absolute terms; €693 million, and higher in relative terms to the total expenditures; 19.3% compared to 13.32% found by Statistics Netherlands. The reason for this is twofold:

1) The issue with the asset concept.

2) The identification of households that should either pay a low or high residential care co-payment. This is important for the calculation of the residential care co-payment as the level of the lower co-payment is (much) lower than the level of the higher co-payment, which could therefore make a big difference in the total sum of the residential care co-payments. The issue with the identification comes from a lack of information that is needed to discern between charging the households a low or a high co-payment. Appendix I shows which seven conditions could lead to a qualification for a low co-payment. From this list of seven conditions only condition 3 and 7 could be identified with our data. This led to a really low amount of households that were identified to

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[7]On a side note, in view of the fact that the level of the income from tax box 1 is unknown and cannot be correctly calculated (the level of the seniority asset exemption is needed, which in turn could only be calculated when the level of the income from box 1 was known), there were two unknowns, which made it impossible to calculate the correct level of the assets which were used for the calculation of the home care and residential care co-payments. With the previously mentioned overstatement in mind, it was chosen to give every household the biggest seniority asset exemption they could obtain. This meant that their income from box 1 was lower, which led to a higher (in certain cases) seniority asset exemption which in turn led to (slightly) lower co-payments (see appendix A, current co-payments).

qualify for a low co-payment. Therefore, it was chosen to identify the following households for a low co-payment: with less than 6 months in a residential care, with a spouse, and with a care intensity package for terminal care. Our calculations find that this led to 17.93% of the residential care using households to be identified as low. The (CBS, 2012) has calculated that in the total residential care using population (also individuals <65) the percentage of people identified as low is around 33%. Therefore, it is assumed that our percentage of households which are identified as qualifying for a low co-payment is too low, which in turn implies a higher sum of the total residential care co-payments.

In short, it is expected that the levels of our calculated current co-payments financed by the parents are higher than in reality, which results in higher additional co-payments paid by the parents and a higher level of PSCP for the children. However, as the financial capacity to contribute of the household of the child is also of importance to the level of the PSCP, the total PSCP's are not expected to be substantially higher.

Our calculations result in the findings shown in table 3 for the levels of the current and additional co-payment, the PSCP, the PSCP without pension exemption and the percentage of our selection of the households of the adult children that pay a PSCP. It illustrates that the additional co-payment financed by the households of LTC users is more than twice as high as the current co-payment. The table also depicts that the level of the PSCP is much lower than the PSCP without pension exemption. Finally, it shows that 13.5% of the households of the children in the Netherlands pay a PSCP, while this is 16.2% when we calculate the PSCP without the pension asset exemption. This difference is found because fewer assets are exempted in the PSCP without pension exemption and therefore more households can contribute to the LTC expenditures of the households of their parents.

Table 3: the average level of the payments per year by the LTC users and their children

Current co-payment (LTC users)	3330.3
Additional co-payment (LTC users)	8637.0
PSCP (children)	667.3
% of households that pay a PSCP	13.5%
PSCP without pension exemption (children)	1362.6
% of households that pay a PSCP without pension exemption	16.2%

Note, the data are means, and except for the percentages, are in euros. They are the results of our calculations according to the calculation rules described in appendix A.

6.2 Research question 1

To answer the first research question: how much can adult Dutch children of parents that use LTC contribute financially if their parents are unable to pay for their LTC? We have calculated, based on the German calculation rules, the potential financial capacity of children to contribute to the LTC of their parents (potential PSCP), and the actual level of that co-payment (actual PSCP). A further distinction is made between the PSCP and the PSCP without the pension exemption. The results of our calculations are found in table 4.

Table 4: the total amount of co-payments by children (PSCP) per year

Potential PSCP	30.8
Potential PSCP without pension exemption	59.4
Actual PSCP	0.6
Actual PSCP without pension exemption	1.2

Note, data in table is in euro billions, based on our calculations.

Table 4 shows that the total amount of co-payments that could potentially be financed by the children is €30.8 billion. This amount increases to €59.4 billion if we leave out the pension asset exemption. However, this is the sum of the potential financial capacity of the households of the children of parents that use LTC. When the actual PSCP is calculated, this results in a much lower amount of €0.6 billion; without the pension asset exemption this amount is €1.2 billion. The sum of the actual PSCP is thus much lower than the sum of the potential PSCP. However, it needs to be taken into account that the calculation rules are of influence on the total proceeds from the PSCP, as is exemplified by the difference between the total revenue from the PSCP and from the PSCP without the pension asset exemption. All in all, the results indicate there is financial scope for a monetary contribution for the LTCE by the children of Dutch LTC users.

6.3 Research question 2

To answer research question two: how does the PSCP system affect the distribution of income/wealth and of costs/benefits of LTC users and their adult children in the Netherlands? We have performed an analysis of the households of the parents and their children. This gives insight in the distributional changes in the income and wealth of the households of the parents and their children that stem from the implementation of the PSCP system in the Netherlands. The findings of our analysis are shown in table 5.

Table 5: households of LTC users (65+)

Type of household	One-person				Multiple-person			
Gross income quartile (1= poorest)	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Gross income	13.6	15.8	19.2	32.3	17.1	23.3	29.4	51.2
Net assets	49.7	27.4	34.6	101.5	67.1	54.4	65.8	197.0
Net housing wealth	56.6	36.6	44.8	107.7	62.1	73.7	83.5	175.6
Current situation								
LTC expenditure	16.1	16.0	14.9	15.1	37.1	19.8	17.6	15.8
Current co-payment	1.4	1.4	1.9	4.0	5.0	2.5	3.2	5.0
LTCE minus current co-payment	14.7	14.6	13.0	11.1	32.1	17.3	14.4	10.9
Additional co-payments by the LTC user								
Additional co-payment (% of financial capacity*)	5.2 (6)	5.3 (10)	6.3 (9)	8.4 (4)	12.7 (11)	9.4 (9)	9.7 (8)	9.6 (3)
LTCE minus current and additional co-payment	9.5	9.3	6.7	2.8	19.5	7.9	4.7	1.2
Co-payment(PSCP) by the children								
Financial capacity of children to contribute	53.8	32.8	36.2	66.8	35.8	19.5	21.3	43.7
PSCP (% of financial capacity of children to contribute)	1.0 (2)	0.9 (3)	0.7 (2)	0.4 (1)	1.5 (4)	0.5 (3)	0.3 (2)	0.1 (0)

Note, N= 870,013. The data in this table are the results of our calculations, and they are means and in thousands of euros.
* Is the summation of the maximum usable income and assets for the additional co-payment financed by parents.

The table depicts the households of persons with an age of 65 or older that use either residential care, home care, or both. A distinction is made between one-person and multiple-person households. This is done because it is expected that multiple-person households have higher LTCE's, because more than one person could use LTC, and it would be interesting to see if this leads these households to pay a higher mean additional co-payment, and their children to pay a higher mean PSCP. A further distinction is made by dividing the households of the parents in gross income quartiles. In this way, the effect of their household income on the level of their additional co-payments and the PSCP paid by the households of their children can be analyzed.

The results in table 5 show that poorer multiple-person households pay a higher additional co-payment, in relative terms to their maximum usable income and assets for the additional co-payment financed by parents (% of financial capacity), than their richer counterparts. This

finding can be explained by higher LTC expenditures for lower income households[8] and a, relative to the income and assets, higher current co-payment, than for example households belonging to income quartile four. This results in a higher residual when the current co-payment is deducted from the LTC expenditures, subsequently leading to a higher additional co-payment.

This result is not found for one-person households, as their counterparts in the second and third income quartile pay a higher additional co-payment, in relative terms to their maximum usable income and assets for the additional co-payment financed by parents (% of financial capacity), than households in the first and last income quartile. An explanation for this observation is that households in the second and third income quartile have a lower maximum usable income and assets for the additional co-payment financed by parents (% of financial capacity) in comparison to income quartile one[9], and a higher residual when the current co-payment is deducted from the LTC expenditures than households in the fourth income quartile.

To see the distributional changes in the income and wealth stemming from the financing of the PSCP by the households of the adult children of parents that use LTC, the level of the PSCP is taken as a percentage of the financial capacity of children to contribute to the LTCE of their parents. This results in the same finding as for the additional co-payments paid by the parents. This is because households of poorer parents have a higher residual when the current and additional co-payment is deducted from the LTC expenditures, compared to their richer counterparts. Thus, the households of children of poorer parents have to pay a higher PSCP, in absolute, and often in relative terms, than households of richer children. This is further exacerbated by the finding that the households of children in income quartile one have a higher financial capacity to contribute than households in the second and third income quartiles, because they fall victim to a lower pension asset exemption – which is present in the PSCP system - because of their lower income. In sum, these findings show that for both the additional co-payments financed by the LTC users, and the PSCP financed by their children, poorer households often pay relatively more than richer households when the PSCP system would be implemented in the Netherlands.

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[8]The high LTCE´s found in the first income quartile of the multiple-person households are due to the large amount of households in this income quartile that have household members that live in a residence and thus have high LTCE´s.
[9]While the gross income of households in income quartile one are lower than households in income quartile two and three, the average net assets of households in income quartile one are much higher: €49,739.6, than for households in income quartiles two and three: €27,376.0 and €34,564.8.

To see if this finding can also be observed when the analysis uses the viewpoint of the households of the children instead of the households of the parents, the following table has been created. It will also give the opportunity to analyze the differences in the levels of the PSCP and the PSCP without pension exemption.

Table 6: households of adult children of LTC users

Age	18 -35				35 – 50				50 – 65				65 +			
Income quartile (1 = poorest)	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Gross income	23	54	80	124	24	55	81	141	25	55	81	145	28	53	80	147
Net assets	10	20	33	61	42	49	71	167	80	82	102	244	84	136	250	549
Net housing wealth	1.8	-3*	-10	-26	25	47	50	33	57	86	98	113	95	148	181	223
LTCE minus current and additional co-payments	9.0	6.3	4.8	4.0	7.1	5.6	4.7	3.6	10.0	9.3	8.2	6.3	17.8	15.0	13.1	11.1
PSCP system																
Financial capacity of children to contribute	2.8	4.2	9.6	18	18	12	17	49	43	26	28	82	32	46	103	254
PSCP (% financial capacity)	0.1 (4)	0.5 (13)	0.7 (8)	1 (6)	0.2 (1)	0.4 (3)	0.5 (3)	0.8 (2)	0.5 (1)	0.5 (2)	0.6 (2)	1.3 (2)	0.7 (2)	0.9 2)	1.7 (2)	3.1 (1)
PSCP system without pension asset exemption																
Financial capacity of children to contribute	3.1	5.9	13	29	21	22	34	96	54	49	64	178	56	105	212	514
PSCP (% financial capacity)	0.1 (4)	0.6 (11)	0.9 (7)	1.2 (4)	0.3 (1)	0.6 (3)	0.8 (2)	1.2 (1)	0.9 (2)	1.3 (3)	1.6 (3)	2.2 (1)	2.4 (4)	3.6 (4)	4.7 (2)	5.5 (1)

*Note, the data in this table are the results of our calculations, and they are means and are in thousands of euros. * Value of house is lower than the mortgage.*

In this table, a distinction is made by age and by gross income quartiles, as it is expected that both can partly explain the level of the financial capacity of children to contribute to the LTCE of their parents and the actual level of the PSCP. As the results show, this is the case, as with a higher age of the household members, the absolute PSCP in the PSCP system increases, whereas the households with a higher gross income also pay a higher absolute PSCP in the PSCP system.

When these findings are compared to those in table 5, in which it was found that often richer children paid relatively less than poorer children, here a more mixed pattern is found. The households in income quartile four of the oldest children (65+), pay a lower PSCP as a percentage of the financial capacity of children to contribute (% financial capacity), than their poorer counterparts, while this pattern is reversed for the other age groups. However, for every age group, and both systems, households in the second income quartile pay a higher (on one occasion similar) relative PSCP than households in the third and fourth income quartiles. The findings in this table therefore also seem to suggest that the PSCP system often leads poorer households to pay a higher PSCP in relative terms than their richer counterparts.

6.4 Comparing the PSCP to the PSCP without pension exemption

In table 6 it can be seen that the level of the PSCP leads to a lower mean PSCP than the PSCP without pension exemption in absolute terms, but a mixed pattern is found when comparing the relative levels (% financial capacity). This finding shows that although the PSCP without pension exemption results in a higher absolute level of the PSCP than the PSCP with the exmption, this does not always lead to a higher relative PSCP, because the financial capacity of children to contribute is also higher, as fewer assets are exempted for the financing of the PSCP.

Furthermore, in table 5, it was found that the households of children in income quartile one had a higher financial capacity to contribute than households in the second and third income quartiles. In table 6 this same result is also found for children in age groups 35 to 50 and 50 to 65 when the level of the PSCP has been calculated. The latter finding is found because households in income quartile one have a higher financial capacity than in income quartile two, while having a lower gross income. This can be partly[10] explained by the inclusion of the pension asset exemption in the PSCP system, as the PSCP without pension exemption system has a much less pronounced difference between the first and second income quartiles of these respective groups. The following figure illustrates this difference between the systems, as the second gross income decile pays a lower PSCP in the PSCP system in comparison to the first income decile, while this result is not found for the PSCP without pension exemption.

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[10]The other explanation is that there are households of children with low gross income but high assets.

Figure 3: PSCP in euros across gross income deciles

PSCP in euros
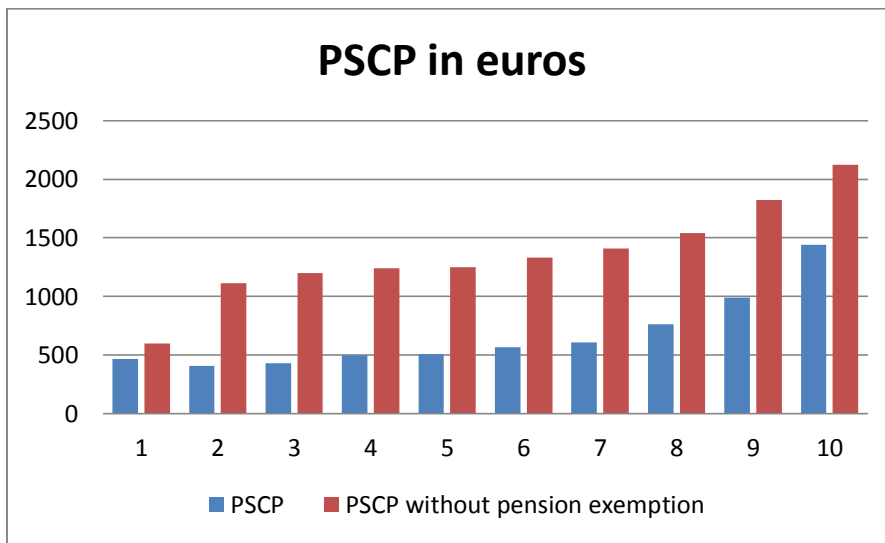
Note, based on our calculations.

7. Discussion

This study is performed because of the expected rise in LTC expenditures, which makes the balancing of an appropriate LTC protection while ensuring long-term fiscal sustainability one of the main future challenges in many OECD countries. This balancing is especially challenging for the Netherlands, as it has the highest level of LTCE of all the OECD countries, and its rising LTCE's could pose a threat to fiscal sustainability of LTC services and to the sustainability of public finance in the Netherlands. Therefore, this study examines a new LTC financing option which is in use in Germany, called Elternunterhalt, or parent support co-payment (PSCP). In this LTC financing system, LTC users pay a co-payment when their pension and LTC insurance benefits are not sufficient to cover their LTC expenditures. If these LTC users do not have the means to pay, their children have to (partly) finance their LTCE´s by paying a parent support co-payment (PSCP).

To our surprise, there is little to no financial research on the PSCP, as well as a lack of studies that examine the redistributive effects of the PSCP on the income and wealth of the parents that use LTC and their children. Therefore, this research studies these effects, which is executed by implementing the PSCP system in the Netherlands. The reason for choosing the Netherlands is because of their high LTCE's and because it is the only country where data on LTC use and wealth/income of the parents and children is available. Our study has been led by the following

research questions: A) How much can adult Dutch children of parents that use LTC contribute financially if their parents are unable to pay for their LTC? B) How does the PSCP system affect the distribution of income/wealth and of costs/benefits of LTC users and their adult children in the Netherlands?

Our findings on the first research question show that the implementation of a co-payment by the children leads to an increase in revenue for the Dutch government of €600 million (€1200 million without pension exemption). However, this is much lower than the €5200 million extra revenue stemming from the additional co-payment financed by LTC users. This means that the additional co-payment financed by the parents has a much greater effect on total government revenue than the PSCP paid by their children. In comparison, the total revenue from co-payments in 2014 was €2.4 billion, while the total LTCE's were €21 billion. This shows that the implementation of both the PSCP and the additional co-payment in the Netherlands would greatly increase government revenue and could help alleviate the threat from rising LTCE's to the fiscal sustainability of LTC services and the sustainability of public finance in the Netherlands. The extent to which this finding can be extrapolated to other OECD countries depends on the levels of income and assets of the LTC users and their children in these respective countries. However, it is expected that the PSCP system can also increase government revenue in other countries, making it also worth considering for policymakers in other OECD countries.

The analysis performed to formulate an answer on the second research questions gives two findings: A) Households of poorer LTC users often pay a higher additional co-payment, relative to their financial capacity, than their richer counterparts. B) Households of poorer children often pay a higher PSCP, relative to their financial capacity to pay for a PSCP, than their richer counterparts. Result A is found because the households of poorer LTC users have less income and wealth than households of richer LTC users, while their LTC expenditures are higher or similar to households of richer LTC users. This results in a relatively higher additional co-payment for households of poorer LTC users than their richer counterparts. Result B is found because the households of poorer children usually have parents that are also poor, while the LTC expenditures of poor parents are higher or similar to rich parents. Therefore, the households of these poor parents have higher LTCE, while they do not have enough resources to pay a high current and additional co-payment. This results in a high level of LTC expenditures,

which cannot fully be covered by the household of the parent and will therefore have to be financed by the PSCP of their child.

Next to the latter finding, which could be seen as a drawback by policymakers, there is another important drawback to the PSCP system. It could for example lead to a big income shock for both LTC users and their children, as there is no insurance for the additional co-payment and the PSCP. When not protected from these income shocks – people may not always expect health problems - people might fall into poverty because of a lack of insurance. This risk of falling into poverty might be exacerbated by the so-called "sandwich situation", in which people are caught between costs for their parents and their own children (Meier-Greve, 2015). Our results show that particularly households of poorer children have to pay a relatively high PSCP, while these households might already struggle to finance the upbringing of their children.

In conclusion, for Dutch policymakers the results for the first research question might be interesting, as they show that the implementation of the PSCP system in the Netherlands could lead to a substantial increase in revenue (especially when the pension asset exemption is excluded). This could mitigate the threat from rising LTCE's to the fiscal sustainability of LTC services and the sustainability of public finance in the Netherlands. However, our findings for research question two seem to suggest that the system also leads to the situation that households of poorer LTC users and their children pay relatively higher co-payments than their richer counterparts. Dutch policymakers may therefore have to redesign the system so that the latter finding is mitigated or turned around. Furthermore, it is expected that especially a high level of the additional co-payments[11] could lead to discussion, as Bockarjova et al. (2014) have indicated that co-payments for Dutch LTC users cannot be increased much further. However, asking high co-payments from parents has a precedent in the Netherlands, as the Wet ouderen oorden (rescinded in 1997) also charged high co-payments for LTC use. Other considerations like income shocks, the sandwich situation and that only a quarter of this population thinks that children should pay for the care of their parents should also be important to keep in mind for Dutch policymakers when considering the implementation of the PSCP system.

The conclusion regarding the Dutch situation could also be interesting for German policymakers, especially when they focus on the results from the second research question; it might be possible that poorer households in Germany also pay higher co-payments relative to

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[11]Table 3 shows that the additional co-payments are much higher than the PSCP.

their financial capacity in comparison to their richer counterparts. Therefore, it might be valuable to study the redistributive effects of the PSCP system in Germany. Furthermore, they might also have to look into the possible income shocks stemming from the PSCP.

An important limitation of our study is that behavioural aspects are not included in our analysis. It is expected that the PSCP system affects the labour supply of the households of the children, and the savings of the households of the parents and the children. This could happen via two ways: A) The labour supply effect (which is normally studied with the help of the standard consumer theory) suggest that the PSCP will entice the households of children to work harder to make up for the loss in income (Danziger et al., 1981). In reality however, it is not sure if this effect will actually occur. A study by the CPB (2015b) shows that for the largest part of the Dutch population (except single mothers), a change in income does not substantially affects their labour supply. B) The savings effect, assumes that when individuals expect income transfers, this may be perceived as decreased net wealth and will result in more saving and less consumption (Danziger et al., 1981). The latter effect could have an effect on the saving behaviour of the households of the parents and the children. They could either save more to smooth income shocks stemming from the additional co-payment or the PSCP, or they could save less to avoid paying it all together. For our research this means that it is unknown how these behavioural aspects will affect our findings. However, it could be that in some situations both the parents and the children might not save for the extra costs for the use of LTC, which will result in less revenue for the Dutch government.

A recommendation would be to examine how the implementation of the PSCP system affects the distribution of income/wealth and of costs/benefits for the whole population, not only for the subpopulation of LTC users and their children. We expect that these redistributive effects could differ between the two populations by for example the two following reasons. Firstly, not every income group uses the same amount of LTC, as table 5 shows that lower income households use more LTC than higher income households. In our subpopulation, there are only people that use LTC, while in the whole population there are both LTC users and non-users, which could lead to different redistributive effects. Secondly, when the PSCP is introduced, the increased revenue could lead to the lowering of the income dependent premiums for the financing of LTC for the whole population; this would result in redistributive effects that were not examined in this research. To analyze the differences in redistributive effects between the populations, the Gini

coefficients of the inequality in pre-transfer incomes could be compared to the inequality in post-transfer incomes (Lambert 1989).

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9. Appendix

Appendix A: calculation rules

Current co-payments

Income and Asset concept:

$$Y_{means-tested} = Y_{gross} + 0.08 * Adjusted\ Assets$$

$$Adjusted\ Assets = Assets - Exempted\ Assets - Seniority\ Asset\ Exemption$$

$$Exempted\ Assets = 21,139\ if\ Spouse = 0, or\ 42,278\ if\ Spouse = 1$$

$$Seniority\ Asset\ Exemption = 27,984\ if\ Y_{box1} \leq 14,302\ \&\ Spouse = 0,$$

$$13,992\ if\ Y_{box1} > 14,302, but\ \leq 19,895\ \&\ Spouse = 0,$$

$$0\ if\ Y_{box1} \geq 19,896\ \&\ Spouse = 0,$$

$$0\ if\ Assets - Exempted\ Assets \geq 279,908\ \&\ Spouse = 0$$

$$55{,}968 \; if \; Y_{box1} \leq 28{,}604 \; \& \; Spouse = 1,$$

$$27{,}984 \; if \; Y_{box1} > 28{,}604, but \leq 39{,}790 \; \& \; Spouse = 1,$$

$$0 \; if \; Y_{box1} \geq 39{,}792 \; \& \; Spouse = 1$$

$$0 \; if \; Assets - Exempted \; Assets \geq 559{,}416 \; \& \; Spouse = 1$$

$$Y_{box1} = Y_{gross} - 0.04 * (Assets - Exempted \; Assets)$$

Home care

$$Co - Payment \; Home \; care \; (HC) =$$

$$Basic \; Amount + 0.15 * \max (0, Y_{means-tested} - Boundary)$$

$$if \; Home \; care \;_{expenditure} < HC, then \; HC = Home \; care_{expenditure}$$

$$Basic \; Amount \; = 247 \; if \; one - person \; household,$$
$$353.6 \; if \; multiple - person \; household$$

$$Boundary = 16{,}456 \; if \; pensioner \; \& \; one - person \; household,$$

$$23{,}295 \; if \; non - pensioner \; \& \; one - person \; household,$$

$$22{,}957 \; if \; pensioner \; \& \; multiple - person \; household,$$

$$29{,}174 \; if \; non - pensioner \; \& \; multiple - person \; household$$

Residential care, low contribution

$$if \; 1872 < 0.125 * Y_{means-tested} < 9832.8 \; then:$$
$$Co - Payment \; Residential \; care \; low \; \; RCl$$

$$= \; 0.125 * Y_{means-tested} \; - Reduction$$

$$if \; 0.125 * Y_{means-tested} \; \geq 9832.8 \; then:$$
$$RCl = 9832.8 \; * Wtcg - Reduction$$

$$if \; 0.125 * Y_{means-tested} \; \leq 1872 \; then:$$
$$RCl = 1872 - Reduction$$

$$if \; Residential \; care_{expenditure} < RCl, then \; RCl = Residential \; care_{expenditure}$$

Residential care, high contribution

$$Co - Payment\ Residential\ care\ high\ \ RCh\ =$$

$$Y_{gross}$$

$$- Taxes\ and\ Healthcare\ Insurance\ Premium$$

$$- Clothing\ Allowance$$

$$- Retirement\ Age\ Rebate$$

$$- Income\ From\ Current\ Enployment$$

$$- Extra\ Exemption$$

$$+ 0.08 * Adjusted\ Assets$$

$$if\ RCh \geq 26{,}983.2\ then\ RCh = 26{,}983.2$$

$$if\ Residential\ care_{expenditure} < RCh, then\ RCh = Residential\ care_{expenditure}$$

$$Taxes\ and\ Healthcare\ Insurance\ Premium = \ Y_{gross} - Y_{disposable}$$

$$Clothing\ Allowance = 300.15 * 12\ if\ Spouse = 0,$$
$$466.85 * 12\ if\ Spouse = 1$$

$$Retirement\ Age\ Rebate = 950\ if Spouse = 0,$$
$$1700\ if Spouse = 1$$

$$Income\ From\ Current\ Employment = \ 0.15 * (Y_{gross} - 0.04 * Adjusted\ Assets)$$
$$Extra\ Exemption = 0.25 * \max\ 0, Y_{available\ income} - Boundary$$

$$Y_{available\ income} =$$

$$Y_{gross}$$
$$- Taxes\ and\ Healthcare\ Insurance\ Premium$$
$$- Clothing\ Allowance$$
$$- Retirement\ Age\ Rebate$$

$$Boundary = 8087\ if\ Spouse = 0,$$
$$Boundary = 9785\ if\ Spouse = 1$$

Additional co − payment

$$Additional\ co - payment =$$

Maximum usable income for the additional co − payment financed by parents
$$+$$
Maximum usable assets for the additional co − payment financed by parents

$$Maximum\ usable\ income = Y_{disposable} - Deductible\ income\ Parent - Current\ co - payment$$

$$Deductible\ income\ Parent = 456.58 * 12\ if\ in\ Institution\ \&\ Couple,$$

$$301.26 * 12\ if\ in\ Institution\ and\ if\ Single\ or\ Single\ Parent,$$

$$1437.02 * 12\ if\ pensioner\ \&\ Couple,$$

$$1313.82 * 12\ if\ pensioner\ \&\ Single\ Parent,$$

$$1044.01 * 12\ if\ pensioner\ \&\ Single,$$

$$Maximum\ usable\ assets =$$

$$Assets + House - Exempted\ Assets - Seniority\ Asset\ Exemption$$
$$- Asset\ Treshold\ if\ House = 1,$$

$$Assets - Exempted\ Assets - Seniority\ Asset\ Exemption - Asset\ Treshold\ if\ House = 0$$

$$Asset\ Treshold = 2600$$

PSCP

$$Income\ Child = Y_{disposable} - Deductible\ income\ Child$$

$$Deductible\ Income\ Child = 1800 * 12\ if\ in\ Institution,$$

$$1800 * 12\ if\ Single,$$

$$1800 * 12\ if\ Single\ Parent,$$

$$Spousal\ Contribution + 1800 * 12\ if\ Couple$$

$$Spousal\ Contribution = 0{,}5 * Y_{disposable}\ if\ < 1440, then\ 1440$$

$$Available\ assets\ Child = Assets - Deductible\ assets\ Child$$

$$Deductible\ assets\ Child = 50{,}000\ if\ House = 1$$
$$Deductible\ assets\ Child = 75{,}000\ if\ House = 0$$

Calculation of the financial capacity to contribute:

$$Financial\ Capacity = 0.5 * Income\ Child + Assets\ Child$$

$$Assets\ Child = \frac{Available\ assets}{100} * (Annuity\ Of\ Remaining\ Life\ Expectancy * 12)$$

$$Available\ assets = Available\ assets\ child - Pension\ asset\ exemption$$

$$Pension\ asset\ exemption = Yearly\ Pension\ Provision\ * \frac{1.04^{Working\ Years} - 1}{0.04}$$

$$Yearly\ Pension\ Provision = 0.05 * Y_{gross}$$

$$Working\ Years = Age - 18$$

$$Annuity\ Of\ Remaining\ Life\ Expectancy = Average\ Life\ Expectancy - Birth\ Year, at\ 4\%$$

Calculation of the PSCP

$$PSCP\ Per\ Child = PSCP\ Parent\ 1 + PSCP\ Parent\ 2$$

$$PSCP\ Parent\ 1 = Residual * Pro\ Rata\ Share$$

$$Residual = LTCE\ Parent - Co - Payments\ (HC, RCl, RCh,\ PSCP_{parents})$$

$$Pro\ Rata\ Share = \frac{Financial\ Capacity\ Per\ Child}{Financial\ Capacity\ Per\ Household}$$

$$PSCP\ Parent\ 2 =\ Residual - PSCP\ Parent\ 1\ * Pro\ Rata\ Share\ 2$$

$$Pro\ Rata\ Share\ 2 = \frac{Financial\ Capacity\ Per\ Child - PSCP\ Parent\ 1}{Financial\ Capacity\ Per\ Household - PSCP\ Parent\ 1}$$

$$PSCP\ Parent = Residual\ if\ Residual < Financial\ Capacity\ Per\ Child,$$
$$0\ if\ Financial\ Capacity\ Per\ Child = 0$$

$$PSCP\ Parent\ =\ Financial\ Capacity\ Per\ Child\ if\ Financial\ Capacity\ Per\ Child < Residual,$$
$$0\ if\ Financial\ Capacity\ Per\ Child = 0$$

Appendix B: life expectancy and corresponding annuity

Life expectancy (in years)	Annuity	Life expectancy (in years)	Annuity
1	85.15	19	6.27
2	43.42	20	6.06
3	29.52	21	5.87
4	22.58	22	5.7
5	18.42	23	5.55
6	15.65	24	5.41
7	13.67	25	5.28
8	12.19	26	5.16
9	11.04	27	5.05
10	10.12	28	4.95
11	9.38	29	4.86
12	8.76	30	4.77
13	8.23	31	4.69
14	7.78	32	4.62
15	7.4	33	4.55
16	7.06	34	4.49
17	6.76	35	4.43
18	6.5		

Based on our calculations via method described in chapter 3.

Appendix C: datasets

1: GEBZZVTAB (2014)
This dataset is based on the registration of the CAK. It contains information on all admissions of people that are 18 years or older and that received care without residence in 2014, for which the expenditures were covered by the AWBZ or WMO and for which a co-payment was required. The dataset depicts per person and per period the amount of domestic care received (HVMIN), personal care (PVMIN), nursing care (VPMIN), individual assistance (BGIMIN) in minutes, and group assistance (BBGDAGDEEL) in blocks of four hours (CBS, 2015a).

2: ZORGMVTAB (2014)
This dataset is based on the registration of the CAK. It contains information on all admissions of people that are 18 years or older that received care with residence in 2014, for which the expenditures were covered by the AWBZ and a co-payment was required. It further depicts per person the amount of days of residential care and the type of care, identifiable by a care intensity package (zorgzwaartepakket) (CBS, 2015b).

3, 4: Rinpersoon-Rinpersoonkern From Integraal Persoonlijk Inkomen (2012/2014)
This dataset contains information about the identification number of persons (RINPERSOON-numbers), their household identifier number (RINPERSOONKERN-numbers) and income on a personal level from persons that belong to the population of the Netherlands on 31-12-2012/31-12-2014.

5: IntegraalHuishoudensInkomen (2012)
The dataset describes the yearly income and household type on December 31st of 2012 of the households which belong to the population of the Netherlands on the 31st of December 2011. The data comes from various administrations of which the tax office is the most important (CBS, 2015c).

6: Integraal-Vermogensbestand (2012)

This dataset contains information about the assets on 1-1-2012 from households that belong to the population of the Netherlands at 31-12-2011. The data are derived from; inter alia, the administrations of the tax authorities and it concerns both declaration- and assessment data. In addition, it uses data on bank deposits and stocks and the value of the property is obtained via the law on property tax (WOZ waarden). Lastly, declaration data from entrepreneurs is used to attain the level of the business assets (CBS, 2015d).

7: GBAVERBINTENISPARTNER (2014)

This dataset contains information about all people that are (once) registered as spouses in the Municipal Administration (GBA) (CBS, 2015e).

8: GBAPERSOONTAB (2014)

This dataset contains information on age, gender, country of birth and country of birth of father and mother of all people that are registered in the Municipal Administration (GBA) (CBS, 2015f).

9: KINDOUDERTAB (2014)

This dataset is a key file with RINPERSOON-numbers of all people that are registered in the Municipal Administration (GBA) and the RINPERSOON-numbers of their parents when these could be identified. The populations in this dataset are persons that are registered in the Municipal Administration (GBA) from first of January 1995 of which the identification number from at least one of the legal parents is known. The child parent information is the most reliable for children born from 1966 and onwards (CBS, 2015g).

Appendix D: data selection in steps

Our data selection has been executed in six consecutive steps. The first step has been to calculate the home care co-payments for which the Home care use (1) dataset was used (N= 6,845,879). This dataset contains 721,792 unique persons. To calculate the level of the expenditures, the different types of care were divided by 60 - as the tariffs are in hours - and were multiplied with their respective tariffs (appendix E). Hereafter, the individual persons were first matched to their age (via dataset 8), partnership status (7) and household identifier (3); secondly, income (3), assets (6), and household type (5) were matched to the household identifier. Next, 1,507,504 households that contain a person under the age of 65 were discarded as the PSCP is meant for the support of parents that use LTC (see PSCP chapter). Subsequently, households which, next to the parents, contain household members that could potentially contribute to the assets of a household[12] were discarded (146,239 households). Finally, the home care co-payments were calculated per household via the calculation rules (appendix A). This results in a dataset with 392,985 households.

The second step involved the Residential care use (2) dataset (N= 367,287). In order to calculate the costs of the stay at the residential care home the tariffs of the different care intensity packages were established. This was done by dividing the total expenditures in euros per care intensity package by the volume of care in days. This leads to a tariff in costs in euros per day, per care intensity package (appendix E). These tariffs were then combined with dataset 2. Hereafter, the care intensity packages 19900: nursing and care, previously used for the care intensity package unknown (5512 observations) and 90001: No care intensity package, LTC user is living with their partner in the residential home (1409 observations) were discarded because there is no tariff for these packages. Furthermore, care intensity package 20092: restorative treatment by nursing and care version B was recoded to 20090: restorative treatment by nursing and care (3829 changes) because there is no tariff for 20092 and the 20090 package is most akin[13]. Next, the tariffs were used to calculate the per person total expenditures

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[12]Household types 4, 5, 7, 8, 11, 12, 14, 15. 16, and 99 were discarded, see appendix H.
[13]Care intensity package 20092 is a subdivision in care intensity package 20090, see:
https://www.cbs.nl/NR/rdonlyres/64336C62-2A10-4477-A339
A2B154B8ED47/0/integraalhuishoudensinkomenmicrodata.pdf

for care with residence. Finally, 44,886 observations were discarded when summing the expenditures to a household level. This leads to a dataset of 253,761 observations at the household level.

In the third step this last dataset was combined with the dataset which was the result of step 1. In this combined dataset there are 131,837 households which use residential care, 376,086 which use home care and 40,162 that use both types of care. Subsequently, this combined dataset was merged with dataset 4 to link households to household members to ensure that children could be linked to their parents so that it was possible to calculate the PSCP in step six. This resulted in a dataset with 774,194 observations with (often) multiple persons per household. To calculate the residential care co-payment a household needs to be identified as either belonging to high or low identification, wherein low leads to a lower co-payment than high[14]. To do so, terminal patients (5936 persons) and persons that use residential care for less than 6 months (70,076 persons) were identified. Next, the dataset was merged with income (3), assets (6), household type (5), spouse (7), age and gender (8), life expectancy (appendix F) and annuity (appendix B). Again, all households consisting of a person with an age under 65 are discarded (160,948 households), and households where there are, next to the parents, household members that could potentially contribute to the assets of a household were also discarded (2271 households). Thus, when only retaining households that use residential care this leads a dataset of 132,649 households.

Step four used the previous dataset while retaining households that use both residential care and home care. On the basis of this dataset the deductibles based on social welfare levels, which were calculated according to the calculation rules which can be found in appendix A, were deduced from the income and assets of the household of the older people that use LTC. This was done so that an additional co-payment paid by the parents could be calculated in accordance with the PSCP found in Germany. This resulted in a dataset with 596,329 households that use either home care or residential care, or both.

The fifth step, used the Parents and their children (9) dataset (N= 15,106,878) which by the following procedure led to a dataset wherein the children were correctly linked to their parents. First, missing children (1 child) and children without an identified mother (639,306 children) were discarded. Hereafter, because of validity concerns, mothers with more than 15 children were discarded (439 mothers). This same procedure was followed for fathers, thus discarding missing children (1 child), children without an identified father (2,639,541 children) and fathers with more than 15 children (631 fathers). This left a dataset with 6,060,070 mothers and one with 5,290,438 fathers. These datasets were appended and parents who were registered as both a father and mother were discarded (1054 fathers and mothers).

Subsequently, the children in this dataset were linked to their parents. This led to a dataset of 19,042,405 observations. Next this dataset was merged with age (8), which was followed by discarding (6,586,251 children) all children who were 18 years or younger, as children under 18 do not have to pay a PSCP. Because of the dataset characteristics there are two observations for each child of which the duplicate was discarded (3,979,695). Hereafter the household of the child was merged with income (3), assets (6) and household type (5). Again, certain types of households were discarded (1,749,926) because they could influence the level of assets.

To derive the maximum level of the PSCP per household, their maximum income and wealth contribution was calculated on the basis of the calculation rules. Furthermore, children who were linked more than once to the household of the parents were discarded (189,921 children),as the household of the parents should per child be represented only once, so that when a child's parents live together they are seen as one living unit for which the child only has to pay once. Also, it appeared that sometimes a household of a child could be linked multiple times to the household of the parent. This could happen for example when a brother and sister live together. To ensure that the income and wealth of the household of the children is not used multiple times (so that a household does not pay a PSCP more than once) they were divided by the amount of times a household of a child is linked to the household of the parent. This leads to a dataset of 745,581 households. It is important to note that because of randomness in this procedure, which is expected to stem from the joining of the two datasets with the use of the joinby command, the amount of

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[14]See appendix I for the criteria to qualify for a low co-payment.

observations of the final dataset is somewhat lower than this dataset. This difference is only seven observations and is therefore not considered to be a big issue.

The sixth and final step is to calculate the PSCP, which was done according to the calculation rules formulated on the German example. For this calculation, the children and their households were matched to the households of their LTC using parents. Furthermore, a distinction was made between a PSCP and a PSCP without pension exemption because the PSCP system accounts for a wealth exemption based on income (see appendix A) to save for the pension of LTC using parents. However, in the Netherlands it is common to have a second pillar pension scheme (91% of the employees have one) and therefore most people do not privately save for their pension (Van der Smitte, 2013). To model this alternative to the PSCP system, the pension asset exemption was taken out of our calculation rules when calculating the PSCP without pension exemption. Again, because of randomness in the procedure the observations and coefficients may differ slightly when rerunning. This led to a final dataset of 870,863 household members and their children.

Appendix E: home care tariffs

Type of Care	Tariff
HV (per hour)	€ 30.610819
PV (per hour)	€ 49.306051
VP (per hour)	€ 72.882830
BG (per hour)	€ 57.511693
BGG (per 4 hours)	€ 61.221515

The HV tariff was calculated by dividing expenditures (CBS StatLine, 2016f) by volume (CBS StatLine, 2016g). Note, in October 2016 a higher tariff for HV is found then in April 2016; 32,605500735. This is probably because of updates in the expenditures or volumes. The other tariffs were calculated via (CBS StatLine, 2016h). Again, our tariffs are different; PV: 49,60009837, VP: 73,04069251 BG: 57,86054539 and BGG: 61,221515

Appendix F: care intensity packages, codes and tariffs

Care intensity package	Code	Tariff
Zorgzwaartepakket (zzp) 1C Geestelijke gezondheidszorg (GGZ) Beschermd wonen met begeleiding (C-groep)	40950	€ 68.7
Zorgzwaartepakket (zzp) 2C Geestelijke gezondheidszorg (GGZ) Gestructureerd beschermd wonen met uitgebreide begeleiding (C-groep)	40970	€ 106.78
Zorgzwaartepakket (zzp) 3C Geestelijke gezondheidszorg (GGZ) Beschermd wonen met intensieve begeleiding (C-groep)	40990	€ 119.68
Zorgzwaartepakket (zzp) 4C Geestelijke gezondheidszorg (GGZ) Gestructureerd beschermd wonen met intensieve begeleiding en verzorging (C-groep)	41010	€ 145.99
Zorgzwaartepakket (zzp) 5C Geestelijke gezondheidszorg (GGZ) Beschermd wonen met intensieve begeleiding en gedragsregulering (C-groep)	41030	€ 158.16
Zorgzwaartepakket (zzp) 6C Geestelijke gezondheidszorg (GGZ) Beschermd wonen met intensieve begeleiding en intensieve verpleging en verzorging (C-groep)	41050	€ 197.47
Zorgzwaartepakket (zzp) 1B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met begeleiding (B-groep)	40810	€ 151
Zorgzwaartepakket (zzp) 2B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met structuur en uitgebreide begeleiding (B-groep)	40830	€ 136.58

Zorgzwaartepakket (zzp) 3B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met intensieve begeleiding (B-groep)	40850	€ 143.41
Zorgzwaartepakket (zzp) 4B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met intensieve begeleiding en verzorging (B-groep)	40870	€ 166.07
Zorgzwaartepakket (zzp) 5B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met intensieve begeleiding en gedragsregulering (B-groep)	40890	€ 178.78
Zorgzwaartepakket (zzp) 6B Geestelijke gezondheidszorg (GGZ) Voortgezet verblijf met intensieve begeleiding en intensieve verpleging en verzorging (B-groep)	40910	€ 235.86
Zorgzwaartepakket (zzp) 7B Geestelijke gezondheidszorg (GGZ) Beveiligd voortgezet verblijf vanwege extreme gedragsproblematiek met zeer intensieve begeleiding (B-groep)	40930	€ 320.62
Zorgzwaartepakket (zzp) 1 Zintuiglijk gehandicapt (ZG) auditief Wonen met begeleiding en enige verzorging	30730	€ 123.96
Zorgzwaartepakket (zzp) 2 Zintuiglijk gehandicapt (ZG) auditief Wonen met intensieve begeleiding en verzorging	30750	€ 257.4
Zorgzwaartepakket (zzp) 3 Zintuiglijk gehandicapt (ZG) auditief Wonen met intensieve begeleiding en intensieve verzorging	30770	€ 325.61
Zorgzwaartepakket (zzp) 4 Zintuiglijk gehandicapt (ZG) auditief Wonen met intensieve begeleiding en enige verzorging.	30790	€ 193.82
Zorgzwaartepakket (zzp) 1 Zintuiglijk gehandicapt (ZG) visueel Wonen met enige begeleiding en enige verzorging	30630	€ 90.8
Zorgzwaartepakket (zzp) 2 Zintuiglijk gehandicapt (ZG) visueel Wonen met begeleiding en enige verzorging	30650	€ 122.28
Zorgzwaartepakket (zzp) 3 Zintuiglijk gehandicapt (ZG) visueel Wonen met intensieve begeleiding en verzorging	30670	€ 162.52
Zorgzwaartepakket (zzp) 4 Zintuiglijk gehandicapt (ZG) visueel Wonen met intensieve begeleiding en intensieve verzorging	30690	€ 215.54
Zorgzwaartepakket (zzp) 5 Zintuiglijk gehandicapt (ZG) visueel Wonen met zeer intensieve begeleiding en zeer intensieve	30710	€ 240.37
Zorgzwaartepakket (zzp) 1 Lichamelijk gehandicapt (LG) Wonen met enige begeleiding en enige verzorging	30490	€ 105
Zorgzwaartepakket (zzp) 2 Lichamelijk gehandicapt (LG) Wonen met begeleiding en enige verzorging	30510	€ 138.93
Zorgzwaartepakket (zzp) 3 Lichamelijk gehandicapt (LG) Wonen met enige begeleiding en verzorging	30530	€ 130.47
Zorgzwaartepakket (zzp) 4 Lichamelijk gehandicapt (LG) Wonen met begeleiding en verzorging	30550	€ 157.8
Zorgzwaartepakket (zzp) 5 Lichamelijk gehandicapt (LG) Wonen met begeleiding en intensieve verzorging	30570	€ 185.96
Zorgzwaartepakket (zzp) 6 Lichamelijk gehandicapt (LG) Wonen met intensieve begeleiding en intensieve verzorging	30590	€ 207.74
Zorgzwaartepakket (zzp) 7 Lichamelijk gehandicapt (LG) Wonen met zeer intensieve begeleiding en zeer intensieve verzorging	30610	€ 224.76
Zorgzwaartepakket (zzp) 1 Licht verstandelijk gehandicapten (LVG) Wonen met enige behandeling en begeleiding	30430	€ 133.64
Zorgzwaartepakket (zzp) 2 Licht verstandelijk gehandicapten (LVG) Wonen met behandeling en	30440	€ 175.55

begeleiding		
Zorgzwaartepakket (zzp) 3 Licht verstandelijk gehandicapten (LVG) Wonen met intensieve behandeling en begeleiding, kleine groep	30450	€ 216.94
Zorgzwaartepakket (zzp) 4 Licht verstandelijk gehandicapten (LVG) Wonen met zeer intensieve behandeling en begeleiding	30460	€ 256.57
Zorgzwaartepakket (zzp) 5 Licht verstandelijk gehandicapten (LVG) Besloten wonen met zeer intensieve behandeling en begeleiding	30470	€ 255.69
Zorgzwaartepakket (zzp) Sterk gedragsgestoord licht verstandelijk gehandicapten (SGLVG) Behandeling in een SGLVG behandelcentrum	30480	€ 327.82
Zorgzwaartepakket (zzp) 1 Verstandelijk gehandicapten (VG) Wonen met enige begeleiding	30270	€ 72.43
Zorgzwaartepakket (zzp) 2 Verstandelijk gehandicapten (VG) Wonen met begeleiding	30290	€ 91.05
Zorgzwaartepakket (zzp) 3 Verstandelijk gehandicapten (VG) Wonen met begeleiding en verzorging	30310	€ 118.99
Zorgzwaartepakket (zzp) 4 Verstandelijk gehandicapten (VG) Wonen met begeleiding en intensieve verzorging	30330	€ 144.25
Zorgzwaartepakket (zzp) 5 Verstandelijk gehandicapten (VG) Wonen met intensieve begeleiding en intensieve verzorging	30350	€ 192.89
Zorgzwaartepakket (zzp) 6 Verstandelijk gehandicapten (VG) Wonen met intensieve begeleiding, verzorging en gedragsregulering	30370	€ 174.77
Zorgzwaartepakket (zzp) 7 Verstandelijk gehandicapten (VG) (Besloten) wonen met zeer intensieve begeleiding, verzorging en gedragsregulering	30390	€ 246.03
Zorgzwaartepakket (zzp) 8 Verstandelijk gehandicapten (VG) Wonen met begeleiding en volledige verzorging en verpleging	30410	€ 221.73
Zorgzwaartepakket (zzp) 1 Verpleging en verzorging (VV) Beschut wonen met enige begeleiding	20010	€ 65.17
Zorgzwaartepakket (zzp) 2 Verpleging en verzorging (VV) Beschut wonen met begeleiding en verzorging	20020	€ 82.98
Zorgzwaartepakket (zzp) 3 Verpleging en verzorging (VV) Beschut wonen met begeleiding en intensieve verzorging	20030	€ 100.9
Zorgzwaartepakket (zzp) 4 Verpleging en verzorging (VV) Beschut wonen met intensieve begeleiding en uitgebreide verzorging	20040	€ 116.42
Zorgzwaartepakket (zzp) 5 Verpleging en verzorging (VV) Beschermd wonen met intensieve dementiezorg	20050	€ 179.78
Zorgzwaartepakket (zzp) 6 Verpleging en verzorging (VV) Beschermd wonen met intensieve verzorging en verpleging	20060	€ 174.13
Zorgzwaartepakket (zzp) 7 Verpleging en verzorging (VV) Beschermd wonen met zeer intensieve zorg, vanwege specifieke aandoeningen, met de nadruk op begeleiding	20070	€ 217.4
Zorgzwaartepakket (zzp) 8 Verpleging en verzorging (VV) Beschermd wonen met zeer intensieve zorg, vanwege specifieke aandoeningen, met de nadruk op verzorging/verpleging	20080	€ 246.9
Zorgzwaartepakket (zzp) 9 Verpleging en verzorging (VV) Herstelgerichte behandeling met Verpleging en verzorging	20090	€ 217.21
Zorgzwaartepakket (zzp) 10 Verpleging en verzorging (VV) Beschermd verblijf met intensieve palliatief-terminale zorg	20100	€ 268.57

Tariffs were calculated via CBS StatLine. (2016i). Again, the tariffs are different. For example, in April 2016 care intensity package 20010 was €65.17 and in October 2016 it is 65.13.

Appendix G: life expectancy

Age	Birth year	Male	Female	Age	Birth year	Male	Female
65	1949	20.29	22.89	**89**	1925	4.3	5.03
66	1948	19.39	21.93	**90**	1924	3.97	4.63
67	1947	18.49	21	**91**	1923	3.68	4.21
68	1946	17.61	20.1	**92**	1922	3.37	3.89
69	1945	16.74	19.2	**93**	1921	3.08	3.57
70	1944	15.45	18.03	**94**	1920	2.88	3.28
71	1943	15.09	17.46	**95**	1919	2.7	3.01
72	1942	14.28	16.6	**96**	1918	2.44	2.74
73	1941	13.49	15.78	**97**	1917	2.3	2.56
74	1940	12.72	14.95	**98**	1916	2.11	2.31
75	1939	11.97	14.13	**99**	1915	2.04	2.23
76	1938	11.23	13.32	**100**	1914	1.97	2.25
77	1937	10.52	12.52	**101**	1913	2.16	2.26
78	1936	9.85	11.75	**102**	1912	2.01	2.4
79	1935	9.18	10.99	**103**	1911	1.97	2.32
80	1934	8.55	10.28	**104**	1910	2.23	2.32
81	1933	7.97	9.57	**105**	1909	1.98	2.31
82	1932	7.4	8.88	**106**	1908	2.04	2.41
83	1931	6.88	8.21	**107**	1907	1.91	2.18
84	1930	6.38	7.62	**108**	1906	1.97	2.16
85	1929	5.89	7.05	**109**	1905	2.03	2.28
86	1928	5.44	6.48	**110**	1904	1.91	2.21
87	1927	5.05	5.97	**111**	1903	2.1	2.19
88	1926	4.65	5.51	**112**	1902	1.96	2.24

Data based on CBS StatLine. (2016j). Note, that t=2014, so a person that is 65 years old is born in 1949.

Appendix H: household types

Single person household (1)	Couple with other, only children <18 (10)
Couple, without children (2)	Couple with other, children <18 and 18+ (11)
Couple, only children <18 (3)	Couple with other, only children 18+ (12)
Couple, children <18 and 18+ (4)	Single parent with other, only children <18 (13)
Couple, only children 18+ (5)	Single parent with other, children <18 and 18+ (14)
Single parent, only children <18 (6)	Single parent with other, only children 18+ (15)
Single parent, children <18 and 18+ (7)	Remaining multiple person households (16)
Single parent, only children 18+ (8)	In residential home (17)
Couple with other, without children (9)	Household unknown (99)

Information based on CBS (2015c).

Appendix I: criteria for the residential care co-payment low

1. You are staying in a residential care home for the first time. Or your last stay was more than 6 months ago. Then you pay a low co-payment for the first six months.
2. You are paying for the livelihood of your children for which you receive child support or if your children receive a student grant.
3. You live in a residential care home and your partner lives outside the residential care home.
4. You or your partner has a total home package (VPT), modular package home, or a personal budget for Wlz.
5. You have an indication for 4 to 6 days a week.
6. You have a declaration for returning to independent living.
7. You have an indication for care intensity package 10 (terminal care).

Criteria compiled based on information from the CAK (2016).