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Complexity and benefit take-up: Empirical evidence from the Finnish homecare allowance

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ABSTRACT

We analyse to what extent the complexity of benefit rules affects take-up in a setting where the effects of complexity can be separated from other potential causes of non-take-up. The benefit we study is extensively used by individuals from all socioeconomic groups, namely the municipal supplement to the child homecare allowance in Finland. We use individual-level data on mothers of young children together with municipal-level data on the application rules for the benefit. Variation in the supplement rules between municipalities and over time is used to estimate the causal effect of complexity on take-up. We find in a differences-in-differences setting that complexity has a very large effect on take-up. Complex application procedures cause individuals to forego a benefit of approximately 200 € per month, potentially for 2 years.

JEL Classification: I38, H31, H53

Keywords: benefit take-up, complexity, childcare

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1. **Introduction**

The take-up of welfare programmes is usually less than perfect, and non-take-up can be caused by transaction costs of applying for the benefit, lack of information or awareness about the programme, or by stigma associated with benefit receipt (Currie 2006). Transaction costs are likely to depend on the complexity of application procedures. Complexity may affect take-up decisions when individuals are perfectly rational; in this case, individuals carry out a cost-benefit calculus of whether applying for the benefit pays off. Complexity may limit take-up also due to psychological frictions (e.g. Bhargava and Manoli 2016). In the latter case, complexity may have adverse effects on efficiency (e.g. providing costly incentives that do not have the desired effects on behaviour if individuals do not respond to complex incentives). Complexity may also affect the income distribution (e.g. if poor people are ill-equipped to deal with complexity – Shah et al. (2012) discuss potential reasons). If complexity implies that some individuals who are entitled to benefits do not apply for them, complexity may harm the most vulnerable individuals in society. On the other hand, complexity may also serve a useful purpose in screening ineligible applicants (Kleven and Kopczuk 2011).

We analyse the causal effect of the complexity of application rules and procedures on benefit take-up. The type of complexity that we analyse relates to the practices used to determine individuals' eligibility for benefits – how many forms one needs to fill out, how many pieces of information to report, and so on. This may cause hassle costs, as well as informational complexity, if rules are hard to understand. We study the effects of complexity in the context of childcare benefits in Finland. If a parent takes care of a child under the age of 3 at home (after 9 months of parental leave), he or she is eligible for child homecare allowance. In addition, some municipalities pay a municipal supplement to the homecare allowance, and the eligibility rules and application procedures for the municipal supplement vary a great deal between municipalities and over time. We utilize individual-level register data on benefit receipt, income and employment for all Finnish mothers, combined with a unique, self-collected municipal-level dataset on the rules and procedures for applying for the municipal supplement between 1995-2014.

The setting that we study has several desirable features when examining complexity as a determinant of benefit take-up: First, we have well-defined measures of complexity of the application procedure, and there is exogenous and exceptionally rich variation in these measures (based on place of residence). Second, welfare stigma (see e.g. Moffitt 1983) is likely not a concern, as applying for the benefit does not require a visit to the benefit office, the benefit is not means-tested, and it is utilized by individuals from a wide variety of backgrounds. The latter feature also implies that we can analyse possible heterogeneities in the effect of complexity according to individual background characteristics, and we can therefore assess the implications of complexity for equity. Finally, in our setting eligibility is easy to ascertain, and we focus on studying take-up among eligibles. Therefore possible claims by ineligible individuals are not an issue in our setting.

To our knowledge, this combination of features is unique in the literature, and allows us to study the causal effect of the complexity of application procedures on take-up and the amount of benefits that are left unclaimed (i.e. "money left on the table"). Despite the special features of the program that we study, similar eligibility criteria are present in many welfare and social insurance programs in other countries. Complexity is often a necessary side-product of determining who is eligible for a given benefit and who is not (Kleven and Kopczuk 2011).

Our paper is complementary to earlier studies on the effects of different types of policies on benefit take-up. Alatas et al. (2016) report results from a field experiment studying the effect of the cost of applying for conditional cash transfers in Indonesia. In their case, the application cost takes the form of time spent travelling to a registration site, whereas we look at non-take-up caused by details of the application procedure itself.[1] They observe lower take-up for those with higher costs, and the reduction in take-up comes from screening away ineligible applicants, whereas we look at the determinants of take-up among eligible individuals. Similarly, Deshpande and Li (2017) examine the effect of application costs for the targeting of disability benefits in the U.S. Variation in application costs in their study comes from field office closings, and the effect comes from increased congestion at nearby offices. Another closely related paper is Bhargava and Manoli (2015), who analyse effects from randomized mailings that provide information to individuals who are eligible to EITC, but have not applied for it. Their paper differs from ours in focusing on informational complexity, while the actual application procedure in their case is the same for everyone. Relatedly, Matikka and Paukkeri (2016) study the effect of information mailings on the take-up of a new pension benefit in Finland.

Our results indicate that the complexity of application procedures has a large and highly significant and robust effect on take-up. We analyse take-up among eligible individuals who are already on homecare allowance, so the question is only whether they take up the municipal supplement or not (i.e. we are not studying the labour supply decision). In particular, in some municipalities, the municipal supplement is applied for jointly with the main part of homecare allowance, e.g. simply by ticking a box in the application form, so that no separate application process is required. This is the simplest type of application procedure in our setting. This type of joint application, in contrast to having to go through a separate application process, increases take-up by about 40 %-points. Therefore having even a small hassle cost – the requirement to fill out and submit a separate form / forms with relatively straight-forward individual information – is highly detrimental for take-up. This can be contrasted with the effect of financial incentives (size of benefit entitlement), which we find to be small or non-existent on average.

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[1]Currie and Grogger (2002) provide related evidence from the context of healthcare, studying the effect of administrative reforms (e.g. shortening and simplifying application forms) on the use of prenatal care on Medicaid-eligible women. Aizer (2007) analyzes the effects of administrative reforms (e.g. providing bilingual community-based application assistance) on Medicaid take-up in California. In the context of food programmes, Bitler et al. (2003) find that requiring more frequent visits to the WIC office lead to lower participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Currie and Grogger (2001) studied the effects of lower transaction costs (longer re-certification intervals) on the take-up of the Food Stamps programme.

To provide further support for the notion that the relatively low take-up in the municipalities that require a separate application process is indeed caused by complexity, we turn to analyse the mechanisms behind this result. We focus on municipalities that have a separate application process, and analyse the effect of implementing additional eligibility requirements on take-up (conditional on eligibility). Having an additional requirement typically means more complexity in the sense that one needs to fill out an additional form or provide proof that the requirement is met. We find evidence that lower take-up is indeed related to more complex application procedures.

The paper proceeds as follows. The relevant features of the Finnish childcare system are described in Section 2. The data is described in Section 3. Section 4 discusses the methodology and presents results on the effect of having a joint vs. separate application process for the municipal supplement. Section 5 examines the mechanisms that cause low take-up in municipalities with a separate application process. Section 6 concludes.

2. The Finnish childcare system

2.1 Finnish childcare institutions

The Finnish childcare system provides financial assistance to parents starting from the birth of a child. Most mothers take up a generous maternity leave, which ends when the youngest child is 9 or 10 months old. After the maternity leave, parents can continue to take care of the child themselves. When a young child is cared for by a parent, he or she is entitled to the child homecare allowance (HCA). All children who are not in public or private day care and are between 9 months and 3 years old are eligible for this allowance. The HCA may be paid to either parent, although it is predominantly the mother who uses the allowance.

The amount of homecare allowance a family is eligible for depends on the family's characteristics and ranges from 300 to 700 euros per month. There is a fixed amount of 255 to 315 euros per month (depending on the year), which does not depend on income. There is a means-tested part targeted at low- to medium-income families, not exceeding 180 euros per month. Additionally there is a sibling extra, which is 60 to 100 euros per month per sibling cared for at home. On top of these allowances, some municipalities provide supplements to the HCA.

If a parent receives the HCA, she or he may not receive other forms of childcare support (public or private day care) for the same child. This feature rules out the use of the HCA for financing private day care. A parent taking up the HCA can, after the HCA period ends, return to the same job that he or she left.

If parents choose not to take care of their children themselves, they can place their children in public or private day care. Both day care options are subsidized by the government. Public day care is the predominant choice of day care in Finland, especially for children aged three years or

above. Every child under the age of 7 (when they start primary school) is entitled to a place in public day care if their parents request it. A child can be placed in public day care even if neither of the parents is employed.

Private day care is subsidized by the private day care allowance and some municipalities provide a municipal supplement to the private day care allowance. Even with these allowances and supplements, in the majority of cases private day care is more expensive than public day care. Thus private day care has not been very popular in Finland.

2.2 Municipal supplements to the homecare allowance and complexity of application procedures

The national HCA is administered by and paid through the Social Insurance Institution of Finland (SII). Some municipalities pay a supplement on top of the national HCA while other municipalities have no supplement policy. Those municipalities that do have a supplement implement a wide variety of rules and application procedures. Many municipalities have changed their supplement policies during the time that we study. This variation in the application procedures for the municipal supplement is at the heart of our analysis.

The municipal supplement is typically a fixed amount that depends on the age of the youngest child and the number of children in the family, and on the condition that the child is cared for at home. Thus the supplement increases the incentives to stay outside of the labour force.[2] The amount of the supplement typically does not depend on family income. However, both the amount of the supplement and the child-age threshold vary by municipality.

The variation in application procedures utilized in this study comes from municipalities changing their supplement rules and application procedures over time. This allows us to compare take-up decisions of similar mothers living in different municipalities, before and after such changes in application procedures take place. The simplest application procedure is one where the municipal supplement is applied for directly through the SII, jointly with the national HCA itself. In this case, there is no separate application process for the municipal supplement, and the application process is thus very simple (e.g. just ticking a box on the application form that one has to fill out in any case to receive the national HCA).

However, in cases where municipalities want to implement some additional restrictions for the receipt of the supplement, the parents have to apply for the supplement from the municipal benefit office. This separate application process features increased complexity in the sense that it involves filling out additional forms and providing proof that the additional eligibility criteria set by the municipality are fulfilled. The additional requirements may also result in increased

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[2] Kosonen (2014) has used variation in the amount of municipal supplement to study mothers' labour supply responses.

informational complexity. A key eligibility criterion implemented by a number of municipalities is the prior work condition, which requires that the eligible parent had a job prior to having the child. Other examples of additional eligibility criteria are a condition that the parent should not be at work while receiving HCA (a condition that is fulfilled in nearly all cases); and a condition that none of the children in the family should be in municipal day care (i.e. it should not be the case that the mother is on HCA with one child, but her other children are in public day care; this condition is also fulfilled in most cases).

In the take-up analysis, we naturally account for the financial incentives created by the municipal supplement. A typical supplement is under 200 euros per youngest child per month plus a sibling extra of 50 euros per month (provided there are older siblings). Thus the typical variation in incentives is that a mother is eligible to a supplement of 100 to 250 euros on top of the HCA.

The eligibility rules for municipal supplements are municipality-specific. In other words, all those living in a municipality who fulfil the eligibility criteria of that municipality, are eligible for the supplement. We observe the eligibility rules and have corresponding information in the micro data, like the age of the youngest child and older siblings and information on work history. Thus we code into the data an individual-level variable indicating whether a mother is eligible for a supplement, and if so, what is the amount that she would be entitled to.

The municipal supplement system has been part of the Finnish childcare system since the 1980s. In this study, the observation period stretches from 1995 to 2012. Over this period, there were around 450 municipalities in Finland. Five of them had adopted a supplement policy in 1995 and the figure had increased to 65 by 2005.

3. Data

Our data covers the years 1995-2014. We have annual, individual-level linked employer-employee data on all Finnish mothers, with information on earnings and other relevant variables, including homecare allowance and municipal supplements received. The fact that the data is at the annual level causes some inaccuracy in the measure of eligibility for municipal supplements. In particular, eligibility in many cases depends on the age of the child, but we only observe the child's age at the end of the year. In most cases, the age limit is between 2 and 3 years. To be conservative about our eligibility measures, we restrict attention to mothers of children who are between 12 and 23 months old at the end of the year.

Second, we have annual municipal-level data on the eligibility rules and application procedures for the municipal supplement to the homecare allowance. A key complexity measure that we focus on is whether the municipal supplement was paid to eligible mothers directly through the SII ("joint application"; this is the simplest procedure). We also have information on the number and type of different eligibility criteria that were in place in a given municipality in each year.

There are altogether over 9000 municipality-year observations in the data, out of which 1079 had a supplement in place, and the application procedures varied considerably between municipalities and over time. The variation in municipal supplements (among those municipalities that had a supplement policy) and application procedures is described in Table 1. The mean supplement amount was 163 € per month, and there are 328 times (municipality-year observations) when the supplement amount has been changed during the observation period (column 2 in Table 1). In 449 cases out of the 1079, the supplement was applied for jointly through the SII, and there are 125 cases when there is a change in whether joint application was possible (column 4 in Table 1). Finally, 628 municipality-year observations have some additional eligibility criteria (in addition to age restrictions) associated with the application process, with a maximum of 7 different additional criteria in place.

Table 1. Variation in application procedures for municipal supplement

Stats	(1) Supplement amount	(2) Change in supplement amount	(3) the SII	(4) Change in the SII	(5) Number of additional criteria
Mean	163	125	1	1	4
Max	314	314	1	1	7
N	1079	328	449	125	628

The data allows us to calculate an eligibility measure at the individual level, since we have information on the age of children, as well as other variables that can be used to determine eligibility depending on the actual rules in place in a given municipality. Regarding the prior work condition that is in place in many municipalities, we do not observe prior employment directly, but we use information on the mother's earnings prior to the birth of the child to form a proxy of prior employment status[3]. As for the other common condition, that none of the child's siblings should be in public day care either, this is something that we do not observe in our data (even though it is easy for the municipal benefit office to ascertain). However, we check the robustness of all our results to cases where there is only a single child in the family, and therefore this condition is automatically met.[4]

To take a first look at the data on eligibility and take-up, Table 2 provides a cross tabulation of the eligibility measure and actual receipt of the municipal supplement, which we can observe in the data. The table shows that take-up among eligibles is about 80 %. There is therefore indeed a significant fraction of individuals who do not take up the supplement that they would be entitled to, and therefore leave some money on the table. There are also some type-II errors in the data, i.e. approximately 3.5 % of individuals who are not eligible for the municipal supplement during a given year according to our measure, actually receive a positive amount of supplement. In reality,

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[3] We define as employed those individuals in the data, whose earnings are above 0,5*median earnings in a given year.
[4] Some conditions are such that they are impossible to take into account, e.g. some municipalities have indicated that they may use case-by-case discretion in whether the supplement is granted. We leave out such cases (municipality-year observations) from the analysis.

the occurrence of type-II errors should be very rare as the relevant information is easily observable to decision-makers. The occurrence of type-II errors is more likely to be a symptom of inaccuracies in the data, in particular due to having data at the annual level. For example, if an individual has moved from a municipality with a supplement policy to one without, she might show up in our data as having received some supplement, despite not being eligible (at the end of the year).

Table 2. Eligibility and take-up of municipal supplement among mothers of 1 year-old children.

	Ineligible for supplement	Eligible for supplement
Supplement received = 0	389 302	63 100
Supplement received > 0	14 130	257 321
	403 432	320 421

A preview of the data shows, for example, that the take-up rate is 95 % among those mothers to whom the supplement is paid directly through the SII, and only approximately 40 % in those cases where a separate application process is involved. This very large difference in the level of take-up already strongly suggests that there is likely to be a relationship between the complexity of the application process and take-up; but part of this difference may of course be due to other factors. We turn to causal estimates of this relationship below.

4. The effect of complexity on take-up

4.1 Event study: introduction of joint application

We first focus on descriptive evidence on the effects of a policy change of particular interest, namely the introduction of joint application i.e. applying for the municipal supplement jointly with the main part of the HCA through the SII. To do this, we isolate cases in the data where a municipality first paid the supplement through a separate application process for a number of years, and then switched to joint application through the SII. We track the group of eligible individuals (i.e. a repeated cross-section of individuals eligible at each point in time) in these municipalities over time, and examine whether there is a change in average take-up behaviour at the time when joint application is introduced. In this event-study analysis, to isolate the effect of joint application, we limit the group of municipalities in such a way that there are no other major changes in policy (supplement amounts, other requirements) that might confound the analysis. (In Section 4.2 below, we go back to a setting where we include data from all municipalities.)

Figure 1 depicts the results of this analysis. We have time on the x-axis, measured as the distance (in years) from the introduction of joint application through SII. Year 0 is therefore the year when joint application is introduced, which occurs at different points in (calendar) time in different municipalities. On the y-axis, we have the change in the take-up share *compared* to a baseline year, namely year -3.

The figure shows that there is a large increase in take-up upon introduction of a joint application process. Take-up in the baseline year (not shown) is under 40 %, and it increases by approximately 60 %-points to close to 100 % by year 2. The result that joint application achieves almost full take-up is quite natural: receiving the benefit is in this case is often automatic (one does not need to do anything to receive the municipal supplement if one is eligible for it), and in some cases it requires simply e.g. ticking a box on the application form for the main part of HCA. What is striking is that take-up (conditional on eligibility) is so low in the same municipalities when there is a separate application procedure in place. This suggests that even a relatively small hassle cost or a low degree of complexity, that is, the requirement to fill out forms with some relatively straight-forward personal information, can have a very large effect on take-up – despite the fact that the sums of money involved (approx. 200 € per month for potentially up to two years) are non-negligible.
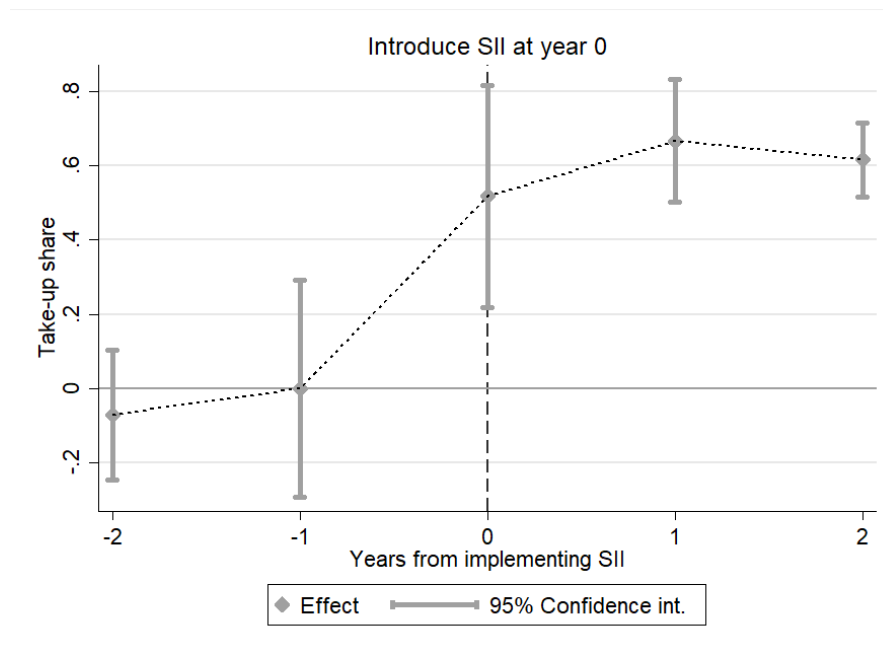

Figure 1. Change in take-up among introduction of joint application.

4.2 Difference-in-difference analysis

Estimation strategy. We next study the causal effect of changes in complexity on take-up, utilizing changes in municipal supplement application procedures to estimate a difference-in-differences

(DD) model: in effect, we compare eligible mothers subject to different application procedures, before and after changes in the application process. We run regressions of the following type:

$$Takeup_{iym} = \alpha + \beta_1 \cdot Comp_{ym} + \beta_2 X_{iym} + \beta_3 Mun_m + \beta_4 Year_y + \varepsilon_{iym}, \tag{1}$$

where $Comp_{ym}$ denotes the complexity variables that are the main explanatory variables of interest. The other variables in equation (1) are the municipality dummies (Mun_m), year dummies ($Year_y$) and a vector of other controls (X_{iym}), while ε_{iym} is the error term. The vector X_{iym} includes the amount of supplement that the individual is eligible for, to take into account monetary incentives.

To carry out the analysis, we first use information on eligibility criteria to calculate an eligibility indicator at the individual level, and form the group of eligible mothers. To avoid misclassification of eligibility vis-à-vis the age restrictions, an issue that arises due to the annual nature of our data, we focus on mothers of children who are between 12 and 23 months old at the end of the year. The outcome variable $Takeup_{iym}$ is a dummy for whether the amount of municipal supplement received by the individual in a given year was positive: if the amount was zero, the mother did not take up the benefit despite being eligible for it.

The identifying assumptions in the DD analysis are that (i) underlying trends in take-up do not differ between municipalities; (ii) individuals do not self-select into treatment (i.e. moving decisions do not depend on municipal supplement rules); and (iii) there are no other concurrent policy changes that might explain differential changes in take-up. In some specifications, we relax assumption (i) by including municipality*year interactions in the control vector, thus allowing for municipality-specific time trends in take-up; in this case, the relevant assumption relates to the similarity of year-to-year changes in the trend in take-up.

Assumption (ii) is likely to be satisfied, since the amounts of money involved are fairly small compared to the likely costs of moving to a different municipality. (This assumption can be tested: do changes in municipal supplements affect moving patterns?) Assumption (iii) is also likely not to cause problems, as we have a large number of changes in supplement policies occurring in different municipalities at different points in time.

Assumption (i) would be violated if there is policy endogeneity, that is, if municipalities react to changes in take-up by changing application procedures. For example, if municipalities are worried about incomplete take-up, they might react by reducing complexity. Alternatively, possible queues in the municipal social assistance office might cause municipalities to move tasks to the SII. Policy endogeneity would show up in the data as non-parallel trends in take-up before implementing a change in supplement rules. In Figure 1, development of the take-up share appear similar between the relevant groups of municipalities prior to introducing joint application, which provides support for assumption (i).

Results. Table 3 considers the effects of two different variables that describe key features of the homecare allowance system in a given municipality, namely whether or not joint application through the social insurance institution was in place (captured by the variable SII), and the monetary amount of the supplement that an individual is eligible for. The results reported in Table 3 are causal estimates from a Difference-in-Difference analysis; that is, all estimations include municipality and year fixed effects, and the effects reported are therefore identified from changes in supplement rules.

Column (1) of Table 3 shows an estimate of the effect of joint application i.e. receiving also the municipal supplement trough the SII. This increases take-up by approximately 35 %-points, which is obviously a very large effect. In column (2), financial incentives (being eligible for a larger amount of municipal supplement) appear to have a statistically significant, but negative effect on take-up, which is of course counterintuitive; however, the point estimate is very small, so the result points towards a negligible effect of monetary incentives on take-up. Column (3) includes the two variables simultaneously; the effect of receiving the supplement through the SII remains at about 35 %.

Table 3. Take-up of municipal supplement among eligibles.

VARIABLES	(1) takeup	(2) takeup	(3) takeup
SII	0.353***		0.345***
	(0.0752)		(0.0699)
Amount of supplement		-2.74e-06**	-2.41e-06***
		(1.12e-06)	(7.27e-07)
Observations	320,421	320,421	320,421
R-squared	0.397	0.376	0.401
Year FE	Yes	Yes	Yes
Muni FE	Yes	Yes	Yes
Controls	No	No	No
Muni trends	No	No	No

Robust and clustered (municipality) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates for mothers of children who have their first birthday during the year.

In Table 4 we examine whether the effect of joint application (the SII-dummy) on take-up is robust to different sample restrictions, as well as to adding controls and/or allowing for municipality specific time trends in take-up. In column (1), we restrict the sample to mothers who according to our classification worked prior to the birth of the child. This is an interesting subgroup to look at, as it appears that many municipalities want to target this group. (The results are robust to the

exact way of defining prior employment, cf. the data section.) In column (2), we restrict the sample to single child families. This is an important robustness check, as our eligibility measure might be somewhat inaccurate for families with many children, as explained in the data section. Finally, in columns (3) and (4), we include individual controls (control for spouse's income, dummies for different education groups, as well as controls for the age of the mother and the child) and municipality-specific time trends in take-up, respectively. The estimated effect of the SII-dummy remains large and highly statistically significant in all these specifications. These results are also robust to adding some municipality-level controls (employment rate, municipality size; results not shown).

Table 4. Effect of joint application on take-up: robustness.

VARIABLES	(1) takeup	(2) takeup	(3) takeup	(4) takeup
SII	0.338***	0.368***	0.327***	0.350***
	(0.0772)	(0.0754)	(0.0678)	(0.123)
Observations	286,425	181,132	271,595	271,595
R-squared	0.399	0.461	0.398	0.429
Year FE	Yes	Yes	Yes	Yes
Muni FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Muni trends	No	No	No	Yes
Sample	Mother worked	Single child	All	All

Robust and clustered (municipality) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Estimates for mothers of children who have their first birthday during the year. Individual controls:
amount of supplement, spousal income, education, age of mother and child, number of children.

These estimates suggest that complexity of application procedures has a very large impact on take-up, whereas financial incentives do not seem to matter. Introducing a separate application procedure causes individuals to forego receiving a benefit that amounts to losing approximately around 200 euros per month on average, for up to two years. In Section 5, we turn to a closer examination of the mechanisms behind this result, and the analysis provides further evidence that individuals' reaction to the introduction of a separate application process is indeed driven by complexity and not by other factors.

Heterogeneity. An interesting further question is which types of individuals are most affected by complexity. Our setting provides a unique opportunity to study this question, given that the

benefit that we are looking at is used by individuals from all socio-economic groups. We take a first look at this issue by including interactions of the SII-dummy with the level of education. The results are given in Table 5. The table shows an interesting pattern: individuals with only basic education or no formal education have lower take-up (compared to those with university education). Further, the take-up of these individuals is affected more by the introduction of joint application through the SII, than take-up of those with higher education. This suggests that individuals with low education may be more affected by complexity. While this is only a first look at possible heterogeneities in take-up and the effects of complexity, the issue clearly appears worthy of further investigation in future work.

Table 5. Heterogeneous effect of complexity for different education groups.

VARIABLES	(1) takeup
SII	0.308*** (0.076)
Education: basic	-0.033*** (0.013)
Education: none	-0.142*** (0.022)
SII*edu_basic	0.054*** (0.014)
SII*edu_none	0.161*** (0.023)
Observations	320,421
R-squared	0.403
Year FE	Yes
Muni FE	Yes
Controls	Yes
Muni trends	No

Robust and clustered (municipality) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates for mothers of children who have their first birthday during the year. Control variables: amount of supplement, spousal income, age of mother and child, number of children.

5. Mechanisms

The evidence presented in Section 4 strongly suggests that complexity of application procedures affects take-up. Nevertheless, it is useful to further analyse the causes behind low take-up in municipalities that have a separate application procedure for the municipal supplement. If low take-up is indeed caused by complexity, one would expect take-up behaviour to be related to the features of the application process. In the current section, we concentrate only on municipalities

that pay the supplement through their own benefit office and therefore have a separate application process for it.

We examine how take-up behaviour upon introduction of the municipal supplement depends on the complexity of the eligibility requirements. The figure shows average take-up behaviour over time in groups of municipalities with different eligibility requirements and application procedures. (The analysis is in all cases again restricted to mothers who are eligible for the supplement, so that low take-up indicates money left on the table.)

Figure 3 compares take-up when the municipal supplement is introduced under more vs. less complex rules. More specifically, the figure compares the take-up rate in municipalities that implement both a prior-work condition as well as the condition that none of the siblings should be in public day care; and compares this to a case where neither of these conditions is in place. The former case is labelled "complex" in the figure, while the latter case is the less complex one (i.e. the latter type of municipality has a separate application process, but less complex rules). To recap, the prior work condition implies that eligibility for the municipal supplement depends on whether the parent was employed before the birth of the child, and the parent needs to provide proof of prior earnings. (We only utilize data for mothers who fulfil the condition in either case, for the two cases to be comparable.) The year when the supplement is introduced is marked by 0 on the x-axis. The figure shows that take-up rises to a somewhat higher level in municipalities with less complex application procedures, and in some of the years the difference is statistically significant.
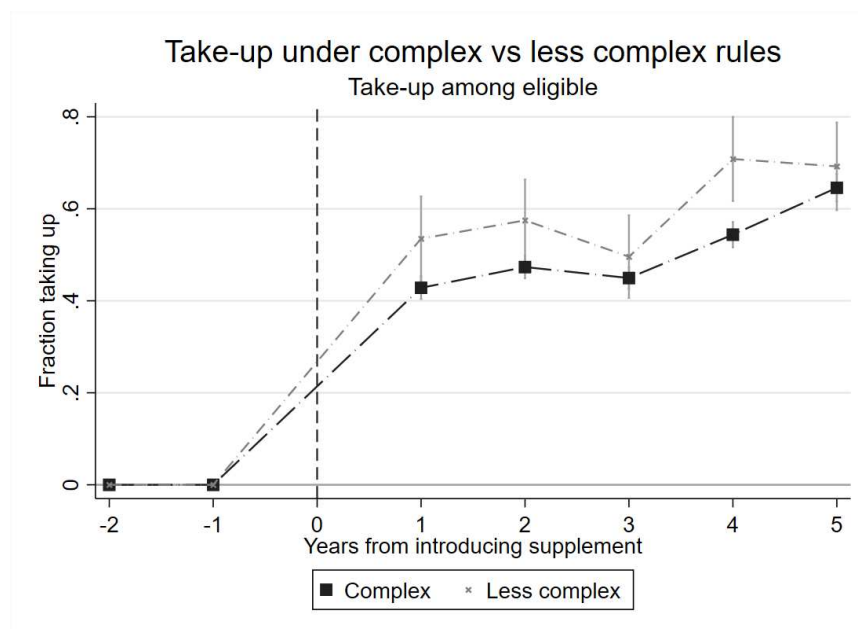

Figure 2. Take-up upon introduction of municipal supplement: more vs. less complex rules.

The relationship between complexity and take-up can be contrasted with the role of monetary incentives. Figure 3 repeats the analysis of Figure 2, this time dividing municipalities into those

with a large (above median) vs. a small monthly supplement amount. There do not appear to be any clear differences in average take-up between the groups.
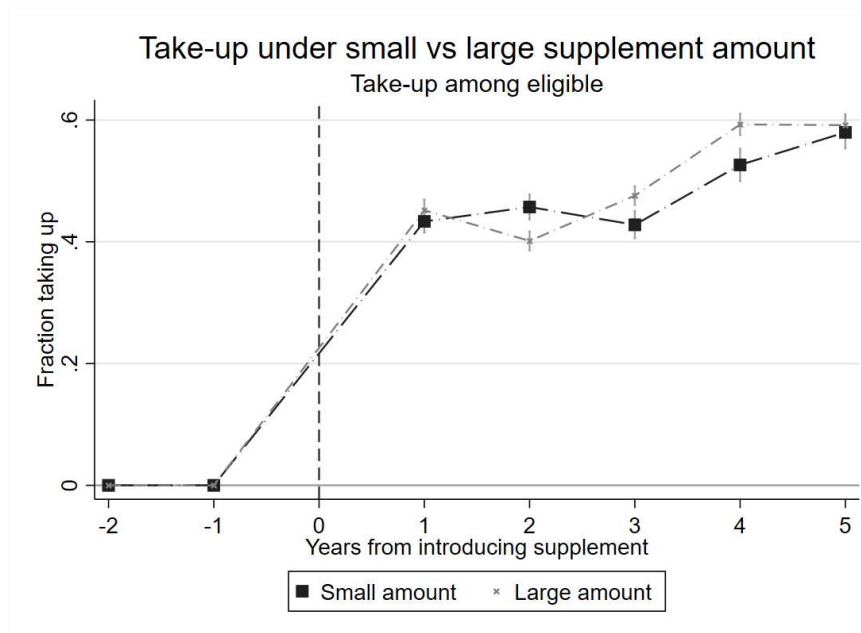

Figure 3. Take-up upon introduction of municipal supplement: small vs. large monthly amount.

The evidence presented in Figures 2 and 3 is descriptive, as the figures simply compare municipalities that introduce a supplement policy under different rules, and does not control for possible differences between municipalities. That is, in the current section unlike in Section 4 above, we cannot implement a diff-in-diff analysis (as take-up is by definition zero in all cases prior to the introduction of the supplement); hence this is in effect a simple difference analysis comparing average take-up levels between groups of municipalities.[5]

To analyse the relationship between complexity and take-up still further, we run regressions that analyse take-up under more or less complex rules in the first years after the introduction of the supplement, as in Figure 2, adding controls first for municipality characteristics, and then individual level covariates.[6] The results are presented in Table 6. The association between complex rules and lower take-up becomes stronger when more control variables are included in column (2) (adding a control for the monthly monetary supplement amount), column (3) (adding controls for

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[5] We find the simple difference analysis in the first years of the supplement to be most tractable here. Difference-in-difference analysis concerning the effects of different eligibility criteria in later years is problematic, as many of the eligibility criteria, joint application status, as well as the supplement amounts may change over time in consecutive years, and isolating the effects of any single change is hard without radically restricting the sample of municipalities (to ensure that we can isolate the effect of a given type of change in policy) and mothers (to ensure that we are confined to a sample of mothers who are always eligible under the types of eligibility criteria under study).

[6] We leave out from this analysis some municipality-year observations with suspiciously low take-up (below 2%) as we suspect that such occurrences are likely to arise due to errors in the data.

municipality size and employment) and column (4) (adding individual level controls). All columns restrict the analysis to mothers that satisfy the prior work condition; this is crucial to ensure that we are comparing eligible mothers under both types of rules. Finally, in column (5) we restrict the sample further to those mothers who only have one child; this further ensures that the condition that no siblings should be in municipal day care is also satisfied. The results are unaffected by this further restriction. The results presented in Table 6 thus provide further support for our main finding that complexity indeed matters for take-up.

Table 6. Take-up when supplement is introduced under more vs. less complex rules.

VARIABLES	(1) takeup	(2) takeup	(3) takeup	(4) takeup	(5) takeupKK7
complex rules	-0.169	-0.184*	-0.241***	-0.244***	-0.277***
	(0.114)	(0.109)	(0.0889)	(0.0890)	(0.0870)
supplement		0.0004	0.0003	0.0001	0.0007
amount		(0.0009)	(0.0007)	(0.0008)	(0.0008)
Observations	26,299	26,299	26,299	23,679	13,090
R-squared	0.019	0.020	0.070	0.085	0.097
Muni controls	No	No	Yes	Yes	Yes
Ind. controls	No	No	No	Yes	Yes
Sample	mother worked	mother worked	mother worked	mother worked	mother worked + single child

Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$
Estimates for mothers of children who have their first birthday during the year. Municipality level controls: municipality size and level of employment. Individual controls: spousal income, education, age of mother and child, number of children.

6. Discussion

We have analysed the effects of complexity of application procedures on the take-up of the municipal supplement to the child homecare allowance in Finland. Despite the unique features of the system that make it possible to identify the causal effect of complexity on take-up, the lessons are likely to be more widely applicable, as similar type of complexity arises in many welfare systems as a by-product of the need to screen eligible applicants.

Our results indicate that complexity appears to be a very important determinant of take-up decisions. In particular, having a separate application procedure for the municipal supplement reduces take-up by as much as around 35 %-points. This is obviously a very large effect, and the result is also very robust. Introducing a separate application procedure causes individuals to

forego receiving a benefit that amounts to losing approximately around 200 € per month on average, for up to two years.

Further evidence on the mechanisms behind this result provides further support to the idea that the effect is really due to complexity: among those municipalities with a separate application process, take-up is lower among municipalities that implement additional eligibility criteria that increase complexity. Such additional criteria may increase complexity through requiring one to provide additional proof of eligibility, to fill out an additional form, or simply through making the eligibility criteria more difficult to understand.

In a significant proportion of cases the simplest application process – the municipal supplement being administered centrally through the social insurance institution, with no separate application process – implies automatic receipt of the supplement (if eligibility criteria are fulfilled). Accordingly, take-up is close to 100 % in these cases. While this finding is reminiscent of earlier findings on default effects in many other contexts, the essence of our result is different: in many other contexts – consider the choice of investment portfolios, for example – it is not obvious whether the individual in question would gain (monetarily) by deviating from the default. Assessing the financial implications of choosing different alternatives may be difficult and burdensome, and it is also possible that the default is the best option available, at least for some individuals. In our case, the default is to receive nothing, and the entitlement amount is in most cases easy to calculate. Therefore sticking with the default, in cases where the default entails not taking up the benefit, implies that the individual unambiguously forgoes receiving significant sums of money.

References

Aizer, Anna (2007). Public Health Insurance, Program Take-up, and Child Health, *Review of Economics and Statistics*, 89, 400-415.

Bhargava, Saurabh and Dayanand Manoli (2015). Psychological frictions and the incomplete take-up of social benefits: evidence from an IRS experiment. *American Economic Review*, 105(11), 3489–3529.

Bitler, Marianne P., Janet Currie, and John Karl Scholz (2003). WIC Eligibility and Participation. *Journal of Human Resources*, 38: 1139–79.

Currie, Janet (2006). The Take-up of Social Benefits. In A. Auerbach, D. Card and J. Quigley (eds) *Poverty, the Distribution of Income, and Public Policy*. New York: Russell Sage. 80-14.

Currie, Janet and Jeffrey Grogger (2002). Medicaid Expansions and Welfare Contractions: Offsetting Effects on Maternal Behavior and Infant Health, *Journal of Health Economics*, 21, 313-335.

Currie, Janet and Jeffrey Grogger (2001). Explaining Recent Declines in Food Stamp Program Participation, in *Brookings Papers on Urban Affairs*, William Gale and Janet Rothenberg-Pack (eds).

Deshpande, Manasi and Li, Yue (2017). Who Is Screened Out? Application Costs and the Targeting of Disability Programs. NBER Working Paper No. 23472.

Kleven, Henrik and Wojciech Kopczuk (2011). Transfer Program Complexity and the Take Up of Social Benefits. *American Economic Journal: Economic Policy*, 3(1), 54-90.

Kosonen, Tuomas (2014). To work or not to work? The effect of child-care subsidies on the labour supply of parents. *The B.E. Journal of Economic Analysis and Policy*, 14(3).

Matikka, Tuomas and Tuuli Paukkeri (2016). Does information increase the take-up of social benefits? Evidence from a new benefit program. VATT Working Papers 83.

Moffitt, Robert (1983). An economic model of welfare stigma. *American Economic Review*, 75, 1023-1035.

Shah, Anuj K., Sendhil Mullainathan and Eldar Shafir (2012). Some consequences of having too little. *Science*, 338(6107), 682–685.