On children's motives to influence parents' long-term care insurance purchase[†]

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Abstract. Long-term care (LTC) is not only a concern for elderly individuals but also for their adult children. Therefore, they might have strong incentives to have their parents purchasing LTC insurance. This article investigates both the determinants and motives of adult children willingness to influence their elderly parents' LTC insurance purchase decision in Switzerland using data from a 2019 survey. We show that those individuals self-reporting interest about LTC insurance, living with their children and having provided informal help with personal care are more likely to influence their parents LTC insurance purchase than others. We also find that the motives to influence parental LTC insurance ownership can be classified either as altruistic, i.e. related to parental wellbeing, or as self-interested, i.e. related to the child's wellbeing. Whereas relatively poor respondents tend to influence their parents mainly for altruistic reasons, relatively rich individuals or expecting to pay large out-of-pocket LTC costs in case of dependency are more likely to influence their parents for self-interested motives.

Keywords: long-term care insurance, adult children, informal care, bequest

JEL codes: D19, G22, I13, J14

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1. Introduction

The ageing of populations in most industrialised countries is accompanied by an increase in the needs for long-term care (LTC), i.e. care for people dependent on help with their daily living activities. LTC is not only a concern for elderly individuals but also for their adult children (Courbage and Eeckhoudt, 2012). Therefore, adult children may take a considerable interest in whether and how their parents' LTC needs are covered. In particular, they might have strong incentives to have their parents purchasing LTC insurance for several reasons.

First, adult children are the main providers of informal care, which could be detrimental for their physical and mental health (Schulz and Beach, 1999) as well as for their employment participation (Moussa, 2019). Second, children may pay themselves for their parents' LTC expenditures, especially if they have the feeling they are compelled to take care of their dependent relatives (Klimaviciute et al., 2017). They may also become legally obliged to financially support their parents if they have exhausted their resources to cover their LTC needs. This is especially the case in countries such as Switzerland, Germany, France or Belgium, where their respective civil codes explicitly force adult children to assist their parents in need (Sayn, 2008). Hence, having parents purchasing LTC insurance covering the cost of formal care might relieve children for their informal care duties and allow them to avoid tapping into personal wealth to finance the possible LTC needs of their parent. In addition, LTC insurance makes possible for elderly parents to protect their children's future inheritance from the cost of LTC (Pauly, 1990).

While these motives are rather self-interested, adult children might also be attentive to their parents' LTC coverage for altruistic reasons simply because they are concerned about their elderly parents' wellbeing. Adult children might see insurance coverage as bringing useful and complementary services to their parents. Alternatively, they might also want to avoid to their parents the financial distress inherent to the event of needing LTC.

In this article we investigate both the determinants and motives of adult children willingness to influence their elderly parents' LTC insurance purchase decision in Switzerland using data from a survey carried out in 2019. This survey, amongst other things, focuses on the willingness and motives of middle aged individuals (40 to 65 years old) to encourage their parents to buy LTC insurance. It also contains information about the respondents' economic and professional situation, their sociodemographic characteristics, their attitude towards LTC risk and their support to elderly dependent relatives.

We are aware of only a few papers looking at the role of adult children in their elderly parents' LTC insurance purchase decision. Cohen et al. (2000) conduct a survey stressing that primary informal caregivers play an important role in the purchase of LTC insurance by their elderly relatives in the U.S. Related to this, Zhou-Richter et al. (2010) use a survey in Germany showing that the more adult children are informed about LTC risk, the more likely private LTC insurance is purchased, either by the adult children themselves on behalf of their parents or by the parents under the influence of their adult children. Sperber et al. (2014) carry out a survey in the U.S. showing that adult children could successfully influence their parents to purchase LTC insurance by framing insurance with respect to their values concerning autonomy for themselves and their children. On the theoretical side, Courbage and Eeckhoudt (2012) look at both the optimal levels of insurance and of informal care chosen by the child to protect his parent against LTC risks. They show that in the presence of child altruism, LTC insurance stimulates the offer of informal care.

The main contribution of our article is twofold. First, it identifies a set of variables that help to predict the interest of adult children in having their parents covered against LTC risk. Second, it investigates the main characteristics of the motives for children to influence their parents to purchase LTC insurance. No empirical study on this topic exists for Europe with the exception of Germany (Zhou-Richter et al., 2010). However, while Zhou Richter et al. (2010) focus on the role played by children's information about LTC risk, our article points out to multiple channels through which adult children could influence their parents' demand for LTC insurance.

We show that those individuals self-reporting interest about LTC insurance, living with their children and having provided informal help with personal care are more likely to influence their parents LTC insurance purchase than others. As for the motives to influence parental LTC insurance ownership, we find that they can be classified either as "altruistic", i.e. related to parental wellbeing, or as "self-interested", i.e. related to the child's wellbeing. We also find that whereas relatively poor respondents tend to influence their parents mainly for altruistic reasons, i.e. to avoid their economic ruin, relatively rich individuals or expecting to pay large out-of-pocket LTC costs in case of dependency are more likely to influence their parents for self-interested motives, i.e. to protect their bequest, to avoid providing informal care or to avoid their legal responsibilities towards their parents in need.

Our results can be useful both for policy makers and insurers as knowing the profile of those children willing to influence their parents' LTC coverage and their motivations might be useful for the specific design of public LTC policies and LTC insurance products.

This article is structured as follows. In Section 2, we present the dataset and the variables used. Section 3 empirically addresses the determinants of adult children' willingness to influence parents LTC insurance purchase, while sections 4 studies the motives of such a decision. Finally, some concluding remarks are provided in section 5.

2. Data and variables

2.1. Data and dependent variables

In February 2019, we ran a survey on a representative sample of adults residing in Switzerland aged between 40 and 65 years old. The survey covers several topics related to LTC financing including the determinants of private LTC insurance demand and informal care provision as well as the respondents' understanding about financial risks related to LTC. Respondents were also asked for their attitudes towards risk and the future, their socio-demographic characteristics and their professional and economic situation.

The survey contains information about 1'066 individuals with (by construction) 40% of individuals with non-dependent parents and 60% with dependent parents. To ensure an adequate representation of all the socio-demographic groups of interest, the sample was additionally stratified by gender, age group (3 categories) and linguistic region (2 categories). Given the nature of our research question, we restrict our final sample to those respondents having at least one parent or step-parent alive. This leaves us with a final dataset containing 881 observations.

The main dependent variable aims to capture the willingness of children to influence their (step-) parents' coverage against LTC risk by coding the answer to the following question:

Have you tried to influence or are you willing to influence your (step-) parents to subscribe a LTC insurance?

The answer to this question is binary and respondents could choose among the options "Yes" and "No". This question was asked at the end of the survey, when the definition of LTC insurance[1], the different concepts of LTC financing and the average amount of out-of-pocket LTC expenditures in Switzerland had been already presented to respondents. Those respondents who answered affirmatively to the previous question were additionally asked about the motives they had to influence their (step-) parents to subscribe a LTC insurance. They include:

- *I would like to avoid my (step-) parents' economic ruin.*
- *My (step-) parents' savings are not enough to pay for their LTC expenses.*
- *I could avoid the burden of providing care to my (step-) parents.*
- *I will protect my future bequest, by avoiding my (step-) parents to pay for formal care.*
- *I am legally responsible to help my (step-) parents if they do not have enough means.*

Answers are constructed as a Likert-type scale with 5 items, with item 1 being equal to *Totally Disagree* and item 5 being equal to *Completely Agree*. The first two motives can be qualified as "altruistic", since they reveal that adult children would like to influence their (step-) parents' to improve their welfare. The last three motives can be referred as "self-interested" since they reveal those respondents who would like to influence their (step-) parents to improve their own wellbeing. Naturally, individuals' preferences in practice could include a combination of both altruistic and self-interested motives (Andreoni, 1989).

2.2. Independent variables

To study the determinants of adult children's willingness to influence their (step-) parents' LTC insurance purchase, we consider the respondent's socioeconomic situation, family composition, parental LTC needs and individual preferences, as well as some other classical control variables.

We first start by considering various socioeconomic factors including the respondent's working status, highest level of education, revenues, main residence ownership and (step-) parents' level of wealth. This last variable is defined as the maximum wealth between the respondent's parents' and step-parents' wealth. The *a priori* direction of the socioeconomic gradient is not straightforward. For example, the legal obligation motive might be more present in the middle and middle-low classes while the bequest motive should be more present in the middle-high classes.

We also consider several variables describing the main characteristics of the respondents' family structure including marital status, number of individuals residing in the respondents' household, number of children younger than 18 living in the household and the frequency of the respondent's contacts with siblings. As indicated previously, influencing (step-) parents LTC coverage might be closely related to the degree of concern for the parents' wellbeing, the strength of family ties or the presence of young children in the household.

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[1] In the survey, LTC insurance is defined as "a complementary insurance that, against the payment of a premium, guarantees to the purchaser a financial protection in the future if she/he has difficulties carrying out activities of daily living".

Having a dependent parent as well as providing informal care by the respondent are also included as explanatory variables. We also consider the respondent's parent degree of dependency, the nature of informal care provided (ADL, IADL, administrative activities, etc.), the respondent's self-reported degree of physical and psychological burden when providing informal care and the pathologies faced by dependent parents, if any (i.e. mental disease, neurological pathology, etc.).

Finally, additional variables related to the preferences of the respondent and his perception of LTC financial risks are also considered. They include self-reported interest about LTC insurance, whether the respondent would like to be cared by the family in case of dependency (as a proxy of the individual's preference for informal care) and expectations about out-of-pocket LTC payments in case of dependency. The usual controls such as the respondent gender, age, nationality and self-reported health are also included. Detailed information about the variables considered is reported in Table 1, which contains the list of all the variables used in the empirical analysis and their brief description.

[INSERT TABLE 1 HERE]

2.3. Descriptive statistics

Table 2 provides some descriptive statistics of the dependent variable.

[INSERT TABLE 2 HERE]

In our sample, 27.1% of respondents replied that they tried to influence or are willing to influence their (step-) parents to subscribe LTC insurance. When it comes to the self-reported motives of surveyed individuals to influence their (step-) parents LTC insurance decisions, the two "altruistic" motives, i.e. avoiding the parents' economic ruin and insufficient savings, find the strongest support. Indeed, 77% and 65% of those respondents willing to influence their parents to purchase LTC insurance indicate to *Agree* or *Strongly Agree* with the first and second motive respectively. Much less support is found for the "self-interested" motives, i.e. to avoid the burden of helping them, to protect bequest or because children are legally responsible of their parents in case of necessity. Indeed, the rate of agreement (*Agree* or *Strongly Agree*) for each of these motives lies around 37%.

Table 3 provides additional descriptive statistics for all the sample and for the subsample of respondents willing to influence their parents to purchase a LTC insurance.

[INSERT TABLE 3 HERE]

Most respondents are employed, live in a rented accommodation and have a high school education level. Additionally, most individuals qualify their (step-)parents' wealth as low or very low. The monthly income distribution is relatively uniform with the modal class at CHF 3001-5000. Regarding the family characteristics, 56% of respondents live in a household with 1 or 2 individuals, around 60% are married and around one third co-resides with young children under the age of 18. Very few respondents have regular contact with their siblings. Concerning the variables related to the respondent parents' LTC needs, 42% of the surveyed declare to provide some form of informal help, among which 20% provide help with ADL (personal care) and 31% with IADL (practical household help). 41% of the surveyed (almost all of those who

provide care) declare to suffer from some burden related to informal help provision. Concerning the individual preferences, most of the interviewed report being aware that they will face some out-of-pocket expenditures in case of dependency. They mainly show few or a fair interest in LTC insurance. Finally, 80% of our sample is Swiss and only 13% of respondents declare to have a bad or very bad health.

The descriptive statistics of the subsample of those willing to influence their (step-) parents gives a first approximation of the relationship between the dependent and independent variables. Indeed, the size and sign of the difference in the means of the whole sample and the subsample is closely related to the degree and direction of the association between the dependent and the independent variables. The largest differences in means concern the variable *Interest in LTC insurance*, followed by the variables *number of co-resident children*, *help ADL* and *informal care burden*.

In the next sections, we first investigate the determinants of the respondents' willingness to influence their (step-) parents to purchase a LTC insurance. Second, we study the different motives to influence (step-) parents' LTC coverage.

3. The determinants of the willingness to influence parents' LTC insurance coverage

We first aim to shed light on the direction and magnitude of the relationship between the set of independent variables considered and the main dependent variable.

3.1. Econometric specification

We perform a series of probit regressions obtained from the following model:

$$WI_i = \alpha_j + \beta_1^j SOC_{j,i} + \beta_2^j FC_{j,i} + \beta_3^j LTC_{j,i} + \beta_4^j PRE_{j,i} + \beta_5^j CV_{j,i} + \varepsilon_{j,i} \qquad (1)$$

where the subscript j corresponds to each multivariate regression estimated and the subscript i is linked to the individual observations. WI_i is a binary variable quantifying respondent's i willingness to influence his/her (step-) parents to subscribe a LTC insurance. $SOC_{j,i}$ refers to the socioeconomic factors of Table 1 selected as independent variables for equation j. Similarly, $FC_{j,i}$ encompasses the variables selected related to family composition, $LTC_{j,i}$ those related to the respondent parents' LTC needs and $PRE_{j,i}$ those linked to the respondent's preferences. Finally, $CV_{j,i}$ includes the control variables selected for the model j and $\varepsilon_{j,i}$ is a set of random variables *i.i.d.* following a standard normal distribution.

The set of independent variables included into each specific model is obtained from the optimisation of the Bayes (BIC) or the Akaike (AIC) information criteria. More specifically, a variable is included in our model only if it decreases the selected criterion. This ensures that the selected variable improves the model's goodness of fit without raising substantially the risk of overfitting[2]. It should be stressed that the binary variable *LTC needs* is included in all regressions regardless the information criteria. This is done to control for the fact that dependent individuals are over-represented in our data due to the sampling design (see section 2.1). We

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[2] The BIC is defined as $\ln(N) K - 2\log\hat{L}$, where N is the sample size, K the number of parameters of a given model and $\log\hat{L}$ its log-likelihood. The AIC is defined as $2K - 2\log\hat{L}$. These criteria are minimized using the function "step" of the R statistical software.

additionally performed variance inflation factor (VIF) checks on all regressions. No high values were found for these tests, confirming the absence of multicollinearity issues in our results.

3.2. Empirical results

The numerical results of the different multivariate models calibrated from Eq. (1) are presented in Table 4. We report there average marginal effects (AME), i.e. the mean of all individuals' marginal effects for each variable or category.

[INSERT TABLE 4 HERE]

The model of the first column is the one minimizing the Bayes information criterion. It corresponds to the model with less parameters, as this criterion puts a stronger penalty when an additional variable is included in the specification. Therefore, by construction, the model optimizing the BIC displays the strongest determinants of the dependent variable.

Our first results indicate that self-reported interest about LTC insurance, having co-resident children (especially more than two) and providing informal care for ADL (personal care) are respectively the main determinants of being willing to influence (step-) parents to subscribe LTC insurance. Having the respondent's parent suffering from a cardiovascular disease is also a strong determinant of the dependent variable. The effect of self-reported interest about LTC insurance mirrors the results of Zhou Richter et al. (2010), who show that parents strongly increase their demand for LTC insurance if their adult children had purchased it for themselves. Following Zhou Richer et al. (2010)'s interpretation, self-interest about LTC insurance by adult children can be seen as a proxy for LTC risk awareness. Hence, those who are more aware about LTC risks are more likely to influence LTC insurance purchase by their parents. It means also that if one recognises the usefulness of LTC insurance for himself or herself it seems rather natural that he or she would find it useful for his or her parents. As for having co-resident children, it may leave less time and resources to middle age individuals to take care of their own elderly parents and then provides further incentives to influence them to purchase LTC insurance. Finally, providing informal help with personal care (ADL) is known to adversely impact the caregiver's physical and psychological health (Roth et al., 2015, Musich et al., 2007). Hence having parents purchasing LTC insurance covering the cost of formal care might relieve children for their informal care burden. This would explain why providing informal help with personal care is a strong driver of the decision to influence parent LTC insurance purchase.

The model of the second column corresponds to the one optimizing the Akaike information criterion. This specification includes more variables than the one of the first column, as the penalty of the AIC on the number of parameters is lower. The effect of informal care provision is slightly different in this second specification. As before, helping (step-) parents with their ADL is positively and significantly associated with the dependent variable. Moreover, the self-reported burden of informal care provision is now included in the model and has a significantly positive effect. However, after controlling for these two variables, providing help with IADL (i.e. practical household help) has, surprisingly, a negative and significant effect on influencing (step-) parents LTC coverage. As providing informal care for ADL is more intense than for IADL, it seems that influencing LTC insurance purchase would not be necessarily done to replace informal care but rather to reduce the burden of intense and painful care provision. Our findings are consistent with Bonsang (2008) who finds that informal care decreases the use of formal domestic help but complements paid personal care. Additionally, being a woman and

showing interest in planning the future have a weak positive effect on influencing (step-) parents, while being Swiss has a negative effect. Interestingly, neither the respondents' nor his/her (step-) parents' economic situation are associated with the dependent variable whatever the model considered. Finally, the binary variable *LTC needs* is also not significant at the usual confidence levels whatever the models of Table 4.

3.3. Robustness checks

In order to test the robustness of the first two columns' results, we performed four checks. In the first check, the models maximizing the BIC and AIC (columns 1 and 2 of Table 4) were estimated using a logit instead of a probit multivariate regression. Results are very similar both qualitatively and quantitatively although the fit is slightly better in the probit models. The second check consisted of testing the independent variables of Table 1 under different forms (e.g., linear in the cases of age and health, binary in the cases of income and parental wealth, categorical for informal care burden, etc.). The third check consisted of regressing the dependent variable on all the independent variables individually, in a series of simple regressions[3]. Finally, the fourth check controlled for the potential eligibility of elderly parent to LTC insurance.

The model of the last column corresponds to the specification maximizing the AIC consistent with the two last checks. To build the model of the third column, we allowed alternative definitions for the independent variables and checked the effect of those variables not included in the first two models that were significant in the univariate regressions. The only change with respect to the previous model is that the binary factor "Income > 9'000", corresponding roughly to the last decile of the Swiss net income distribution (FSO, 2020), is incorporated as a determinant and has a positive and significant effect. Hence, adult children with very high incomes are more likely to influence their parent LTC insurance purchase decision. This result could be explained by the fact that very high income individuals have a higher opportunity cost of providing informal care or have more resources available to pay themselves LTC insurance for their parents.

Finally, for the fourth check, we ran the third column's model on a subsample of respondents whose parents are not dependent or only need little help[4]. This allows to make sure that parents are eligible to LTC insurance because no already dependent. Our results do not change much in the last model. Self-reported interest about LTC insurance, having more than two co-resident children and informal care provision are still the strongest determinants of the dependent variable. Moreover, the sign and magnitude of these variables' coefficients are similar. However, the degree of significance of the variable *# co-resident children* and of those defining informal care provision is lower. Indeed, due to the large reduction in the sample size, standard errors are much higher.

4. The motives to influence parents' LTC coverage

After having looked at the determinants of respondents' willingness to influence their (step-) parents LTC insurance coverage, we now focus on the respondents' self-reported motives to

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[3] The results of the logit models and the simple regressions are available upon request.
[4] We follow Klimaviciute et al. (2019) and consider a respondent to have "healthy" parents if he/she declares not to have a parent with 2 or more limitations in activities of daily living. The threshold of 2 limitations is largely used to qualify for LTC insurance benefits and public support (Frank, 2012; Courbage et al., 2020).

influence parental LTC insurance purchase. In particular, we study the relationship between the five motives to influence LTC coverage presented in section 2.2 and the profile of those respondents who tend to agree with the "altruistic" versus the "self-interested" motives.

The descriptive statistics (see Table 3) indicate that respondents largely agreed with the first two motives, i.e. avoiding the parents' economic ruin and insufficient savings, while their degree of agreement was lower for motives three to five, i.e. avoiding to provide informal care, the bequest motive and the legal responsibility motive.

To further study the relationship between the set of motives, we compute the covariance and correlation matrices of the respondents' degree of agreement on the different motives. The individuals' degree of agreement is quantified by coding from 1 to 5 their different answers, with 1 corresponding to the lowest degree of agreement (Totally disagree) and 5 to the highest (Strongly agree). Therefore, we assume that the degree of agreement as defined by this measure is approximately continuous. The motives' covariance and correlation matrices are displayed in Table 5.

[INSERT TABLE 5 HERE]

In general, the intensity of agreement across the different motives is positively correlated, with the exception of "Insufficient savings" and "Avoid help", which correlation is negative but very low. This implies that in general respondents tend to agree (or disagree) together with the five motives. From Table 5, we also easily distinguish two groups. On one side, we have the altruistic motives "Avoid Ruin" and "Insufficient savings" with a correlation of 43%. On the other side, we have the self-interested motives "Avoid Help", "Bequest" and "Legal Responsibility" which correlation lies between 23% and 46%. The correlation between elements of the different groups is, instead, much lower.

In a second step, we perform a Principal Components Analysis (PCA) on the covariance matrix of Table 5. The objective is double. First, it allows to further study the relationship existing between the five motives. Second, it allows to study the profile of respondents agreeing to a specific group of similar motives, either altruistic or self-interested. A summary of the different motives' PCA is displayed in Table 6.

[INSERT TABLE 6 HERE]

We focus on the first two dimensions of the PCA, which explain around 60% of the total variance. According to Table 6, their corresponding principal components are:

$$Z_1 = \quad 0.2661\, Y_1 + 0.1295\, Y_2 + 0.9563\, Y_3 + 1.1217\, Y_4 + 0.9123\, Y_5$$
$$Z_2 = \quad 0.8439\, Y_1 + 0.9708\, Y_2 - 0.0560\, Y_3 - 0.1230\, Y_4 - 0.1740\, Y_5$$

where $Y_k \in [Y_1, \dots, Y_5]$ corresponds to the degree of agreement on the kth motive. The first principal component Z_1 is the variable which variance is the highest. As all the coefficients are positive, Z_1 can be interpreted as the degree of agreement on the five motives in general. An individual with a high (low) value of Z_1 will tend to agree (disagree) with the five motives all together. The second component Z_2 has positive coefficients in the first two variables (Avoid Ruin and Insufficient Savings) and negative coefficients in the others (Avoid Help, Bequest and Legal Responsibility). The component Z_2 mirrors the two groups of motives identified previously, i.e. the "altruistic" and "self-interested" motives. Individuals with high Z_2 will tend

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to influence their (step-) parents' insurance coverage thinking of their elderlies' interest while individuals with low Z_2 thinking on their own interest.

The first principal component does not tell much about the similarities and differences between the five motives. However, by studying the determinants of the second principal component Z_2, we can unveil the profile of those respondents being willing to influence their step-parents for "altruistic" rather than "self-interested" motives. To that aim, we regress the second principal component Z_2 on a set of covariates selected, as in the previous subsection, from the optimisation of the Akaike Information Criterion (AIC) after checking them under different forms. The results of this linear regression model are displayed in Table 7.

[INSERT TABLE 7 HERE]

The coefficient corresponding to "Other" in the variable "Working Status", which includes mainly unemployed people and homemakers, is negative which implies that this group of population would be more willing to influence their (step-) parents to purchase LTC insurance for self-interested motives than those retired or active. Respondents who expect to pay large out-of-pocket LTC costs in case of dependency also seem to agree more with the self-interested motives. In addition, the variable "Housing" (with owner as a reference) has a positive coefficient while the effect of parental wealth is negative. This indicates that respondents whose parents' or own wealth is large also tend to be more willing to influence their (step-) parents' LTC coverage for self-interested reasons.

The effect of the working status is driven by the fact that unemployed and mainly homemakers are those assuming the greatest responsibility if their parent become dependent. This seems confirmed by the fact that this group of respondents strongly agrees with the legal responsibility motive. Our results also show that economic factors affect the motives of being willing to influence (step-) parents' LTC coverage. In particular, the degree of agreement on altruistic versus self-interested motives to influence (step-) parents' LTC coverage is strongly correlated with the respondent economic situation and expectations of out-of-pocket LTC costs. Whereas relatively poor respondents will tend to influence their parents for altruistic reasons, i.e. to avoid their economic ruin, relatively rich individuals report a lower degree of agreement for this group of motives. In particular, wealthier respondents are much less in agreement with the "Insufficient savings" motive. Finally, respondents expecting large out-of-pocket costs would be more worried for their future bequest, which explains the negative effect of this variable on the principal component.

5. Concluding remarks

In this paper, we explore the determinants of adult children's willingness to influence their elderly parents' LTC coverage in Switzerland and their motives using data from a survey carried out in 2019.

Our results show that 27% of respondents are willing to influence their parents to subscribe LTC insurance. We find that reporting self-interest for LTC insurance, living with children under 18 and providing informal care for ADL (personal care) are the strongest determinants of the willingness to influence (step-) parents' LTC insurance decisions. Hence, those who are more aware about LTC risks (proxied by self-interest about LTC insurance) are more likely to influence LTC insurance purchase by their parents. But also recognising personally the usefulness of LTC insurance is strongly related to influencing others to purchase it. Having

young children is likely to increase the opportunity cost of informal care as people with children might have less time available to take care of their elderlies. Providing informal help with personal care (ADL) is known to be time consuming and to adversely impact the physical and psychological health of children caregivers (Roth et al., 2015, Musich et al., 2007). Hence, having parents purchasing LTC insurance covering the cost of formal care might relieve children for their informal care duties. Actually, our results show that influencing parent LTC insurance purchase would not be necessarily done to substitute informal care by formal care but rather to reduce the burden of intense and painful care provision. Finally, individuals with very high net incomes (i.e. greater than CHF 9'000 per month) also show a significantly higher willingness to influence their parents' LTC insurance coverage. An explanation would be that adult children with large revenues have a high opportunity cost of providing informal care or that they can afford to pay for their parents' LTC insurance premiums.

When it comes to the motives to influence (step-) parents' LTC coverage, we find that they can be grouped according to an "altruistic" versus "self-interested" component. Most respondents willing to influence their (step-) parents' LTC coverage do it for altruistic reasons, i.e. for which the interest of the elderly prevails over that of the child. Finally, we find that the motives to influence (step-) parents LTC coverage have a socio-economic gradient, as relatively poor respondents tend to influence their parents mainly for altruistic reasons, while relatively rich individuals or expecting to pay large out-of-pocket LTC costs in case of dependency are more likely to influence their parents for self-interested motives.

Our results offer various insights when it comes to managing LTC risks. A first insight is that LTC insurance is mainly seen as a tool that is beneficial to elderly parents in the face of LTC risks and this is the mean reason why children would influence parents LTC insurance purchase. Second, knowing the profile of those children willing to influence their parents' LTC coverage and their motivations might be useful for the specific design of LTC financing policies. Indeed, our results indicate that one way to increase private LTC insurance amongst elderly parents could be to directly target adult children with the relevant profiles (and whose parents are eligible), and to stress the various benefits for them of having their parents insured for LTC risks. This may also create a spillover effect in which adult children could consider LTC insurance as an option for themselves opening the path to contract LTC insurance at younger ages when the cost is lower and the premiums are more attractive.

There are some limitations to this study that need to be pointed out. First, as in the case of many survey-based studies, our work is observational in nature, meaning that estimates could be driven by omitted variables, although we have done our best to control for most variables. The second limitation is that the survey's respondents expressed above all their willingness to influence insurance purchase which may not necessarily reflect the real decision to influence parent's decision or may not necessarily lead to LTC insurance purchase by the parent. Finally, respondents are aged between 40 and 65 years old whom parents may be very old or already dependent, and therefore not eligible to LTC insurance or facing very high premiums. While we partially control for this issue, it could create a potential bias in survey's answers should the respondent be aware of such information. However, these limitations should not seriously modify our results which, we hope, contribute to better understand the interest adult children take in how their parents' LTC needs are covered.

Appendix 1: Tables

Table 1
Variables used and description

	Variable	Question in the survey	Answers / Categories
	Dependent variable		
1	Willingness to influence	Have you tried or are you willing to influence your (step-) parents to subscribe a LTC insurance?	Yes, No
	Socioeconomic factors		
2	Working status	What is your current profession?	Employed, retired, other
3	Education	What is your highest level of education?	Mandatory, high school, and higher education
4	Income	What is your monthly net income?	≤3000, 3001-5000, 5001-7000, 7001-9000, >9000, DK
5	Housing	Concerning your main residence, are you…	Tenant, owner, other
6	(Step-) parent's wealth	How do you estimate your (step-) parents' net wealth?	Very low, low, high, very high
	Family characteristics		
7	Household members	How many people are there in your household including you?	1, 2, 3, 4 or more
8	Married	What is your civil status?	Married, Not Married
9	# of co-resident children	How many children younger than 18 are there in your household?	0, 1, 2 or more
10	Contact with siblings	During the last 12 months, how often have you contacted your siblings? Think only about the person you contacted the most often if you have several siblings.	Never, less than every two weeks, every two weeks, weekly, several times a week, daily
	Parent LTC needs		
11	LTC needs	During the last 12 months, did any of your (step-) parents have any difficulty to carry out independently a daily living activity (take a bath or a shower, go to the toilet, to get dressed…)?	Yes, No
12	Intensity of dependency	With how many daily living activities does your (step-) father / mother have functional limitations?	0, 1, 2, 3, 4 or more
13	Activity	With which activities (ADL, IADL, administrative tasks or emotional support) have you helped your (step-) father / mother during the last twelve months?	Matrix with 4 variables. Yes, No.
14	Informal care burden	Self-reported burden of informal care, built from an index composed by 7 questions.	Scale. 0, 0.5, 1, 1.5, … ,7
15	Pathology	Do / did any of your (step-) parents suffer from any of the following diseases: a mental, musco-skeletal, cardiovascular or neurological problem or cancer?	Matrix with 5 variables. Yes, No
	Preferences		
16	Out of pocket LTC costs	If you became dependent, how much do you think you will have to pay out-of-pocket for LTC?	Nothing, little part, important part, almost all, DK
17	Interest in LTC insurance	Are you interested on subscribing a LTC insurance?	Not at all, few interest, fair interest, strong interest
18	Help with ADL by family	If you became dependent, would you like receive personal care from relatives, neighbours or friends?	Yes, No
19	Planning	In general, are you interested on planning the future?	Scale 1-10
20	Risk Aversion	In general, are you a person willing to take risks?	Scale 1-10
	Control Variables		
21	Language	Language of the questionnaire	German, French
22	Gender	You are a…	Male, Female
23	Swiss	Which is your nationality? In case of double-nationality, please indicate your nationality at birth.	Non-Swiss, Swiss
24	Age	How old are you?	40-45, 46-50, 51-55, 56-60, 61-65
25	Health	How do you perceive your own health status in general?	Very bad, bad, fair, good, very good

Table 2

Percentage of respondents willing to influence their (step-) parents to purchase LTC insurance and their motivations

	% of N	% of N				
Willingness to influence						
YES	27.13%					
NO	72.87%					
Motivation to influence		Strongly agree	Agree	Neutral	Disagree	Totally disagree
Avoid (step-) parents' ruin		52.72%	24.69%	14.23%	4.60%	3.77%
Insufficient parental savings		41.00%	23.85%	22.18%	10.46%	2.51%
Avoid providing help		17.15%	21.34%	30.96%	14.64%	15.90%
Bequest motive		15.48%	20.50%	28.03%	12.97%	23.01%
Legal responsibility		17.57%	20.92%	24.27%	16.74%	20.50%
Size of the sample (*N*)	881			239		

Table 3

Descriptive statistics (mean) for all the sample and for the subsample of respondents willing to influence

	All	*Willing*		*All*	*Willing*		*All*	*Willing*
Dependent variable								
Willingness to influence								
Yes	0.729	1						
No	0.271	0						
Socioeconomic factors								
Working status			**Income**			**Housing**		
Employed	0.781	0.808	3'000 or less	0.118	0.100	Tenant	0.654	0.611
Retired	0.065	0.059	3'001 - 5'000	0.230	0.213	Owner	0.334	0.377
Other	0.154	0.134	5'001 - 7'000	0.199	0.197	Other	0.013	0.013
Education			7'001 - 9'000	0.133	0.130	**(Step-) parents' wealth**		
Mandatory	0.060	0.067	More than 9'000	0.134	0.201	Very low	0.120	0.180
High school	0.577	0.502	DK	0.186	0.159	Low	0.497	0.498
Higher education	0.363	0.431				High	0.284	0.289
						Very high	0.019	0.034
Family characteristics								
Household members			**Married**			**Contact with siblings**		
1	0.217	0.143	No	0.389	0.331	Never	0.176	0.188
2	0.342	0.326	Yes	0.611	0.670	Less every 2 weeks	0.324	0.272
3	0.179	0.193	**# co-resident children**			Every two weeks	0.141	0.096
4 or more	0.262	0.339	0	0.669	0.557	Weekly	0.159	0.176
			1	0.152	0.036	Several times a week	0.146	0.176
			2 or more	0.179	0.255	Daily	0.055	0.092
Parent LTC needs								
LTC needs			**Help ADL**			**Mental**		
No	0.351	0.289	No	0.792	0.686	No	0.863	0.829
Yes	0.649	0.711	Yes	0.208	0.314	Yes	0.137	0.172
Intensity of dependency			**Help IADL**			**Musco**		
No dependent	0.351	0.289	No	0.694	0.632	No	0.644	0.615
1	0.156	0.142	Yes	0.307	0.368	Yes	0.356	0.385
2	0.144	0.138	**Help admin**			**Cardio**		
3	0.127	0.151	No	0.740	0.686	No	0.773	0.690
4 or more	0.225	0.280	Yes	0.260	0.314	Yes	0.227	0.310
			Help company			**Neuro**		
			No	0.702	0.649	No	0.929	0.908
			Yes	0.299	0.352	Yes	0.072	0.092
			Informal care burden			**Cancer**		
			= 0	0.589	0.498	No	0.959	0.962
			Conditional to > 0	1.236	3.267	Yes	0.041	0.038
Preferences								
OOP LTC costs			**Interest in LTCI**			**Help ADL family**		
DK	0.125	0.121	Not at all	0.150	0.029	No	0.484	0.427
Nothing	0.209	0.159	Few	0.436	0.339	Yes	0.517	0.573
Little part	0.252	0.259	Fair	0.346	0.511	**Planning**	7.518	7.799
Important part	0.254	0.272	Strong	0.068	0.121	**Risk aversion**	5.645	5.870
Almost all	0.160	0.188						
Control variables								
Language			**Age**			**Health**		
German	0.670	0.682	40-45	0.309	0.381	Very bad	0.015	0.013
French	0.330	0.318	46-50	0.220	0.218	Bad	0.115	0.100
Gender			51-55	0.221	0.176	Fair	0.321	0.389
Male	0.499	0.490	56-60	0.144	0.164	Good	0.403	0.372
Female	0.501	0.511	61-65	0.106	0.092	Very good	0.146	0.126
Swiss								
Not Swiss	0.193	0.268						
Swiss	0.807	0.732						
N	881	239		881	239		881	239

Table 4
Multivariate probit models (average marginal effects)

Dependent variable: Willingness to influence	Model 1 (BIC)	Model 2 (AIC)	Model 3 (AIC alternative)	Model 4 ("Healthy" parents)
Income (ref: Less than 9'000)				
More than 9'000	–	–	0.103** (0.043)	0.105* (0.062)
DK	–	–	0.011 (0.037)	0.043 (0.051)
# of co-resident children (ref: 0)				
1	0.081** (0.040)	0.081** (0.040)	0.082** (0.040)	0.034 (0.040)
2 or more	0.162*** (0.039)	0.164*** (0.039)	0.155*** (0.039)	0.134** (0.039)
LTC needs (ref: No)	−0.003 (0.035)	−0.021 (0.038)	−0.024 (0.037)	−0.026 (0.053)
Help ADL (ref: No)	0.124*** (0.040)	0.113** (0.048)	0.110** (0.048)	0.210 (0.174)
Help IADL (ref: No)	–	−0.099** (0.040)	−0.104*** (0.039)	−0.134** (0.062)
Informal care burden (linear)	–	0.015** (0.006)	0.016*** (0.006)	0.026* (0.014)
Cardio (ref: No)	0.093** (0.038)	0.107*** (0.038)	0.105*** (0.038)	0.075 (0.085)
Planning	–	0.013* (0.007)	0.012* (0.007)	0.003 (0.009)
Interest in LTCI (ref: No)				
Few	0.158*** (0.028)	0.156*** (0.029)	0.157*** (0.029)	0.157*** (0.033)
Fair	0.341*** (0.034)	0.330*** (0.034)	0.324*** (0.034)	0.333*** (0.041)
Strong	0.416*** (0.066)	0.418*** (0.066)	0.418*** (0.066)	0.386*** (0.089)
Gender (ref: Male)	–	0.050* (0.028)	0.058** (0.028)	0.023 (0.038)
Swiss (ref: Non-Swiss)	–	−0.071* (0.036)	−0.073** (0.036)	−0.039 (0.052)
N	881	881	881	446
Pseudo R^2 †	10.93%	11.63%	11.83%	7.70%
AIC	917.36	910.19	908.06	444.94
BIC	960.39	977.12	984.55	510.55

Robust standard errors are reported in parentheses.
*The significance levels of the two-tailed hypothesis test are coded as follows: * significance at 10% level,*
  *** significance at 5% level, *** significance at 1% level.*
† *Mc. Fadden's adjusted pseudo R*

Table 5
Covariance (left) and correlation (right) matrix of the different motives' degree of agreement

	Avoid ruin	Insufficient savings	Avoid Help	Bequest	Legal Resp.	Avoid ruin	Insufficient savings	Avoid Help	Bequest	Legal Resp.
Avoid Ruin	1.165					1				
Insufficient Savings	0.522	1.272				0.428	1			
Avoid Help	0.227	−0.021	1.681			0.162	−0.014	1		
Bequest	0.118	0.073	0.830	1.877		0.080	0.047	0.468	1	
Legal responsibility	0.108	0.040	0.409	0.595	1.907	0.072	0.026	0.229	0.315	1

Table 6
Principal Component Analysis on the degree of agreement for the different motives (eigenvectors on the columns)

	t_1	t_2	t_3	t_4	t_5
Avoid Ruin	0.2661	0.8439	−0.0080	0.2441	−0.5634
Insufficient Savings	0.1295	0.9708	0.1107	−0.2368	0.4892
Avoid Help	0.9563	−0.0560	−0.5608	0.6186	0.2425
Bequest	1.1217	−0.1230	−0.3531	−0.6697	−0.1494
Legal Responsibility	0.9123	−0.1740	1.0086	0.1374	0.0244
Eigenvalues	3.09	1.70	1.47	0.97	0.64
% of variance	39.30	21.65	18.67	12.27	8.11
cumulative % of variance	39.30	60.95	79.61	91.89	100

Table 7
Linear regression on the motivations of being willing to influence

Dependent variable: Second principal component (Z_2)	
(Intercept)	−0.233
	(0.482)
Working status (ref: Active)	
Retired	0.033
	(0.330)
Other (incl. unemployed, homemaker…)	−0.709***
	(0.223)
Housing (ref: Owner)	0.275*
	(0.159)
(Step-) parent's wealth (ref: Very Low)	
Low	−0.575***
	(0.219)
High	−0.900***
	(0.241)
Very high	−1.506***
	(0.475)
Help company (ref: No)	0.565***
	(0.168)
Cardio (ref: No)	−0.413**
	(0.167)
Neuro (ref: No)	−0.841***
	(0.276)
OOP LTC costs (ref: Nothing or little part)	
Important part or Almost all	−0.472***
	(0.169)
Don't know	−0.046
	(0.249)
Interest in LTCI	0.337***
	(0.108)
Language (ref: German)	−0.311*
	(0.164)
Health (ref: Very bad or bad)	0.535**
	(0.239)
Adjusted R^2 †	23.77%
AIC	758.18
BIC	813.80

Robust standard errors are reported in parentheses.
The significance levels of the two-tailed hypothesis test are coded as follows:
* significance at 10% level, ** significance at 5% level, *** significance at 1% level.

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