

Once or Twice a Month? The Impact of Payment Frequency on Consumption Patterns

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Abstract

We study how the number of benefit payments within a month affect spending patterns of benefit recipients. In Finland, the payment dates of national pension benefits were based on the initial of the recipients last name. This generates as-good-as-random variation in payment dates over the month, providing a clear and robust setup to analyze consumption patterns. Using detailed consumption survey data, we find more within-month variation in expenditures for those who received most of their incomes in the beginning of the month, compared to a smoother consumption pattern for those who received their income in a more dispersed manner. There are similar patterns in expenditures both on nondurable goods and on a broader group of goods. Our results imply that two benefit payments, instead of just one, over the month can lead to smoother consumption patterns among benefit recipients.

Keywords: Benefits, Consumption, Consumption smoothing, Present bias

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I. Introduction

Means-tested social benefits and cash transfer programs form the backbone of the welfare system in most developed countries. The aim of the welfare benefits is to insure individuals against adverse earnings shocks such as unemployment or sickness, and to provide the necessary subsistence for deprived individuals outside the labor force. However, there is only limited evidence of how these programs affect consumption and welfare of the targeted individuals. This is in stark contrast with various instruments used to finance these programs such as income taxes, from which we have rather detailed and wide-ranging knowledge on its effects on labor supply from many countries and contexts.

In particular, it is of key importance to know how, if in any way, benefit and cash transfer payments affect household spending patterns. The traditional life-cycle/permanent-income hypothesis suggests that individuals are able to smooth their consumption between and across benefit payment dates. In other words, predictable changes in income should have no impact on consumption patterns (see e.g. Hall, 1978). However, empirical literature has clearly challenged this view by showing that the amount of money spent on basic needs such as food tends to peak right after benefit payment dates (see e.g. Stephens, 2003; Mastrobuoni and Weinberg, 2009; Aguila, Kaptyen and Perez-Arce, 2017). This implies that the payment date schedules can have a significant impact on welfare of benefit recipients.

In this paper, we utilize an as-good-as-random variation in payment schedules in Finland to show how the payment frequency affects spending choices of benefit recipients. In Finland, the payment date of national pension benefits was based on the initial of the recipients last name: those with their surname starting with A-K received their benefits on the 4th day of each month, and those with surnames starting with L-R on the 14th, and those with S-Ö on the 22th. Contributed pensions and other typical benefits were mostly paid at the beginning of each month. Therefore, the first payment group (A-K) received most of their monthly incomes in the beginning of each month, while other groups received payments twice a month. As the allocation to payment groups by surname initials is virtually random, this setup enables a straightforward and robust analysis of the impact of payment frequencies on spending patterns.

We focus on timing of consumption, providing evidence on implications of payment date frequencies. Detailed consumption survey data spanning

from 1985 to 2012 combined with high-quality register data on benefits and other earnings enable an analysis on the timing of spending as well as the composition of spending of basic needs such as food and medicine, and non-necessities such as restaurant meals and alcohol. This evidence paints a picture of the broader impact of payment date frequencies on the welfare of benefit recipients, and provides applicable policy implications on the detailed design of benefit and cash transfer programs.

In our empirical analysis, we first show that the income receipts of the first payment group clearly concentrate on the beginning of each month. In contrast, for the other groups, the payments are more dispersed over the month. It appears that there is no selection into the payment groups other than the last name initial, i.e. the benefit recipients in the groups are very similar when it comes to the received total benefits, earnings and other characteristics.

As our main results, we find clear differences in consumption patterns between the payment groups. First, as modeled linearly, within-month spending pattern of those receiving most of their income in the beginning of the month is decreasing, whereas we do not find such significant trends for the two other groups. A closer look at spending patterns reveals that spending is markedly concentrated in the beginning of the month for those who received most of their monthly income at that time. In comparison, spending is more scattered over the month for those who received their income in a more scattered manner. Relatedly, we observe that variability of expenditures across the days of the month is smaller in the second payment group compared to the other groups, illustrating that splitting benefit payments more evenly across the month can induce more consumption smoothing over time.

Our results add to the scarce literature examining the impact of benefit payment dates on expenditures. In a seminal study, Stephens (2003) show that consumption on necessities such as food peaks after benefit payments in the US. Relatedly, Mastrobuoni and Weinberg (2009) show evidence that benefit recipients without savings consume less calories in the week before benefit payments in the US. For other countries, Stephens (2006) shows that consumption peaks right after receiving the paycheck in the UK and Stephens and Unayama (2011) and Aguila et al. (2017) find that spending jumps right after benefit payments also in Japan and Mexico, respectively. We contribute to this literature in two important ways. First, we study consumption responses to payment dates in a European welfare state context with relatively large benefit levels. Second, we provide direct evidence of the impact of

different payment schedules on spending patterns using as-good-as-random variation in the schedules. Latter perspective is an important one, because spending peaks after payments are well-documented in the earlier literature, and some of the papers have speculated on whether more frequent payments could help people smooth consumption and avoid consumption peaks. A recent paper on this topic is that of Berniell (2018), which shows that those who are paid in a more frequent manner have smoother consumption patterns in the US.

In addition to spending, a few studies have analyzed the impact of payment dates on other outcomes. Dobkin and Puller (2007) find that benefit payment dates are linked to increased drug abuse, hospitalization and mortality among certain subgroups of benefit recipients in the US. Relatedly, Evans and Moore (2012) find evidence that mortality increases after benefits are paid. Finally, Foley (2011) finds that financially-motivated criminal activity increases in US cities over the course of the month due to the fact that benefit payments received in the beginning of the month are spent very quickly after they are received. Because payment receipts have such consequences, it is worthwhile to study the potentially beneficial impacts of alternative schedules.

The paper proceeds as follows: Section II presents the relevant institutions and the payment schedule system. Section III describes the data. Section IV provides the empirical evidence, and Section V concludes.

II. Finnish pension system and payment dates

The Finnish pension system consists of two main pillars: contributed pensions (earnings-related pensions) are accrued from mandatory pension contributions over the working history, and national pensions guarantee a minimum pension level for those with little or no employment history. Pensioners can have a combination of the two pension sources depending on the amount of accrued contributed pensions.¹ In 2017, 94% of Finnish pensioners had earnings-related pension income and 40% had national pension income. 33%

¹In 2019, a pensioner earning less than 56 euros per month of employment pension income receives the full national pension (629 eur per month for singles and 558 eur per month if living with partner), after which national pension is reduced by 50 cents for each additional euro of employment pension income. This means that positive amounts of national pension are earned up until 1150–1300 euros per month of employment pension income.

of pensioners earned both types of pension income. (Finnish Centre for Pensions 2018)

National pensions are administered by the Social Insurance Institution (SII). Until 2013, national pensions were paid out on different dates of the month depending on the surname initial of the recipient. Individuals with surname initials between A–K, L–R and S–Ö were paid their national pension on the 4th, 14th and 22nd day of the month, respectively.²³ This was done in order to avoid overly high traffic in the Finnish banking system on one particular day. In 2013, the payment dates were harmonized and all national pension recipients were paid on the 7th day of the month. We exploit the old system in our analysis, as the surname initial group can plausibly be thought of as uncorrelated with other outcomes and, therefore, this payment mechanism provides exogenous variation in the within-month timing of national pension payments.

No such payment dispersion exists for employment pensions. They are managed and disbursed by pension insurance companies and public sector pension providers. Payment dates are not regulated, but majority of payments are made in the first days of the month, typically the first banking day (see Table 1). As mentioned above, it is fairly typical for Finnish pensioners to have both national and employment pension income, and hence the national pension payment mechanism based on surname initials provides exogenous variation in the frequency of pension payments within the month.

Because of the different payment timings, pensioners who have both employment and national pension income have different pension income flows within the month. Those with surname initials between L–Ö receive pension income twice a month: their contributed pension would be paid at the beginning of the month (first banking day) and national pension on the 14th or 22nd of the month. Those with surname initials between A–K receive all their pension income at the beginning of the month: contributed pension income on the first banking day and national pension on the 4th day of the month. In addition, pensioners who only have contributed pension income or only national pension income receive pension income once a month.⁴

²³S–Ö includes S–Z, Å, Ä, and Ö.

³If the scheduled date falls on a weekend or banking holiday, pensions were paid on the previous banking day.

⁴Note that pensioners who have worked for the state and earned a contributed pension from there form an exception, as their payment date is the 20th of the month. These pensioners could either have a single pension payment around the middle of the month

Table 1: Finnish pension providers and pension payment dates

Pension insurance companies	payment date
Eläke-Fennia (now Elo)	first banking day of month
Eläke-Tapiola (now Elo)	first banking day of month
Etera (now Ilmarinen)	first banking day of month
Ilmarinen	first banking day of month
Mela	second banking day of month
Pensions Alandia (now Veritas)	first banking day of month
Sea farers' pension fund	last banking day of month
Veritas	first banking day of month
Varma	first banking day of month
Public pension providers	payment date
Church pension fund	first banking day of month
Keva ^(*)	3rd day of month ^(**)
Social Insurance Institution (SII)	first banking day of month
State pension fund	20th day of month ^(**)

(*) Keva is the local government pension provider. In the 2010s, it started managing the pension disbursement of former state employees (2011), church employees (2012) and SII employees (2012). The payment dates are the same under Keva as they were previously under the original institutions.

(**) If specific payment dates fall on a weekend or a banking holiday, pensions are paid on the previous banking day.

Other social benefits can also be paid at different times of the month. Many benefits by the SII have been paid on the same date as national pensions and hence been dispersed based on surnames. These are survivors' benefits (a pension benefit on the event of a parent or partner deceasing), child supplement (for pensioners with under 16-year-old children), front-veterans' supplement and veterans' disability supplement, disability allowances, pensioners' care allowance and pensioners' housing benefit.⁵ Because a variety,

(14th–20th–22nd), or, if they have other contributed pension income, or also national pension income and surname initials between A–K they would receive income twice a month (beginning of month and 20th). Majority of the pension payments are not state contributed pensions.

⁵Pensioners' housing benefit payment date was harmonised to the 4th of each month for all recipients in 2007. SII's guarantee pensions (a benefit for lowest-income pensioners)

not limited to old-age pensions, of SII benefits were paid based on last-name initials, individuals of different age and other characteristics are affected by the exogenous variation in payment dates and, therefore, our analysis does not only cover retired individuals.

In this paper we focus on benefit recipients who are likely to receive a large part of their total income in the form of national and contributed pensions, for which we encounter variation in the monthly payment schedule (payment once or twice a month). In addition, pensioners can have other benefit income (as well as earnings) paid on different dates of the month, but these are likely to form a smaller share of their total income, and are also paid similarly to all recipients regardless of their surname. In the next section, we will illustrate that for our analysis sample, initial-based pension payments indeed are a considerable share of total income.

III. Data

The main element for our research purposes is the availability of consumption studies from the Household Budget Survey (HBS) carried out by Statistics Finland. We combine further information from registers based on individual identifiers to the sample members. Importantly, while the data are anonymous, we link the surname initial at the time of the consumption study to each household member from the Population Register Centre.

The HBS data provides detailed consumption data over a two-week period at the household level. Participating households are first interviewed by phone or in person, after which they keep record of a expenditure diary and collect all their purchase receipts during their two-week survey period, both of which are submitted to Statistics Finland. The data set provides information on aggregate consumption expenditure over the two-week period across over 900 consumption categories (based on the EU’s COICOP-HBS standard). In a study such as ours, purchases of nondurable goods are of particular interest because they are telling of what people actually consume instead of just buying for maybe later use. The measurement period in the HBS

have been paid on the 22nd of the month since their introduction in 2011. Other benefits, such as housing benefit and student allowance, have their particular payment dates that do not depend on the recipient’s surname. Some benefits, such as unemployment and sickness allowance, do not have fixed payment dates but are paid at fixed intervals based on when the entitlement to the benefit has started.

is two weeks for all nondurable goods and some more durable goods. In contrast, HBS attempts to measure larger purchases of durable goods (like cars, furniture etc.) and regular costs (such as housing costs) annually and therefore asks the households to report their such spending from a longer time period. This means that timing of all spending is not in our disposal but, luckily, the timing of all nondurables and also some durables can be measured.

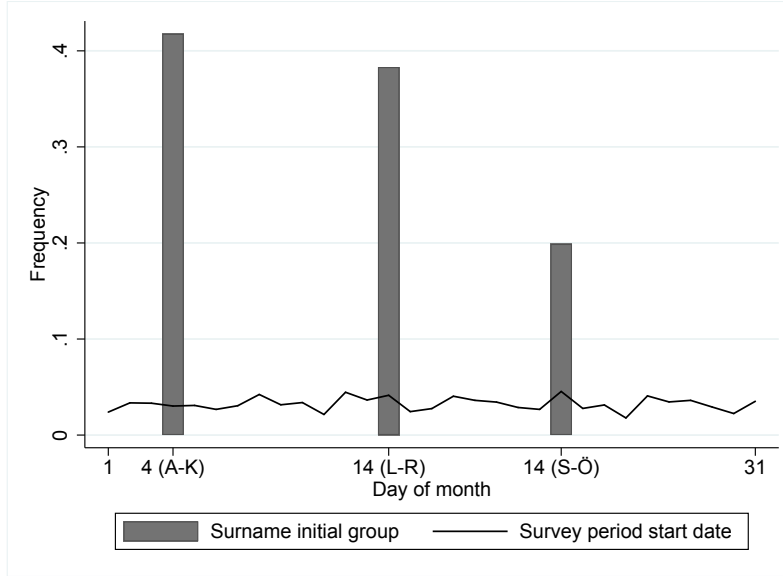
In a given survey year, there are 28 consecutive two-week survey periods, with variation in the starting date of the first period (typically in mid-January). Therefore the data provides useful variation in the timing of the survey periods relative to the payment dates of interest. We use 9 rounds of the survey between 1985–2012, which together total 40,614 unique households, of which 15,960 are pensioner households.⁶ Most pensioner households (70%) receive both national and contributed pension payments: 19% of pensioner households have only national pension and 11% only contributed pension income. Based on the pension combination and surname initials, 58% of pensioner households receive pension payments only in the beginning of the month and 42% two times a month.⁷ Figure 1 illustrates that both the surname groups as well the survey period start days are smoothly distributed across the the pensioner population.

We combine to the consumption data detailed information on national pensions and other benefits paid by the SII, as well as income data from tax registers. Based on the surname initials and SII disbursement rules (taking into account weekends and banking holidays), we know the date when each benefit paid by the SII is disbursed. This allows us to construct estimates of how large a share of total income the pensioners receive on each payment date. Figure 2 illustrates the typical differences between the payment receipts of the three surname initial groups. All groups receive approximately 65% of their total income in the form of pension payments (about one-third of the pension payments being national pensions), but for the initial group A–K, this income flow is concentrated at the beginning of the month, whereas for the other groups, income flows are more dispersed across the month. Notice also that the actual temporal distance between the two payments for the A–K group is very often shorter than what is depicted in the figure. This is

⁶We use the rounds of 1985, 1990, 1994, 1995, 1996, 1998, 2001, 2006, and 2012. Sample sizes vary between 2,000–8,000 households per round.

⁷This does not account for state pension recipients but assumes all contributed pensions are disbursed at the beginning of the month.

Figure 1: Surname groups and survey period start dates in the pensioner sample



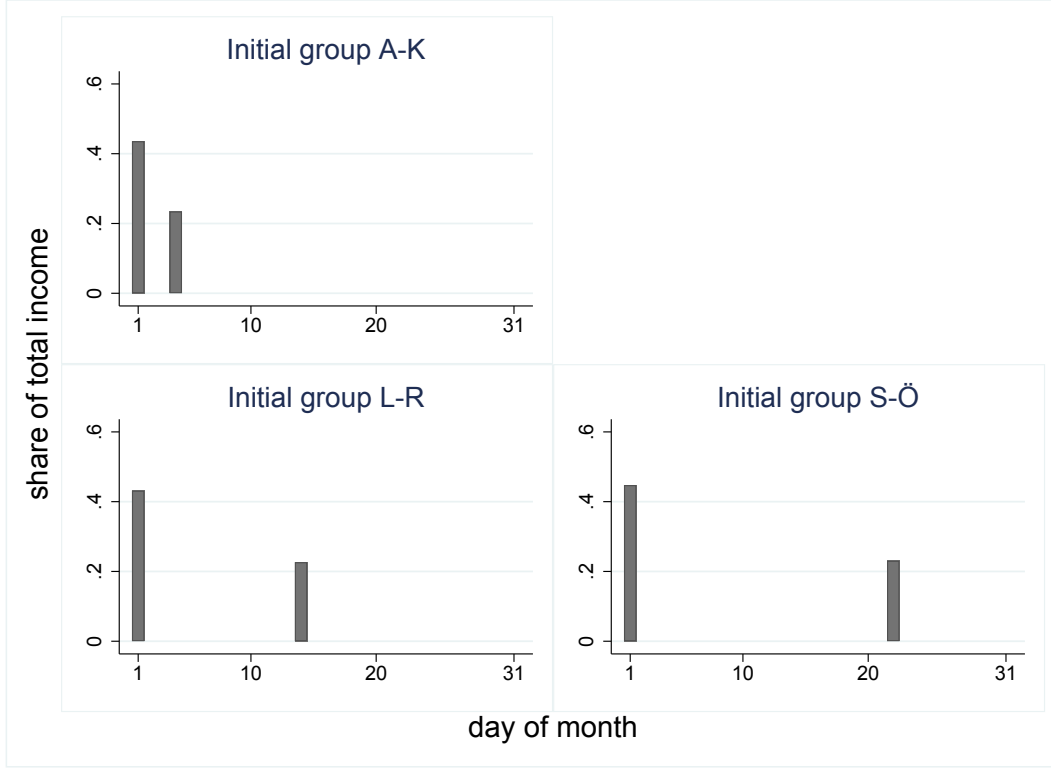
because weekends and holidays push the first payment forward in time and national pensions backward in time.⁸

Because the variation in payment receipts is only due to the as-good-as-random variation in surnames, the three payment groups are otherwise very similar.⁹ Tables 2 and 3 illustrate there are no major differences between the

⁸As an example, imagine that the first-of-the month is a Thursday or a Saturday. In these cases contributed pensions (paid in the first banking day) and national pensions (paid on the 4th and earlier if it is a weekend/holiday) are paid in two consecutive days for the A–K group.

⁹For now, we focus on households with all members having the same payment day of the national pension. Therefore, we exclude those households in which members have different payment days. We did not yet get the last name information from the time of the consumption studies. Instead, we only have the names people were given at birth. For this reason, we need to restrict the analysis to single males (who are very unlikely to have changed their last names) and to couples whose given-at-birth last name initials belong to the same of the three surname-initial groups. It is acknowledged that we assign the females of the couples wrong payment days in cases in which the females changed their last names at some point before the current relationship *but* did not change it again when they entered the current relationship. Such cases must be rare, but some errors inevitably remain. Intuitively, such errors would just cause difficulties in obtaining statistically significant results.

Figure 2: Monthly pension income flows of different surname initial groups.



groups. All groups have similar amounts of pension income – around 400 euros per month of national pension and 1,000 euros per month of employment pension –, and other background variables are relatively equally distributed.

IV. Results

A. Within-month spending decrease / increase

We begin our analysis by showing how the three payment groups' spending changes in the course of a month. The approach resembles that of Aguilu et al. (2017), who compare linearly modelled spending patterns within a two-month period for those who received their payment every two months, and within a one-month period for those who received a payment every month. They model one-week spending as a function of the number of days elapsed

Table 2: Descriptive statistics of the surname initial groups.

	(1) A–K	(2) L–R	(3) S–Ö
Household expenditures, 14 days	363	359	337
Nondurable expenditures, 14 days	335	333	311
Initial-based national pension, monthly	414	405	394
Other pensions, monthly	1.095	1.072	1.045
Female-headed household	0.50	0.47	0.51
Age of household head	65	64	66
Household type:			
One person	0.45	0.41	0.50
One adult, one child	0.01	0.01	0.01
Two adults	0.38	0.40	0.36
One adult, two children	0.00	0.00	0.00
Two adults, one child	0.02	0.02	0.01
Three adults	0.07	0.09	0.06
Two adults, two children	0.01	0.01	0.01
Three adults, one child	0.02	0.01	0.01
Other four-person households	0.02	0.02	0.02
Other	0.03	0.02	0.02
Housing type:			
Own house	0.48	0.49	0.44
Own apartment	0.29	0.29	0.33
Rented	0.21	0.20	0.21
Other	0.02	0.02	0.03
N	2,530	2,320	1,205

Notes: All variables at the household level. Monetary amounts in 2016 euros.

Table 3: Descriptive statistics of the surname initial groups (continued).

	A-K	L-R	S-Ö
Year:			
1985	0.18	0.17	0.15
1986	0.01	0.01	0.01
1990	0.22	0.22	0.21
1991	0.02	0.02	0.02
1994	0.06	0.05	0.06
1995	0.06	0.07	0.07
1996	0.05	0.06	0.07
1997	0.00	0.00	0.00
1998	0.11	0.12	0.13
1999	0.00	0.00	0.00
2001	0.09	0.10	0.08
2002	0.03	0.03	0.02
2006	0.08	0.07	0.09
2007	0.01	0.01	0.01
2012	0.08	0.07	0.09
2013	0.00	0.00	0.00
Month:			
Jan	0.09	0.09	0.09
Feb	0.09	0.09	0.09
Mar	0.08	0.09	0.10
Apr	0.08	0.07	0.08
May	0.08	0.09	0.09
Jun	0.08	0.07	0.07
Jul	0.07	0.07	0.06
Aug	0.10	0.09	0.09
Sept	0.09	0.08	0.08
Oct	0.08	0.07	0.08
Nov	0.09	0.09	0.09
Dec	0.08	0.08	0.07
N	2,530	2,320	1,205

Notes: The table displays the year and month of the date when the two-week consumption survey was started.

since the last payment as the one-week diary period begins. Our approach of modelling spending linearly differs from theirs in two ways. First, instead of looking at spending patterns between payments, we model within-month spending patterns for all three groups. This allows us to examine differences in the within-month spending ‘trends’ between the three groups. Second, we use a somewhat more complicated model to take into account the fact that many of the diary periods cover days of two different months. This concern is an important one because the diary period in our data is almost half of a month (and thus covers a large part of a payment cycle). To understand our approach, imagine working with daily spending observations, in which case the appropriate linear model would be (ignore control variables for now):

$$c_{i,d} = \alpha + \beta DOM_d + \epsilon_{i,d}, \quad (1)$$

where $c_{i,d}$ is spending of household i on day d and DOM_d is day d ’s day-of-month (ie. for the first day of the month this equals 1, for the second day of the month this equals 2, and so on). Parameter β thus measures how much more/less the household spends on a day that is one day further away from the beginning of the month than it spends on the previous day. Given that our expenditure data are on two-week diary periods, we need to aggregate model (1) over 14 days to get an appropriate model of the two-week sum. This aggregation yields

$$\sum_{h=0}^{13} c_{i,d+h} = \alpha + \beta \sum_{h=0}^{13} DOM_{d+h} + \sum_{h=0}^{13} \epsilon_{i,d+h}, \quad (2)$$

where the LHS variable is spending as we observe it in the data and the explanatory variable is the sum of days-of-month of the 14 days in the diary period beginning on day d . The key feature of model (2) is that estimating it gives us an estimate of parameter β , which is the parameter of interest here. Notice that if all diary periods ended during the same month in which they began, the sum of DOM s would just equal $bd + (bd + 1) + \dots + (bd + 13)$ which equals $7 \times (2bd + 14)$, where bd is the DOM of the day on which the diary period begins. In such a case DOM could be replaced by bd and the regression coefficient of that variable would equal $14 \times \beta$. But because many of our two-week diary periods extend over the turn of the month, severe biases would follow from such a simplification.

Table 4 presents the results from estimating model (2). The parameter β is let vary between the three payment groups to see the differences caused

Table 4: Linear models of within-month spending

	Spending			Nondurable spending		
Payment group 1 (4th)	-0.2560	**	(0.1013)	-0.2392	***	(0.0796)
Payment group 2 (14th)	0.0074		(0.0846)	-0.0017		(0.0786)
Payment group 3 (22th)	-0.0142		(0.1203)	-0.0530		(0.1068)

N = 4,050. Robust standard errors in parentheses. Control variables: Payment group dummies (3), household head gender, household head age, age (third polynomial), household type dummies (17), housing tenure dummies (6), year dummies, and month dummies. (*) denotes significance at 10% level, (**) at 5% level and (***) at 1% level.

by the payment schemes. Only the payment group which receives all their pension payments in the beginning of the month experience a statistically significantly trending spending path within month. They cut their spending by about 26 euro cents, on average, every day of the month. Although this is not much, it means that their spending is almost eight euros less in the 30th of the month compared to the 1st of the month. The per-day spending in our sample is about 14.41 euros, which means that spending is cut by almost a half as we move from the beginning to the end of a month. There is no such spending decrease (or increase) for the other two payment groups that receive part of their pension payments later in the month.

As earlier studies have discussed, variability in spending across time does not need to be indicative of any behavioral problems or failure of life-cycle / consumption-smoothing hypothesis. Namely, there may be peaks in purchases of durable goods because such goods are often indivisible, because buying them in bulk leads to lower transaction costs, and because there may be quantity discounts. Therefore, any study such as ours should also look at purchases of nondurable goods. Table 4 also documents results on spending of nondurable goods. We can see that, again, only those with all pension payment receipts in the beginning of the month experience a decreasing spending pattern. The estimated spending drop is 24 euro cents per day, which amounts to 53.5 % of the average nondurables spending in our data.

Judging from the results so far, it seems that national pension payments made on the 14th or on the 22nd of the month, that is, distinctively from the contributed pension and many other benefit payments, help recipients

to attain smoother spending patterns. However, the within-month spending paths are not likely to be linearly increasing/decreasing or flat. In the next section, we take a closer look at spending of the three groups relative to the three payment days.

B. Spending relative to payment days

Many of the earlier studies compare expenditure before and after a payment receipt and it is commonly found that expenditures are higher in the days after than in the days before a payment receipt. We expect to similarly find higher expenditure after a payment than before it. In the case of our study, the three payment days of the last-name initial groups constitute a natural division of the days of each month into intervals. The three sets of days are the days between the different payment days of national pensions. Estimating the expenditure levels during the three sets of days allows for both comparison of the spending levels between the three groups and also allows us to examine the differences in the intra-month spending patterns between the three groups. Let us start from a simple daily expenditure regression for day d 's expenditures (ignoring control variables for now)

$$c_{i,d} = \beta^{4to13} D_d^{4to13} + \beta^{14to21} D_d^{14to21} + \beta^{22to3} D_d^{22to3} + \epsilon_{i,d}, \quad (3)$$

where dummies D^{4to13} , D^{14to21} , and D^{22to3} indicate the set of days in which day d belongs to. Notice here that the superscripts are not to be taken literally because the payment days deviate from the said days of the month in all cases in which the days are not banking days. In such cases the payments are made in the previous banking day. This means that e.g. days that are classified as belonging to the group 4to13 are actually days that are between the first initial group's payment day (including it) and before the second initial group's payment day in that month. Finally, $\epsilon_{i,k,d}$ is the error term.

To take into account the two-week measurement period of spending in our data, we, again, need to aggregate model (3) over 14 days. By aggregating we get

$$\sum_{h=0}^{13} c_{i,d+h} = \beta^{4to13} \sum_{h=0}^{13} D_{d+h}^{4to13} + \beta^{14to21} \sum_{h=0}^{13} D_{d+h}^{14to21} + \beta^{22to3} \sum_{h=0}^{13} D_{d+h}^{22to3} + \sum_{h=0}^{13} \epsilon_{i,d+h}, \quad (4)$$

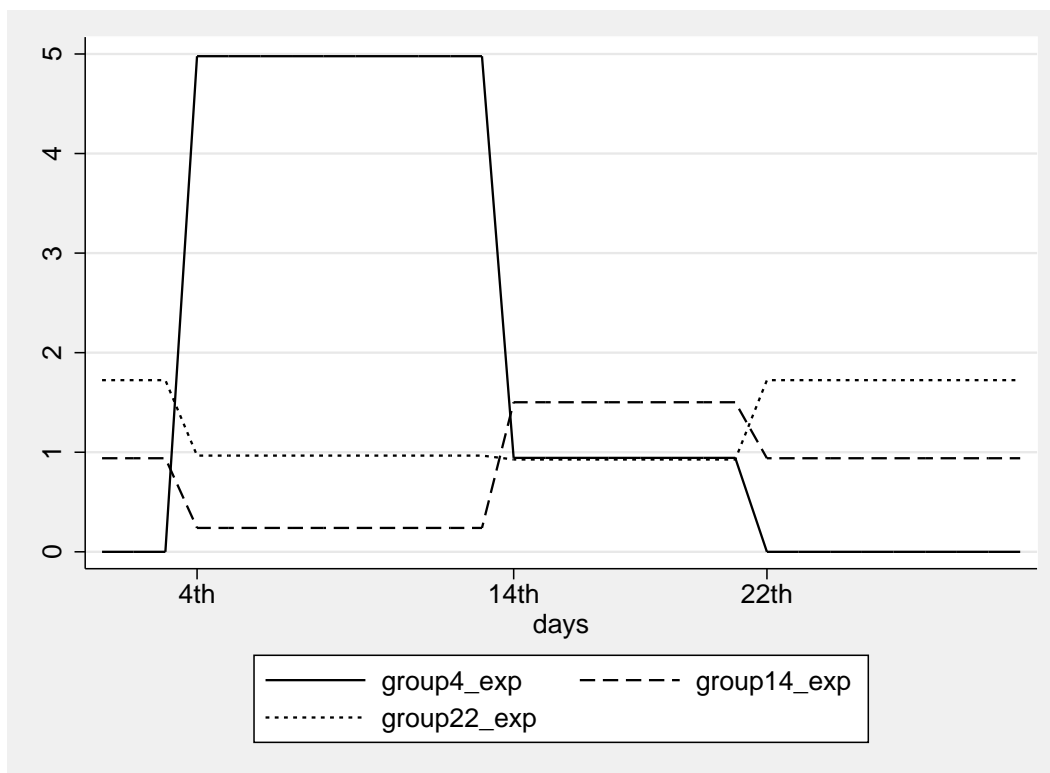
where the LHS variable is what we observe in the data. The sums on the RHS are simply counters of diary days that are between the three payment days. For example, the first sum of dummies counts the days within the 14-day period that fall between the payment of the first initial group (including the payment day) and the payment of the second initial group. Again, estimating the aggregated model (4), we get estimates of the parameters of the daily model (3) that are the parameters of interest. To allow the differences between the spending patterns of the three payment groups, the RHS variables are interacted with the payment group indicators.

Let us now turn to results from estimating model (4). For clarity, we present the results graphically and report the statistical significance in the text. The results on overall spending are illustrated in Figure 3. Those households that receive national pension (and therefore a large share of their income) in the beginning of the month decrease their spending towards the end of the month. This spending difference between beginning of the month and the end of the month (until their next payment in the next month) is statistically significant. The group that receives their payment at around the 22nd of the month also spend less in the periods after their national pension payment period. However, the differences between the three periods are not statistically significant, perhaps due to the relatively small size of that group. Looking at the remaining group which receives national pension payment in the middle of the month is interesting: their spending seems to decrease towards their next national pension receipt, but the decrease is much smaller than for the group receiving their national pensions in the beginning of the month.

Figure 4 presents results on nondurable goods. The overall picture remains similar. 4th-of-the-month payment group, again, has statistically significantly higher spending after their payment. As discussed earlier, finding variability in spending on nondurables as well as on overall spending is clear indication of failure of the life-cycle/consumption smoothing hypothesis.

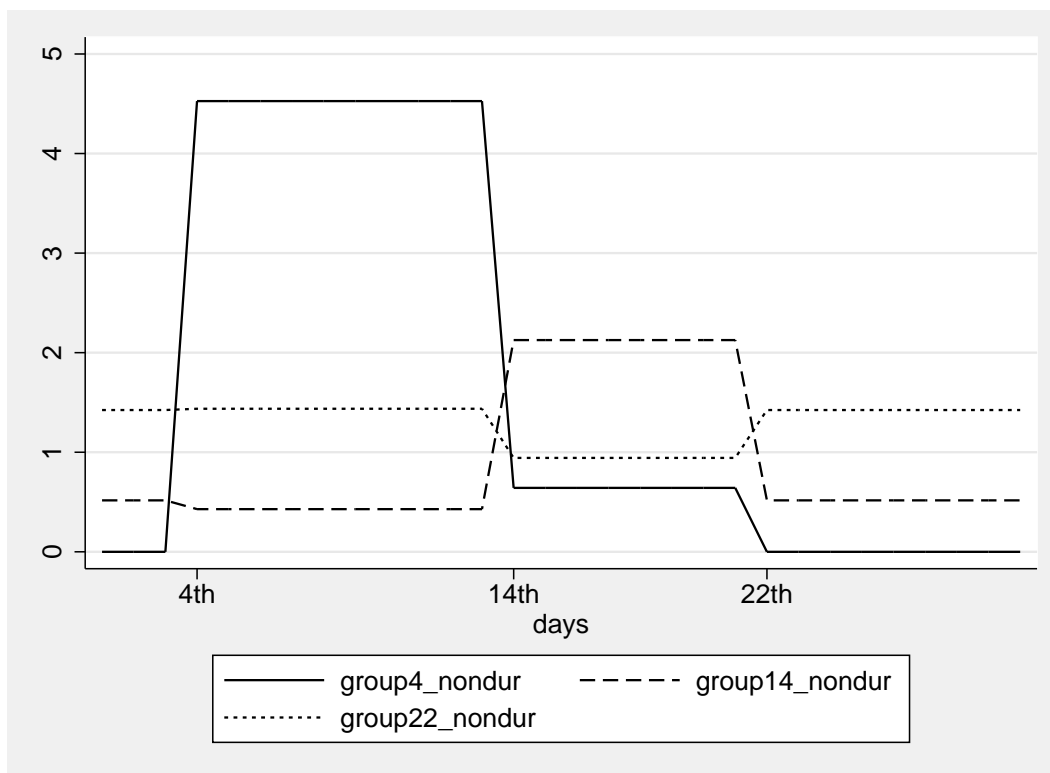
It should be noted here that expenditures need not peak at national pension receipts although we find such peaks. This is because households may use their national pensions to pay off the bills which they are committed to, most notably housing costs. For example, last-name initial group three, who receive national pension at around the 22nd of the month, may pay their housing costs then. Such behavior could lead to the spending peak in the beginning of the month as they receive their contributed pensions then. However, our results indicate that national pension payments are associated

Figure 3: Within-month expenditure (EUR / day) patterns for three payment groups



Reference expenditure: group1's (4th-of-month) expenditure from 22nd to 3rd = 0.

Figure 4: Within-month nondurable expenditure (EUR / day) patterns for three payment groups



Reference expenditure: group1's (4th-of-month) expenditure from 22nd to 3rd = 0.

Table 5: Standard deviation (between days of the month) differences between payment groups.

	Spending				Nondurable spending			
	St.dev.	vs.1	vs.2	vs.3	St.dev.	vs.1	vs.2	vs.3
No controls								
1 (4th)	44.23		+***	-***	39.35		+***	-***
2 (14th)	39.80	-***		-***	35.51	-***		-***
3 (22th)	53.37	+***	+***		52.47	+***	+***	
Controls								
1 (4th)	36.40		+***	-***	33.67		+***	-***
2 (14th)	34.05	-***		-***	28.58	-***		-***
3 (22th)	50.12	+***	+***		47.54	+***	+***	

Control variables: Household head gender, household head age, age (third polynomial), household type dummies (17), housing tenure dummies (6), year dummies, and month dummies. (*) denotes significance at 10% level, (**) at 5% level and (***) at 1% level.

with higher-than-average expenditures other than housing costs. There seems to be something different about the group which gets their national pension payments in the beginning of the month, together with their other pension payments. Given the payments of other pensions in the beginning of the month, paying national pensions on some later day seems to lead to smoother expenditure.

C. Expenditure variability

The most important question to be answered by our analysis is whether different payment schedules lead to differences in spending smoothness. We therefore statistically test the variability differences between the three national pension payment groups. We do this by modelling spending by re-

gressing it on full set (31) of day-of-month (DOM) dummies interacted with payment group dummies. We then take the fitted values of the regression to get a measure of between-days variation in spending (and exclude all the residual spending variation). Table 5 tests the equality of the standard deviation in spending (overall and nondurables) between the three groups. Testing is done pairwise. The lower part of Table 5 conducts the same tests but now controlling for the same control variables as in our earlier analyses.¹⁰ In line with our other analyses, variability in spending is larger in payment group 1 (4th-day national pension payments) than in group 2 (14th-day national pension payments). This difference is statistically significant in all tests. Somewhat surprisingly, the variability is (statistically significantly) largest in payment group 3 (22nd-day national pension payments). In any case, it seems safe to conclude that receiving national pension in the middle of the month (on 14th), separately from other pension payments mostly paid in the beginning of the month, leads to smoother spending pattern regardless of how spending smoothness is measured.

V. Conclusions

We study how within-month spending smoothness could be advanced by making benefit payments in two separate occasions within-month instead of paying them at once. We find clear differences in consumption patterns between one and two-payments groups. Linear within-month spending pattern of those receiving most of their income in the beginning of the month is decreasing, whereas we do not find such significant trends for others. Spending patterns seem to be such that both overall and nondurable spending peaks are associated with national pension payments. Spending is more dispersed over the month for those who received their income in a more dispersed manner. Looking at variability of expenditures across the days of the month, we find that two temporally separate payments might lead to smoother spending than just one payment or two payments that are done with only some days in between.

¹⁰We use the estimated coefficients of the day-of-month variables to extract the variation in spending due to days of month.

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