# Broken homes and empty pantries: The impact of separation on household economic resources

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### Abstract

I study the long-term impact of couple separation on income and consumption in France. Using an event study approach, I examine changes in household income, food purchases and body weight around separation, compared to households that do not separate. I find significant reductions in income and food purchases after separation. A concomitant decrease in the spouse's body weight indicates reduced overall caloric intake and lower living standards. Unlike previous studies, I find no recovery in income over time. While income falls more in high-income households, food purchases and body weight decline more in low-income households. A greater inability to smooth necessary consumption suggests that low-income households are particularly vulnerable, a conclusion that could not be drawn by looking at income alone. This is the first study of its kind for France and the first to consider income and consumption along with body weight as additional tangible measure of life quality.

**Keywords:** Separation, divorce, economic resources, income, event study.

**JEL codes:** D12, J12

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# 1  Introduction

Families have become more unstable in recent decades, as the likelihood of a couple separating has increased. In France, the share of cohabiting couples who broke up their first union within the first eight years more than doubled, from 12% for unions formed in the 1970s to 29% for unions formed between 1997 and 2005 [INSEE, 2015]. A couple who married in 1970 has a 12% chance of ever getting divorced, compared to 44% for couples who married in 2014 [INSEE, 2016]. Trends are similar in many countries around the world [OCDE, 2011]. As a result, family dissolution due to the separation of the couple has become an event that a large part of the population in many countries worldwide will eventually experience. In this study, I estimate the impact of a couple's separation on household economic resources in France. At the end of 2013, 73% of people aged between 26 and 65 in France cohabited. For 26% of them, it was at least the second cohabitation of their lives after having experienced a separation. Among the remaining people who were not cohabiting, 50% lived alone after a separation [INSEE, 2015]. Increased family instability is likely to have sizable impacts on living standards. The policy implications could be significant, given the size of the affected population and the fact that lower economic resources are associated with worse adult and children's outcomes including poorer psychological and physical health, lower academic achievement, and more behavioral problems [McLanahan et al., 2013, Tach and Eads, 2015].

The economic consequences of divorce have been studied many times, showing evidence of a drop in income one year after a divorce ranging from 23% to 40% [Hoffman, 1977, Duncan and Hoffman, 1985b, Bianchi and McArthur, 1991, Holden and Smock, 1991, McLanahan and Sandefur, 1994, Peterson, 1996, Galarneau and Sturrock, 1997, McKeever and Wolfinger, 2001, Avellar and Smock, 2005, Tach and Eads, 2015]. However, the effects in most studies have been estimated by comparing changes across two time periods, before and after the separation occurs. Estimates based on simple "before and after" comparisons are likely biased if the effect is not immediate and constant over time [Laporte and Windmeijer, 2005]. In addition, most of the studies do not include a control group to contrast the changes in the separated households with the changes in households that do not separate. More generally, the identification of causal effects is difficult

because separation is unlikely to be exogenous. Households that separate may be different from those that do not, and time-varying shocks may have an impact on probability of separation and also directly affect the outcome variables.

In this study, I examine the evolution of household economic resources several years before and after separation by exploiting longitudinal data from a panel of French households in an event study approach. I estimate how (household size-adjusted) resources evolve relative to the year before the separation and relative to households where no separation occurs, adjusting for household and year fixed effects and time-varying household characteristics. I look at the effects on income as a direct measure of economic resources, and study the effects on food purchases as indirect measure of resource availability. I also consider the remaining spouse's body weight and household diet quality in terms of the share of unhealthy food products purchased as measures of the household's quality of life. I perform heterogeneity analyses by pre-separation income, family composition, and the employment status, subsequent relationship status, and sex of the remaining spouse.

My study design eliminates several potential sources of bias. I account for time-invariant differences among household by including household fixed effects. I include year fixed effects and compare the outcomes in the separated households with the outcomes in a control group of households that do not separate to account for the impact of macro-level shocks. I control for a vector of time-varying covariates, including the labor market status of both spouses. Adjusting for changes in the labor market status addresses concerns of bias due to job loss that could directly impact household economic resources and also affect the decision to break up. An advantage of tracing the trajectory of the outcome variables using the event study approach is that it avoids the bias from simple "before and after" comparisons if the effect is not immediate and constant over time. Looking at the time-path of the outcome variables also allows me to check for the presence of unobserved time-varying shocks that have an immediate impact on the outcome variables, but a delayed impact on couple separation. If an unobserved shock impacts the outcome variables more quickly than it leads to a separation - because partners may first try to cope with the new situation or need some time to prepare to leave the household physically - I should observe changes in the

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outcome variables sometime before the separation.

This study contributes to the literature on the long-term effects of family dissolution on household income and consumption. The longer-term evolution of income and consumption are rarely investigated as the necessary longitudinal data on a large enough and representative number of households are often not readily available. Many studies are based on non-representative, dated samples and, most importantly, do not employ regression analysis which means that there is no adjustment for any time-varying covariates [Weiss, 1984, Duncan and Hoffman, 1985a,b, Peterson, 1989, Stirling, 1989]. Among the more recent studies, many also either do not control for time-varying household characteristics or do not account for unobserved heterogeneity. Fisher and Low [2016] estimate household fixed effects models to investigate changes in income separately for low, middle and high income households in the UK, but they do not control for time-varying household characteristics. De Vaus et al. [2014], De Vaus et al. [2017] and Fisher and Low [2009] study the time-path of income using data from Australia, six OECD countries and the UK, respectively. While controlling for some observable household and individual characteristics, they do not account for unobserved heterogeneity. An exception and most closely related to this study is the work by Page and Stevens [2004] who study the effects of family structure on income and food expenditures in the US by estimating household fixed effect models and controlling for additional time-varying covariates. I am not aware of any recent study investigating the evolution of income and consumption around the time of couple separation in France. Most of the existing literature focuses on the US and an important question is to what extent the results are valid for other countries. One contribution of this study is to provide evidence for the long-term effects of separation in France, a country with more developed welfare safety nets than the US. A second contribution of this study is to look for evidence of tangible effects of separation on household quality of life by examining whether changes in economic resources are reflected in changes in the body weight of the household members or in changes in household diet quality.

Some studies such as Bedard and Deschenes [2005] and Ananat and Michaels [2008] exploit the sex of the firstborn child as an instrumental variable to identify causal effects. This strategy

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exploits the fact that the sex of the firstborn child is random and the fact that marriages are less likely to continue following the birth of girls as opposed to boys. My event study captures a completely different impact than these IV approaches. First, these IV studies focus on the before-after effects of divorce, while I study the evolution of the outcome variables around the time of the separation. The before-after estimates of the IV studies could be biased if the effects are not immediate and constant. Second, the IV studies capture the impact on compliers, i.e., the effects on women who divorced because they had a female firstborn child but who would not have divorced if they had had a male firstborn child. Even if the compliers are representative of women with children, these studies cannot say anything about the effect of divorce in households without children.

I find that separation leads to sudden and significant declines in (household size-adjusted) income and food purchases. In the first year after the separation, income and food purchases are almost 20% lower than pre-separation levels and relative to the control group. Income remains 25% lower from the second year after separation onward while food purchases remain between 25% to 30% lower. These effects are detectable until the end of the observation window up to nine years after the separation. The decrease in income and food purchases is accompanied by a 1.5% decline in the body mass index[1] of the spouse who remains in the household that lasts three years after the separation. This weight loss occurs despite an increase in the share of unhealthy food purchases consisting of more salty, sweet, fatty and convenience foods, which are relatively calorie dense food products. The share of unhealthy food purchases shows an upward trend that starts prior to separation and peaks during the first year after separation. The effects on income are stronger in high-income households, but the effects on food purchases and body weight are more prominent in low-income households and households where the remaining spouse is unemployed. Single-parent households are most affected as the impact on all outcome variables is stronger in households with children. While labor force participation allows spouses in households without children to attenuate the effects of separation, it does not allow them to fully offset the impact. The only households that recover their income and food purchasing levels within four years after the

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[1]The body mass index (BMI) is calculated by dividing the individual's weight by the square of height and is commonly used to measure corpulence. The results are qualitatively the same when using body weight directly.

separation are those where a new partner joins the households.

The sudden, significant, and lasting declines in income and food purchases at the time of separation suggest that households experience a reduction in economic resources. It should be noted that I control for the number of meals eaten at home, so there should be less concern that changes in the amount of food eaten at home versus outside the home drive the results. In addition, the concomitant decline of in the body mass index of the spouse suggests that the reduction in calories from reduced food purchases is not compensated by consuming more calories outside the home. The spouse's weight loss and the adoption of a less balanced diet could be interpreted as further evidence of a reduced household standard of living and declining quality of life. Finding stronger effects among the poorer households and households where the spouse is unemployed suggests that the decline in food purchases and body weight are due to a reduction in economic resources. Alternative explanations such as household preferences, onset of depression or changes in the recording behavior are less plausible if we assume that households do not differ along these dimensions by their pre-separation income and employment status. The results of this study primarily reflect the impacts of separation on women's standard of living because I mostly observe female-headed households after separation. However, I do find small negative effects of separation on men's food purchases and body weight.

The effects I find in the French data are less pronounced than the 50% decline in income and 35% reduction in food purchases in the US reported by Page and Stevens [2004]. The difference in the strength of the effect could be due to the more generous welfare systems in France compared to the US. Public spending on family benefits including spending in cash, services and tax breaks in 2017 amounts to over 3.5% of GDP in France whereas it is only about 1% in the US [OECD, 2017].[2] However, the effects of separation last longer for the French households compared to their American counterparts. While Page and Stevens [2004] find that food purchases recover partially after six years which the authors attribute mainly to re-marriage, I do not find evidence for such an overall

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[2]This difference could also be due to the difference in the time periods considered. Page and Stevens [2004] use data from the 1968 through 1993 waves of the Panel Study of Income Dynamics whereas I use data on households from 2005 to 2014.

recovery. My finding of greater income declines in high-income households is consistent with previous results such as for example Fisher and Low [2016] who show that women in the highest income households before divorce suffer the largest and most persistent falls in their standard of living compared to those from the lowest income households. The authors interpret this as evidence that high-income households are the most affected by separation. However, my results of larger declines in food purchases and body weight in low-income households, in households where the spouse is unemployed, and in single-parent households suggest that these households are, in fact, the most vulnerable. Changes in household food purchases are arguably a more direct measure of changes in economic resources than changes in income, as these changes tell us something about the ability of the household to maintain necessary consumption. The results on weight loss further indicate tangible negative effects of separation on household living standards. The results of this study therefore underscore the importance of investigating not only household income but also consumption and other tangible measures of quality of life to determine which households are particularly vulnerable to separation.

This study presents evidence that families suffer significant and lasting reductions in economic resources after separation, even in a country with relatively strong welfare safety nets such as France. The findings underscore the importance of potential approaches to increasing resources for these families, with a particular attention to the most vulnerable low-income, unemployed and single-parent households. Mitigating the decline in economic resources avoids potentially costly negative consequences in the future. Improving the situation of single-parent households is likely to be particularly effective in avoiding the possibly most costly negative effects, such as reduced human capital accumulation of children in these households.

The remainder of the paper is as follows. Section 2 describes the data and outlines the event study methodology. Section 3 presents and discusses the results and Section 4 concludes.

# 2 Method

## 2.1 Data

I use data on household characteristics and food purchases from a representative sample of French households collected by *Kantar Worldpanel* covering the period 2005 to 2014. *Kantar Worldpanel* is a private company specialized in the construction of consumer panels and analysis for market research purposes similar to Nielsen Holdings in the US. The firm provides households with scanners to record their food purchases of goods with a bar code. Food items without a bar code are entered manually by the panelist.[3] Data on individual and household characteristics include information on household composition, household income (including pensions and alimony payments) bins, and the socioprofessional category, age, gender, height, weight, education level, and labor market status of each household member. Information on food purchases include product type, quantity, price and exact purchase date.

As the data on individual and household characteristics are updated annually, the time interval for analysis in this study is the year. I therefore construct household food purchases as the quantity of products purchased annually, both in terms of total expenditure denominated in euros and the total quantity purchased measured in kilograms. I define the share of unhealthy food products purchased as annual purchases of prepared food products (pizza, sauerkraut, cassoulet, etc.), salty-fatty products (finger food, crisps, crackers, appetizers), and sweet-fatty products (candy, chocolate, cookies, pastries, ice-creams, jams, etc.) over the total amount of annual food purchases. I use the information on weight, height and age to construct household total calorie needs and the body mass index (BMI) of each household member. I do not have information on purchases of food consumed outside the home, but households report the number of meals usually eaten at home per day of the week. I use this variable to construct the average number of meals usually eaten at home to account for changes in eating habits in terms of food consumed at home.

The data do not include direct information on the marital status of the household members, but

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[3]For more information, see the *Kantar Worldpanel* website here.

I exploit the fact that individuals are assigned codes according to their status within the household. Status 1 corresponds to the female partner (the "panellist" responsible for food purchases) and status 2 to the male partner (the "head of household"), while status 3 and 4 designate additional female and male household members. I define separation as the departure from the household of an individual with status 1 or 2. I am therefore not distinguishing between the separation of cohabiting or married couples. While it is possible that departure from the household is due to death rather than separation, most often the end of the union follows a separation, and few deaths occur before the age of 65 [INSEE, 2015, INED, 2018]. The results are robust when I consider a sub-sample of younger individuals. Of the total of 1,328 households for which I observe a separation, only 216 are cases of the departure of a female partner. The effects I estimate are therefore mainly the impact of a male partner leaving the household.

I observe a total of 61,000 households for an average of 3.4 years. My goal is to implement an event study design to examine changes in the outcome variables within a given household over time by including household fixed effects and flexibly controlling for year fixed effects. To avoid capturing effects due to changes in sample composition over time, I restrict the sample to households that I observe for at least 3 consecutive years, leaving about $30,000$ households out of the initial $61,000$. I further restrict the group of households that do not separate (the control group) to households observed for at least 7 consecutive years. I avoid further restricting the sample of separating households in order to keep a sufficiently large number of observations of separation. The results are robust to further restricting the sample of separating households, but the estimates are less precise. The final sample is composed of a total of $10,000$ households observed for an average of 8.5 years. The results remain qualitatively similar when I do not restrict the sample in any way, except for food purchases that show an upward trend in the years before separation in the regressions on the unrestricted sample. Compared to the other outcome variables, food purchases vary more strongly between households and over time, so using a panel with households observed for short periods could lead to effects induced by changes in sample composition. Restricting the sample to households observed over a longer time period is a conservative approach, as it avoids

capturing effects due to changes in sample composition over time and makes it more difficult to detect effects due to the reduced sample size. Table A1 provides summary statistics.

## 2.2   Empirical Strategy

The objective of this study is to measure the effect of couple separation on household economic resources. I implement an event study design to examine changes in the outcome variables of interest over time relative to the year before the separation and relative to households where no separation occurs. I run the following regression

$$Y_{ht} = \sum_{j=\underline{j}}^{\bar{j}} \beta_j D_{ht}^j + \alpha_h + \gamma_t + \rho X_{ht} + \epsilon_{ht},$$

where $Y_{ht}$ denotes the outcome of interest for household $h$ at time $t$. I include household ($\alpha_h$) and year ($\gamma_t$) fixed effects, and a vector of time-varying household characteristics ($X_{ht}$). I denote $D_{ht}^j$ the treatment indicator for a separation happening $j \in [\bar{j}, \underline{j}]$ periods away from $t$. The event time coefficients measure the impact of separation relative to the households that do not separate and, as I omit the event time dummy $j = -1$, relative to the year just before the separation. The event time runs from $-7$ to $+9$, meaning that I look at changes up to seven years prior to and nine years after the separation. $\epsilon_{ht}$ is the random error. The time-varying covariates include both spouse's age and labor market status, and changes in household size that are unrelated to a couple breaking up.

Including household fixed effects accounts for time-invariant differences between households and exploits the longitudinal aspect of the data by looking at changes in the outcome variables within the households over time. The year fixed effects flexibly adjust for the impact of common macro-level shocks while adding age dummies adjusts for underlying life-cycle trends. Adjusting for changes in the labor market status addresses concerns of bias due to job loss that could directly impact household economic resources and also affect the decision to break up. Including a control group of households in which the couple does not separate is important to estimate how much more economic resources households would have had if the couple had remained together. For

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the regressions on food purchases, I additionally adjust for total household calorie needs and the average number of meals eaten at home in a typical week. Total household calorie needs vary over time as a function of the household's composition in terms of sex and age and is a more refined measure of adjustment than simply household size. The average number of meals eaten at home in a typical week serves as a proxy for food habits in terms of share of food eaten at home compared to away from home.

I consider a range of different outcome variables as more or less direct measures of the household's standard of living or economic well-being. The primary outcome is income, which is the most direct measure of economic resources. I examine food purchases as an indirect measure of resource availability. It has been argued that consumption measures are preferable to income measures because income understates the financial resources available and because consumption is a more direct measure of well-being [Meyer and Sullivan, 2004, Page and Stevens, 2004]. As an essential, necessary expenditure, food expenditure is also particularly interesting to policymakers. I also study household members' body weight and diet quality to see if changes in economic resources translate into tangible effects on quality of life.

I perform analyses of effect heterogeneity by household and individual characteristics to identify the most vulnerable households. I group households according to their pre-separation income, household composition (presence of children), and the employment status of the spouse who remains in the household. Households are likely to use their savings or reallocate their budget by diminishing other leisure and durable goods expenses to maintain some minimum threshold of food consumption. If saving and budget reallocation are essential mechanisms, I expect food consumption and, as a potential consequence, changes in body weight or diet quality to be most responsive in low-income households, which may be less able to smooth over the income shock. An employed spouse may be better able to maintain his or her previous standard of living, while the presence of children in the household may impact the ability of the spouse to adjust to the income shock. I also investigate whether previously unemployed spouses take up an employment or move together with a new partner and if this mitigates the effects of separation.

The identification of causal effects is challenging because couple separation is unlikely to be exogenous. Households that separate may be different from those that do not, and time-varying shocks that increase the chances of separation may also affect the outcome variables. Some studies such as Bedard and Deschenes [2005] and Ananat and Michaels [2008] exploit the sex of the firstborn child as an instrumental variable to identify causal effects. This strategy exploits the fact that the sex of the firstborn child is random and the fact that marriages are less likely to continue following the birth of girls as opposed to boys. However, these IV studies focus on the before-after effects of divorce which could lead to biased estimates if the effects of separation are not immediate or constant. The authors acknowledge that many of the women are not single anymore when observed, have increased their labor market participation and/or moved back in with their parents. Another limitation of these studies, which is common to IV studies in general, is that the estimates capture the local effect on compliers, i.e. the effects on women who divorced because they had a female firstborn child but who would not have divorced if they had a male firstborn child. These studies cannot tell us anything about the effects of divorce in households without children. Finally, it is questionable whether the sex of the firstborn is an invalid instrument, as the exclusion restriction might be violated. While the sex of the firstborn child is arguably random, having a higher chance of breaking up due to a firstborn female child might be less so. The complier households might have different attitudes towards gender and different family dynamics upon the arrival of a female firstborn. For example, Kabátek and Ribar [2021] show that there are larger child-gender differences in divorce risks for parents whose attitudes towards gender-roles are likely to differ from those of their daughters and partners. Having a female firstborn could therefore influence the outcome variables independently of its effect on the probability of separation.

While certainly not perfect, the event study design has several advantages over these IV studies. One benefit is that the model estimates the global effects of separation and not just the local effect on the complier population. Another advantage is that the event study can show the timing, strength, and duration of the effects of separation, which is valuable information for policymakers to design well-targeted policies. Tracing the full trajectory of effects avoids the bias of simple "before

and after" comparisons if the effect is not immediate and constant over time. Looking at the time path of the effects also allows checking for unobserved time-varying shocks that have an immediate impact on the outcome variables but a delayed impact on couple separation. If an unobserved shock impacts the outcome variables more quickly than it leads to a separation - because partners may first try to cope with the new situation or need some time to prepare to leave the household physically - I should observe changes in the outcome variables sometime before the separation. For example, it has been shown that divorce is associated with a health effect that occurs before the actual separation [Blekesaune and Barrett, 2005, Laporte and Windmeijer, 2005]. If the health shock has an immediate impact on economic resources, the event study coefficients should reveal changes in the outcome variables prior to separation. However, I cannot rule out that some bias may remain in the case of unobserved time-varying shocks that both simultaneously lead to the spouse's departure and have a significant direct effect on the outcome variables. It should be noted that I can exclude job loss as such a potential source of bias because I observe and adjust for both spouses' labor market status.

## 3   Results

This section presents the estimates of the effect of separation on the evolution of household economic resources. I begin by showing the effects on income as a direct measure of economic resources, and on food purchases and spouse's body weight as indirect measures of resource availability. I present further results for household diet quality as evidence for tangible changes in the household's quality of life. I then turn to analyses of effect heterogeneity by household and individual characteristics.

### 3.1   Impact of separation on household economic resources

Figure 1 shows how the outcome variables evolve relative to the year before the separation ($j = -1$) and relative to households where no separation occurs, after adjusting for household and year fixed effects, spouse's age and employment status, and changes in household composition that are

unrelated to a couple breaking up. For food purchases, I further control for total household calorie needs and the average number of meals eaten at home in a typical week to adjust for changes in the proportion of food eaten at home relative to food eaten away from home.

I find that separation leads to a significant and lasting decline in household income and food purchases. As shown in panels A and B, there is no difference in the evolution of income and food quantities purchased in households that break up relative to the control households prior to the separation. The outcomes (adjusted for household and year fixed effect) are similar across both groups and relative to the year just before the separation. In the first year after the separation ($j = 1$), income and food purchases are almost 20% lower than pre-separation and relative to the control group. Income remains 25% lower from the second year after separation while food purchases remain between 25% to 30% lower up to nine years later until the end of the observation window.

I also find evidence that the declines in income and food purchases are accompanied by a decrease in the body weight of the remaining spouse and changes in the share of unhealthy food purchases. Panel C shows that the remaining spouse's BMI is visibly lower during the first, second and third year after the separation before reverting to pre-separation levels and becoming indistinguishable from the levels in the control group in the fourth year after the separation. There also appears to be a slight downward trend relative to the control group during the years before the separation, but the confidence intervals overlap with zero. I do not find effects on children's BMI. Panel D reports that households that break up buy a lower share of unhealthy food products than other households in the years before the separation. The share then increases to surpass the share of unhealthy food products bought in the control group in the first and second years after the separation. The difference is not statistically significant in the subsequent years.

The results are qualitatively similar when using the original non-transformed dependent variables rather than their log transformation or per capita income and food purchases as shown in Figure A1 in the appendix. The results are also robust to changes in the model specification. When some of the control variables are omitted, the magnitude of the coefficients tends to increase, but the results are qualitatively similar. When the control group of households that do not break up
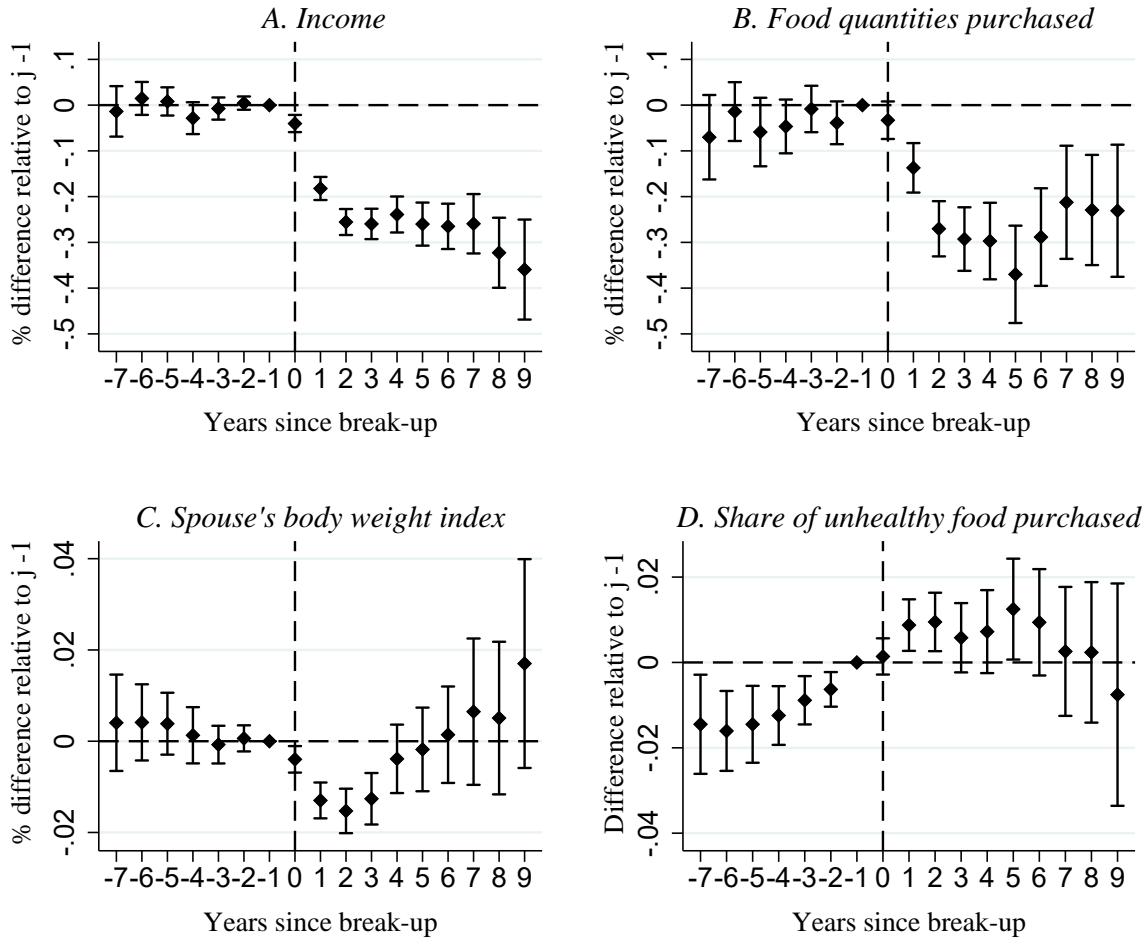
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Figure 1: Trend in outcome variables around separation.

*Note:* The figure shows event time coefficients relative to the control group of households where no separation occurs and relative to the year just before separation ($j = -1$). The dependent variable are the logarithm of income, food quantities purchased, remaining spouse's body mass index (a measure of corpulence, results for body weight are the same), and the share of unhealthy food products purchased in household $i$ in year $j$. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.

is excluded from the regressions, the effects on income and BMI are virtually the same, while the effects on food quantities purchased are stronger (decline of up to 40% relative to pre-separation levels). The evolution of the share of unhealthy foods purchased is similar, although the effects are not statistically significantly different from zero. Results and figures are made available upon request.

To test whether similar patterns could have been obtained by pure chance, I conduct two kinds of placebo exercises. First, I reshuffle the existing separation dates in the households where I observe a separation. I reassign the dates randomly and run the estimation 100 times. Second, I exclude the households where the couple separates, and draw a random subset from the remaining households, to which I then assign random separation dates. I repeat the drawing, date assignment and estimation 100 times. Figure A2 in the appendix represent the mean and the 95$^{th}$ percentile of the coefficient distributions of these placebo exercises. There is no noticeable sudden drop in any of the outcome variables from one period to the next. At most, the random separation dates seem to capture a slight upward trend in income and food purchases over time in the case where I randomly reassign the dates in households where a couple separates. Assigning random separation dates among the control households leads to coefficients that are centered around zero. These placebo exercises alleviate the concern that the results are obtained by chance, as my actual coefficient estimates are above the 95$^{th}$ percentile of the placebo coefficient distribution.

The results are not driven by the simple fact that an individual has left the household. I carefully control for household size and composition in all regressions, meaning that the results show changes in household size-adjusted outcomes. Further evidence that the sudden drop in income and food purchases and the change in the spouse's body weight are due to the separation of a couple is that the results are markedly different when I examine cases where people other than the spouse leave the household. Figure A3 in the appendix shows that (household size-adjusted) income increases slightly (between 3% and 5% depending on the post-event period) after a household member other than the spouse left relative to the period before and relative to the control households. Food purchases increase in the year after a non-spouse leaves the household,

revert to zero in year two and three and then briefly and barely statistically significantly dip below the previous levels in year five before the difference becomes again indistinguishable from zero. BMI does not appear affected at all, whereas the share of unhealthy food purchased has a tendency to decrease over time. Without wanting to interpret these results too much, as they are not the subject of this work, the pattern could be consistent with the story of an adult child or elder parent who are not generating income and therefore leave the household no worse off in terms of income. Food purchases could be higher shortly after the person leaves because households need some time to adjust their spending to the new household composition. Results and figures are made available upon request.

Identifying causal effects is challenging as separation is unlikely to be exogenous. I address concerns of endogeneity in several ways. I account for any time-invariant differences in household characteristics by including household fixed effects. I also control for time-varying covariates, including the labor market status of both spouses. Adjusting for changes in the labor market status addresses the issue of endogeneity due to job loss that could impact both the decision to break up and the outcome variables. Bias could still arise from other unobserved shocks, such as a severe illness of household members that could lead to a separation and independently affect the outcome variables. The advantage of tracing the trajectory of the outcome variables using the event study approach is that it allows me to check for the existence of shocks that have an immediate impact on the outcome variables while leading to the separation with some delay. If an unobserved shock impacts the outcome variables immediately but leads to a separation with some delay I should observe changes in the outcome variables sometime before the separation. I do not find evidence for such anticipatory effects in the data. Household income, food purchases, and the remaining spouse's BMI are relatively stable in the years preceding the separation and then fall sharply during the year and the first year after the separation. However, I cannot exclude remaining bias due to unobserved shocks that simultaneously lead to the separation of the couple and effects on outcome variables.

Declines in household income and food purchases at the time of separation have previously

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been reported in the literature. The most comparable study by Page and Stevens [2004] who also look at the time path of income and food purchases using household fixed effects but using data from the US report a 50% decline in income and 35% reduction in food purchases. These effects are stronger than the 30% and 25% declines in income and food purchases I find for France. The difference in the strength of the effect could be due to the more generous welfare systems in France compared to the US. Public spending on family benefits including spending in cash, services and tax breaks in 2017 amounts to over 3.5% of GDP in France whereas it is only about 1% in the US [OECD, 2017]. Another possibility is that the differences are due to the different time periods considered. Page and Stevens [2004] use data from the 1968 through 1993 waves of the Panel Study of Income Dynamics whereas I use data on households from 2005 to 2014. While the magnitude of the effects is smaller for the French households, the effects of separation appear to last longer compared to households in the US. I do not find evidence for recovery over time, whereas Page and Stevens [2004] find that food purchases recover partially after 6 years as they are then only 6% lower than pre-separation level and household income is 23% lower than pre-separation levels. The authors attribute this recovery mainly to re-marriage. I only rarely observe a new spouse joining the household, which may explain why I do not observe a recovery at the aggregate level. Finding a decrease in the body weight of the remaining spouse is consistent with some previous studies [Lee et al., 2004, Eng et al., 2005], but the results are ambiguous as other studies point rather to a weight gain [Mata et al., 2018]. Regarding the share of unhealthy food products purchased, I did not find comparable estimates in the literature. A few studies examine the associations between marital status change and dietary behaviors by focusing mainly on a limited set of food items [Lee et al., 2004, Vinther et al., 2016].

The sudden, significant and sustained decline in income and food purchases at the time of separation suggests that households experience a reduction in economic resources due to their separation. The decrease in the remaining spouse's body weight that accompanies the decline in income and food purchases suggests that overall caloric intake has been reduced and could be interpreted as evidence that the separation has tangible effects on the household's standard of living.

It should be noted that I control for the number of meals eaten at home, so there should be less concern that changes in the amount of food eaten at home versus outside the home drive the results. Furthermore, the decrease in body weight suggests that the reduction in calories from reduced food purchases is not compensated by consuming more calories outside the home. The decrease in body weight occurs despite an increase in the share of unhealthy food purchases consisting of more salty, sweet, fatty and convenience foods, which are relatively calorie dense food products. Adopting a less balanced diet could be interpreted as evidence of a decline in the household's quality of life. It is also possible that the declines in food purchases and body weight and the changes in diet patterns are due to changes in household preferences rather than a result of or evidence for a decrease in household economic resources. The newly single spouse may want to buy less food and lose weight to increase the chances of finding a new partner. Depression and loss of appetite are other potential competing explanations. Finally, individuals could change how they report their food purchases and weight. The results from heterogeneity analyses presented in the next section provide some evidence against these alternative explanations by revealing stronger effects among households with lower pre-separation income and households where the remaining spouse is unemployed. If we assume that weight loss preferences, the incidence of depression, and food and weight recording behavior do not differ between households according to their pre-separation income or employment status, then finding stronger effects in poorer households and households with unemployed household heads suggests that insufficient economic resources drive these effects. See section section 3.2 for more details.

## 3.2   Effect heterogeneity by household and individual characteristics

This section presents the results of the heterogeneity analyses. I show how the effects differ by pre-separation income, family composition, and the employment status, subsequent relationship status, and sex of the remaining spouse.

Figure 2 presents the results of regressions run separately for households grouped according to their average per capita income in the period before separation. The left-hand panels show results

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for the 35% of households with the lowest pre-separation average incomes, while the right-hand panels show results for the 35% of households with the highest incomes. Panel A shows a sustained fall in income after separation for both groups of households but larger effects for high-income households, with falls of up to 30%, compared with falls of around 10% to 20% for low-income households. While the effects on income are more substantial in the households with the highest pre-separation income, the effects on food purchases and spouse's body weight are more prominent in the low-income households. Panel B shows that the amount of food purchased in the low-income households drops precipitously by 20% in the first year after the separation and then further to 40% before recovering slightly in year five, but remaining around 20% lower compared to pre-separation levels. Income decreases more steadily in the high-income households with a decline of 10% to 20% in the first two years, staying around 30% lower in years three and four to reach a decline of around 40% by year five. Panel C shows that the effects on the remaining spouse's body mass index are similarly stronger in the low-income households and are barely statistically different from zero in the high-income households. Panel D reveals an upward trend in the share of unhealthy food purchases for both groups of households prior to the separation. This trend disappears in the low-income households after separation but accelerates in the high-income households to reach a peak of around 3% five years after the separation.

I also find evidence for effect heterogeneity by family composition. Figure 3 presents the results separately for couple-only households and for family households where children are present at the time of separation. Changes in the outcome variable tend to be larger for family households. Income declines by around 20% in the couple-only households, while it drops by 35% in the family households. Food purchases drop more abruptly and up to 40% in family households compared to a decrease of about 30% in the couple-only households. However, the estimates for food purchases are noisy, and the difference is not statistically significant. The spouse's body weight decreases statistically significantly in both couple-only and family households, but the magnitude of the effects is more than twice as large in the family households. Households with children are more likely to belong to the 35% of households with the lowest pre-separation incomes than couple-only
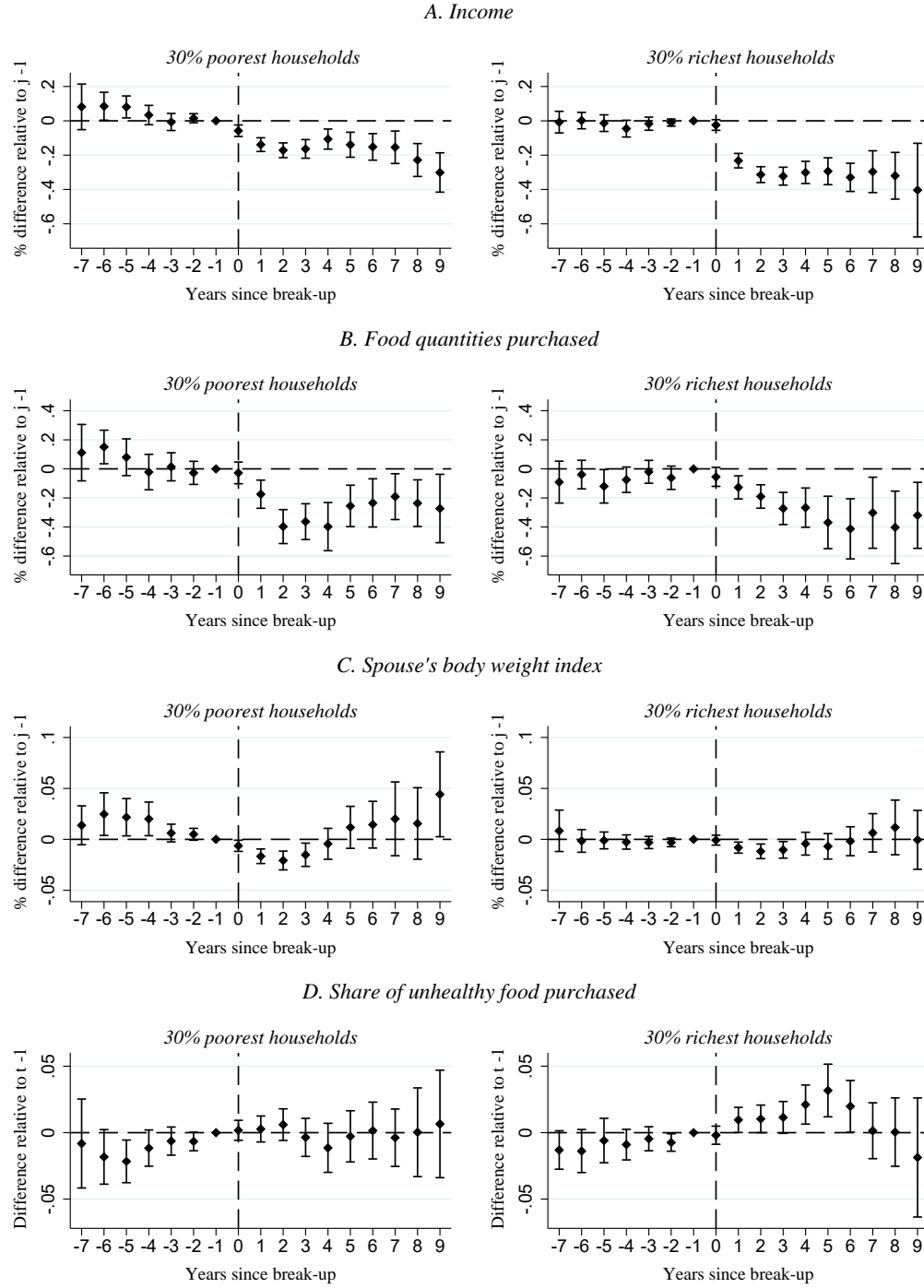
Figure 2: Trend in outcome variables around separation, by pre-separation per-capita income.
*Note:* The figure shows event time coefficients relative to the control group of households where no separation occurs and relative to the year just before separation ($j = -1$). The left-hand panels present results for the 35% of households with the lowest pre-separation per-capita incomes, while the right-hand panels show results for the 35% of households with the highest incomes. The dependent variable are the logarithm of income, food quantities purchased, remaining spouse's body mass index (a measure of corpulence, results for body weight are the same), and the share of unhealthy food products purchased in household $i$ in year $j$. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.

households that are more likely to belong to the 35% of households with the highest pre-separation income. However, the differences across family composition are not entirely driven by different pre-separation income levels. Looking at effect heterogeneity by income within each family type, I find that the effects on food purchases and spouse's body weight are most pronounced in the poorest 35% of households with children compared to the poorest 35% of couple-only households. Income declines most in the households with higher pre-separation income, but the effect is stronger in the family households. Similarly, the increase in the share of unhealthy food products purchased is larger in the high-income households but more pronounced in the family households. Results and figures are available upon request.

I further divide households into groups by both family composition and employment status to see whether the differences in the effects between couple-only households and households with children could stem from differences in the labor market participation as parents might need to reconcile market labor with childcare. In the couple-only households, separation leads to a stronger and persistent drop in income for households where the remaining spouse is inactive. The decrease in income is smaller, not statistically significant and reverts to zero four years after the separation for households where the remaining spouse is active. Food purchases also decrease more strongly during the first five years in couple-only households where the spouse is inactive, while the effect is about half as strong and barely statistically significant in the households where the spouse is active. The group of family households where the remaining spouse is inactive is small (55 households) and the regression estimates are highly imprecise, with none being statistically significantly different from zero. However, I find that the effects on income and food purchases are more pronounced in the family households where the spouse is active compared to the couple-only households where the spouse is inactive. Although the spouse's body weight appears to decrease, and more sharply in couple-only households where the spouse is active, the coefficients are mostly imprecisely estimated. Similarly, other than a slight increase in the share of unhealthy food purchased in couples-only households where the spouse is inactive, the coefficients on the effects on the share of unhealthy food are generally not statistically different from zero. Results and figures are available
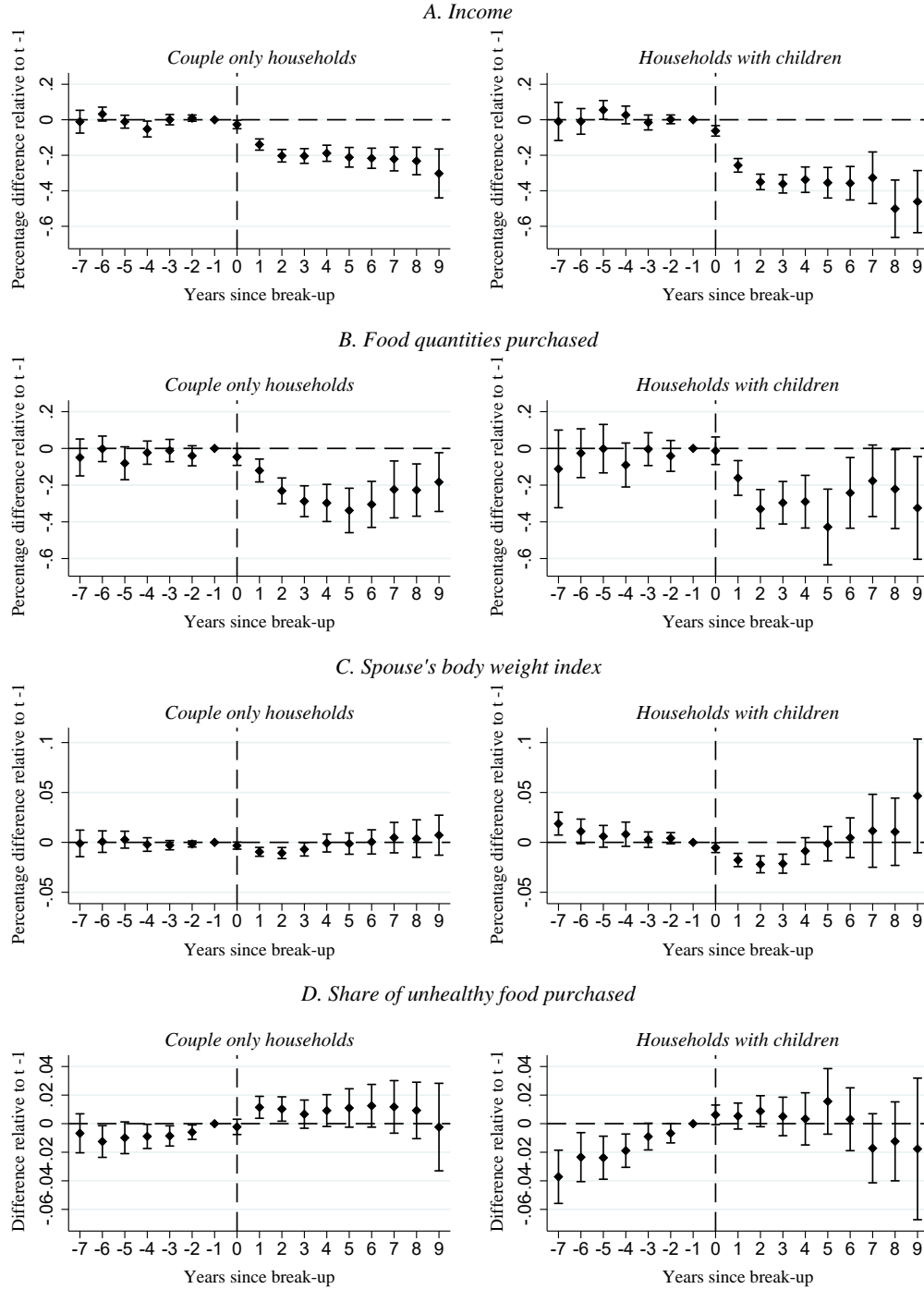
Figure 3: Trend in outcome variables around separation, by pre-separation per-capita income.
*Note:* The figure shows event time coefficients relative to the control group of households where no separation occurs and relative to the year just before separation ($j = -1$). The left-hand panels present results for couple-only households, while the right-hand panels show results for households with children ("family households"). The dependent variable are the logarithm of income, food quantities purchased, remaining spouse's body mass index (a measure of corpulence, results for body weight are the same), and the share of unhealthy food products purchased in household $i$ in year $j$. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.

upon request. In addition to grouping households by the employment status of the remaining spouse, I also examine changes in the spouse's employment status to see if taking a job after separation allows households to mitigate the effects of separation. However, I only observe 50 cases where a previously unemployed spouse becomes employed and the estimates are noisy with no clear trend.

Finally, I investigate whether the effects of separation differ between female- and male-headed households and whether forming a new couple allows households to mitigate or offset the effects. In a majority of the cases, I observe a male spouse leaving the household, meaning that I mainly estimate the effects of separation on the female partner who remains in the household. When I focus on the 216 cases where the remaining spouse is male (or, in other words, where the remaining spouse has left the household), I find no evidence of a decline in income. I also find no effect on changes in the share of unhealthy foods purchased. However, I find a small negative effect on food purchases and body weight of the male spouse, but the effects are imprecisely estimated. Results and figures are available upon request. To study the impact of forming a new couple, I estimate the effects separately for households where a new partner joins the household and for households where the spouse remains single. I observe only 116 cases where a new spouse joins the household and the coefficients are generally less precise, but it appears that the effects are smaller and shorter-lived in households that form a new couple. In households where I observe the arrival of a new spouse, income declines by 20% in the first and second years after separation, then returns to the pre-separation level. Food purchases appear to decline, but the effects are imprecisely estimated. The spouse's body weight declines initially but returns to its pre-separation level six years after separation. The results are presented in Figure A4 in the Appendix.

Finding more pronounced declines in income for households with higher pre-separation income levels is consistent with results from the literature. For example, Fisher and Low [2016] find that women in the highest income households suffer the largest and most persistent falls in their standard of living compared to those from the lowest income households. These high-income households may therefore appear to be more vulnerable than low-income households, an interpretation seconded by Fisher and Low [2016]. The more prominent drop in income in high-

income households is not surprising, as it likely reflects the high wages of the departing spouse. However, it does not necessarily indicate that these households are the most affected. My results for the other outcome variables indicate that low-income households are, in fact, most affected by separation. Food purchases and spouse's body weight decline more in these households than in high-income households, suggesting that low-income households are less able to smooth their necessary consumption. This pattern is consistent with a lower saving capacity of low-income households, whereas high-income households could have more easily built up assets and better cushion the effects. The results of this study underscore the importance of investigating not only household income but also consumption and other tangible measures of quality of life to determine which households are particularly vulnerable to the effects of separation. Changes in household food purchases are arguably a more direct measure of changes in economic resources than changes in income, as these changes inform us about the household's ability to maintain necessary consumption.

The results suggest that single-parent households are particularly vulnerable. Within their respective income groups, the effects on all outcome variables are stronger in households with children. Declines in income and food purchases are more pronounced in family households where the spouse is in employment than in couple households where the spouse is not working. I would have expected to find even stronger effects in households with children where the spouse remains inactive, however I only observe a small group of family households where the spouse is inactive, leading to noisy estimates that do not allow for a clear interpretation. The larger decline in food purchases in households with children could be explained by the fact that some children might be registered in the household, even if they are not present at all times in cases where spouses have agreed to alternate custody. I have included information on the average number of meals served in the household in a typical week, which should account for children regularly eating at their other parent's home. In addition, the larger effect on the spouse's body weight in these households suggests an overall reduction in calories consistent with the reduction in food purchases.

By revealing stronger effects among households with lower pre-separation income, the results

from the heterogeneity analyses provide some evidence against alternative interpretations that the decline in food purchases and body weight are driven by household preferences, onset of depression or changes in the recording behavior of the household. If we assume that weight loss preferences, the incidence of depression, and recording behavior do not differ between households by their pre-separation income, then finding stronger effects in poorer households suggests that insufficient economic resources drive these effects. Similarly, effect heterogeneity by spouse's employment status also hint at reduced economic resources as driving factor. An employed spouse in couple-only households is better able to maintain his or her previous standard of living compared to a household where the spouse is inactive.

While labor force participation allows spouses in households without children to attenuate the effects of separation, it does not allow them to fully offset the impact. Forming a new couple seems to be the only way to avoid a long-term reduction in the standard of living after separation. The only households that regained their income within four years after the separation and had almost no reduction in their food purchasing levels were those where a new partner joined the household. Finding that forming a new couple reduces the impact of separation is consistent with previous results, such as those from Page and Stevens [2004] who find that marriage mitigates the effects on income and food purchases six years after separation.

Because I observe mostly female-headed households after separation, the results of this study primarily reflect the impacts of separation on women's standard of living, although I find a small negative effect of separation on men's food purchases and body weight. This evidence is consistent with previous evidence from the literature. A large body of research has shown that women experience significant effects [Hoffman, 1977, Duncan and Hoffman, 1985b, Bianchi and McArthur, 1991, Holden and Smock, 1991, McLanahan and Sandefur, 1994, Peterson, 1996, Galarneau and Sturrock, 1997, McKeever and Wolfinger, 2001, Avellar and Smock, 2005, Tach and Eads, 2015] while the effects for men have been found to be more heterogeneous and overall less severe [Smock, 1994, Galarneau and Sturrock, 1997, McManus and DiPrete, 2001]. However, while I find more evidence of effects on women, it is possible that the smaller sample size of men

left by their female partners does not allow for proper detection of effects on men.

Overall, the study presents evidence that families in France suffer significant and persistent reductions in economic resources after separation. Mitigating the decline in economic resources of these families avoids potentially costly negative consequences in the future, such as reduced human capital accumulation. Improving the situation of single-parent households to protect children who are likely to be the most vulnerable to the consequences of reduced economic resources while being the least responsible for their situation should be considered a policy priority. Although the phenomenon is not sufficiently documented, it is estimated that in France, 35% of people do not receive the child support payments they were legally granted [Auvigne et al., 2016]. The government's efforts to decrease the number of child support payment arrears through the creation in 2017 of the Agency for the Recovery of Child Support Arrears (ARIPA for the French "Agence de recouvrement des impayés de pension alimentaire") have been deemed insufficient.[4] Before or in addition to considering an increase in public assistance or mandatory child support payments, policymakers should ensure that current legislation is fully implemented. It is not only a matter of fairness to ensure that both parents share responsibility for their joint dependents, it will also focus the allocation of resources to the most vulnerable population.

# 4 Conclusion

This study provides evidence that households in France suffer a significant and persistent reduction in economic resources after a separation. I examine the evolution of household economic resources several years before and after separation by exploiting longitudinal data from a panel of French households in an event study approach. I estimate how a range of outcome variables evolve relative to the year before the separation and relative to households where no separation occurs, adjusting for household and year fixed effects, and time-varying household characteristics. I look at the effects on income as a direct measure of economic resources, and examine food purchases as

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[4]See for example here.

indirect measure of resource availability. I also study the spouse's body weight and the quality of the household diet in terms of the share of unhealthy food items purchased as evidence of tangible effects on household quality of life.

I find sudden and significant declines in income and food purchases at the time of separation, suggesting that households experience a reduction in economic resources. These effects are detectable until the end of the observation window up to nine years after the separation. A decrease in the body weight of the remaining spouse that accompanies the declines in income and food purchases during the first three years after the separation suggests that overall caloric intake has been reduced and is evidence for a tangible decline in the household's standard of living. The body weight loss occurs despite an increase in the share of unhealthy and relatively calorie-dense food purchases. The adoption of a less balanced diet could be interpreted as further evidence of declining household quality of life. The effects of separation are most pronounced among low-income households, households where the remaining spouse is unemployed and single-parent households. Finding stronger effects among poorer households and households where the spouse is unemployed suggests that the decline in food purchases and body weight are due to a reduction in economic resources. Alternative explanations for the decline in food purchases and weight loss such as household preferences, onset of depression or changes in the recording behavior are less plausible if we assume that households do not differ along these dimensions by their pre-separation income and employment status.

The results of this study underscore the importance of investigating not only household income but also consumption and other tangible measures of quality of life to determine which households are most affected by separation. If I had considered only income, I would have identified high-income households as most at risk, as previous studies have done, because the decline in income is more pronounced in these households. However, the stronger declines in food purchases and body weight in low-income households, households where the spouse is not employed or single-parent households suggest that these households are less able to smooth their necessary consumption and are, in fact, the most vulnerable.

This study presents evidence that families suffer significant and persistent reductions in economic resources after separation, even in a country with relatively strong welfare safety nets such as France. The findings underscore the importance of potential approaches to increasing resources for these families, with a particular attention to the most vulnerable low-income, unemployed and single-parent households.

# References

Elizabeth O Ananat and Guy Michaels. The effect of marital breakup on the income distribution of women with children. *Journal of Human Resources*, 43(3):611–629, 2008.

François Auvigne, François Dumuis, Laurence Pecault-Rivolier, Jérôme Guedj, Catherine Sueur, Marie-Bénédicte Maizy, Irène Domenjoz, and Isabelle Bignalet. Création d'une agence de recouvrement des impayés de pensions alimentaires, 2016.

Sarah Avellar and Pamela J Smock. The economic consequences of the dissolution of cohabiting unions. *Journal of Marriage and Family*, 67(2):315–327, 2005.

Kelly Bedard and Olivier Deschenes. Sex preferences, marital dissolution, and the economic status of women. *Journal of human Resources*, 40(2):411–434, 2005.

SM Bianchi and E McArthur. Family disruption and economic hardship: The short-run picture for children. us bureau of census, curr. *Popul. Rep. Ser. P*, 70, 1991.

Morten Blekesaune and Anne E Barrett. Marital dissolution and work disability: A longitudinal study of administrative data. *European Sociological Review*, 21(3):259–271, 2005.

David De Vaus, Matthew Gray, Lixia Qu, and David Stanton. The economic consequences of divorce in australia. *International Journal of Law, Policy and the Family*, 28(1):26–47, 2014.

David De Vaus, Matthew Gray, Lixia Qu, and David Stanton. The economic consequences of divorce in six oecd countries. *Australian Journal of Social Issues*, 52(2):180–199, 2017.

Greg J Duncan and Saul D Hoffman. Economic consequences of marital instability. In *Horizontal equity, uncertainty, and economic well-being*, pages 427–470. University of Chicago Press, 1985a.

Greg J Duncan and Saul D Hoffman. A reconsideration of the economic consequences of marital dissolution. *Demography*, 22(4):485–497, 1985b.

Patricia Mona Eng, Ichiro Kawachi, Garrett Fitzmaurice, and Eric B Rimm. Effects of marital transitions on changes in dietary and other health behaviours in us male health professionals. *Journal of Epidemiology & Community Health*, 59(1):56–62, 2005.

Hayley Fisher and Hamish Low. *Sharing Lives, Dividing Assets: An Interdisciplinary Study*. Hart Publishing, 2009.

Hayley Fisher and Hamish Low. Recovery from divorce: comparing high and low income couples. *International Journal of Law, Policy and the Family*, 30(3):338–371, 2016.

Diane Galarneau and Jim Sturrock. *Family income after separation*. Statistics Canada, 1997.

Saul Hoffman. Marital instability and the economic status of women. *Demography*, 14(1):67–76, 1977.

Karen C Holden and Pamela J Smock. The economic costs of marital dissolution: Why do women bear a disproportionate cost? *Annual review of sociology*, 17(1):51–78, 1991.

INED. Mortality in france, 2018. `https://www.ined.fr/fr/tout-savoir-population/chiffres/france/mortalite-cause-deces/table-mortalite`.

INSEE. Couples et familles, 2015. URL `https://www.insee.fr/fr/statistiques/2017510?sommaire=2017528`.

INSEE. 123 500 divorces en 2014, 2016.

Jan Kabátek and David C Ribar. Daughters and divorce. *The Economic Journal*, 131(637): 2144–2170, 2021.

Audrey Laporte and Frank Windmeijer. Estimation of panel data models with binary indicators when treatment effects are not constant over time. *Economics Letters*, 88(3):389–396, 2005.

Sunmin Lee, Eunyoung Cho, Francine Grodstein, Ichiro Kawachi, Frank B Hu, and Graham A Colditz. Effects of marital transitions on changes in dietary and other health behaviours in us women. *International Journal of Epidemiology*, 34(1):69–78, 2004.

Jutta Mata, David Richter, Thorsten Schneider, and Ralph Hertwig. How cohabitation, marriage, separation, and divorce influence bmi: A prospective panel study. *Health Psychology*, 37(10): 948, 2018.

Matthew McKeever and Nicholas H Wolfinger. Reexamining the economic costs of marital disruption for women. *Social Science Quarterly*, 82(1):202–217, 2001.

Sara McLanahan and Gary Sandefur. *Growing Up with a Single Parent. What Hurts, What Helps.* ERIC, 1994.

Sara McLanahan, Laura Tach, and Daniel Schneider. The causal effects of father absence. *Annual review of sociology*, 39:399–427, 2013.

Patricia A McManus and Thomas A DiPrete. Losers and winners: The financial consequences of separation and divorce for men. *American Sociological Review*, 66(2):246, 2001.

Bruce D Meyer and James X Sullivan. The effects of welfare and tax reform: the material well-being of single mothers in the 1980s and 1990s. *Journal of public economics*, 88(7-8):1387–1420, 2004.

OCDE. Doing better for families, 2011.

OECD. Public spending on family benefits, 2017. URL `https://www.oecd.org/els/family/database.htm`.

Marianne E Page and Ann Huff Stevens. The economic consequences of absent parents. *Journal of Human Resources*, 39(1):80–107, 2004.

Richard R Peterson. *Women, work, and divorce*. SUNY Press, 1989.

Richard R Peterson. A re-evaluation of the economic consequences of divorce. *American Sociological Review*, pages 528–536, 1996.

Pamela J Smock. Gender and the short-run economic consequences of marital disruption. *Social forces*, 73(1):243–262, 1994.

Kate J Stirling. Women who remain divorced: The long-term economic consequences. *Social Science Quarterly*, 70(3):549, 1989.

Laura M Tach and Alicia Eads. Trends in the economic consequences of marital and cohabitation dissolution in the united states. *Demography*, 52(2):401–432, 2015.

Johan L Vinther, Annalijn I Conklin, Nicholas J Wareham, and Pablo Monsivais. Marital transitions and associated changes in fruit and vegetable intake: Findings from the population-based prospective epic-norfolk cohort, uk. *Social Science & Medicine*, 157:120–126, 2016.

Robert S Weiss. The impact of marital dissolution on income and consumption in single-parent households. *Journal of Marriage and the Family*, pages 115–127, 1984.

# Appendix

Table A1: Summary statistics

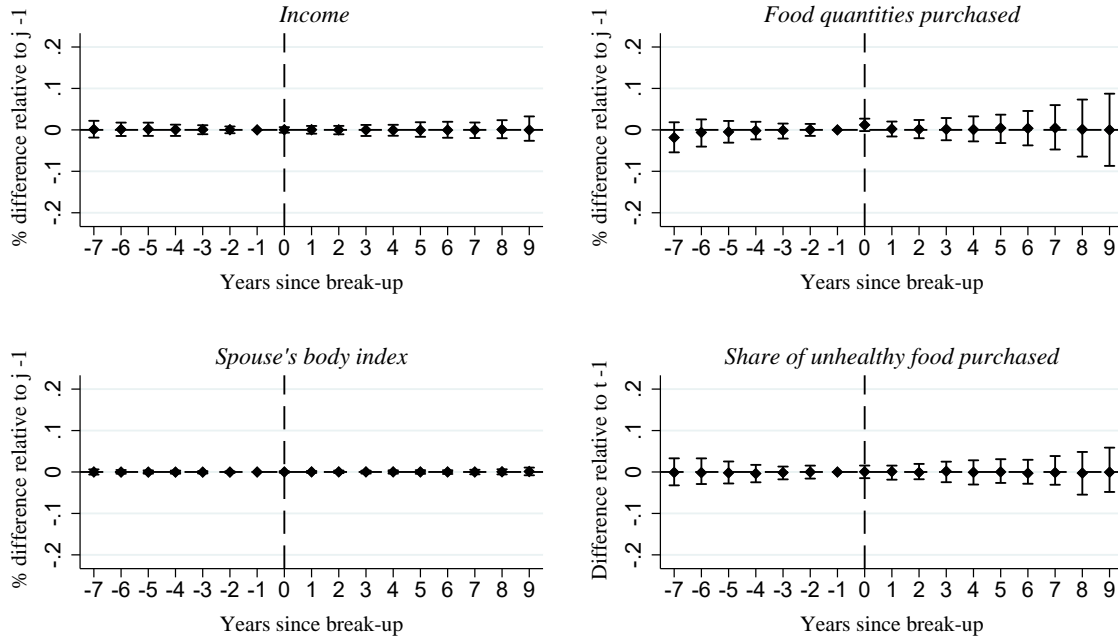|  | Separating households | | | Control group | | |
|---|---|---|---|---|---|---|
|  | Mean | Std. Dev. | n | Mean | Std. Dev. | n |
| Household income (EUR) | 2440 | 1327.86 | 8469 | 2681.22 | 1417.86 | 75242 |
| Food quantity (kg) | 671.83 | 415.91 | 8469 | 768.08 | 431.89 | 75242 |
| BMI of female spouse | 24.86 | 4.8 | 7768 | 25.09 | 4.74 | 71830 |
| Share of unhealthy food | 0.21 | 0.12 | 8469 | 0.19 | 0.11 | 75242 |
| Household size | 2.43 | 1.24 | 8469 | 2.53 | 1.33 | 75242 |
| Age Spouse 1 | 50.67 | 16.13 | 8469 | 52.94 | 14.77 | 75242 |
| Age Spouse 2 | 51.09 | 17.29 | 8469 | 54.44 | 14.85 | 75242 |
| Spouse 1 inactive = 1 | 0.36 | 0.48 | 8469 | 0.4 | 0.49 | 75242 |
| Spouse 2 inactive = 1 | 0.34 | 0.47 | 8469 | 0.36 | 0.48 | 75242 |
| Household calorie needs | 3210.99 | 1651.01 | 8092 | 3439.57 | 1807.23 | 72333 |
| Meals at home per day | 2.06 | 1.05 | 8291 | 2.16 | 1.13 | 74503 |
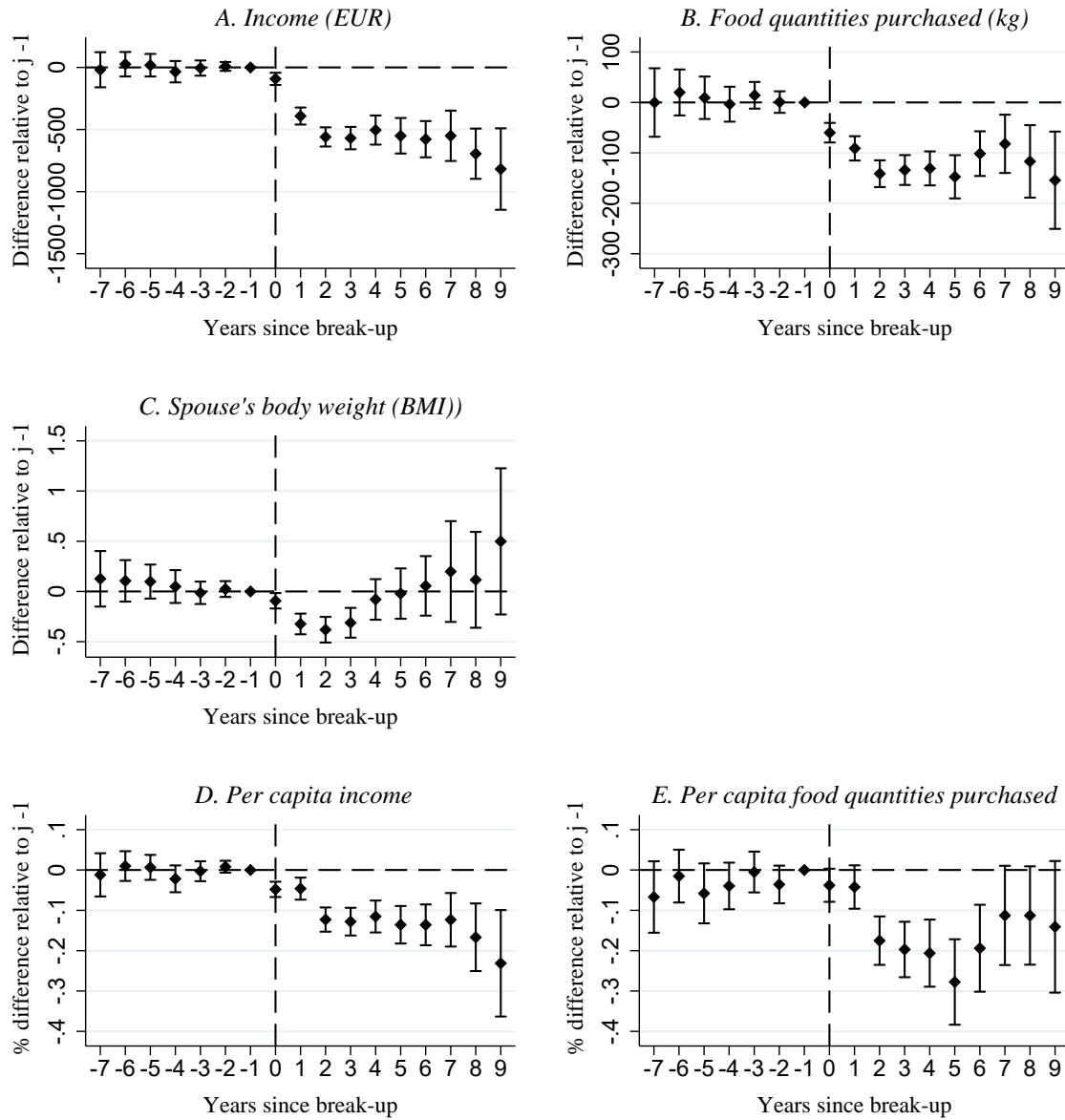
Figure A1: Trend in outcome variables around separation using the original non-transformed dependent variables and per capita income and food purchases.

*Note:* The figure shows event time coefficients relative to the control group of households where no separation occurs and relative to the year just before separation ($j = -1$). The dependent variable are the income, food quantities purchased, remaining spouse's body mass index (a measure of corpulence, results for body weight are the same), the share of unhealthy food products purchased, per capita income and per capita food quantities purchased in household $i$ in year $j$. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.

*Placebo using random separation dates in houeholds that do not separate*



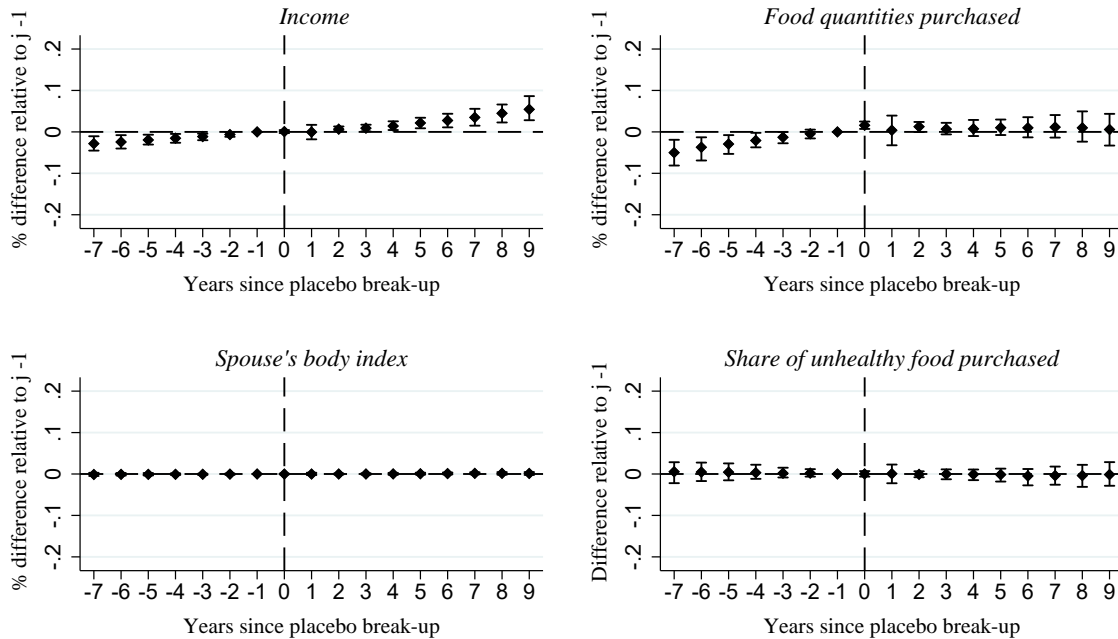*Placebo using reshuffled separation dates in houeholds that separate*



Figure A2: Trend in outcome variables around placebo dates of separation.
*Note:* The figure shows the mean and the 95th percentile of the coefficient distributions of placebo exercises, that is placebo event time coefficients relative to the placebo control group of households and relative to the year just before the placebo date of separation ($j = -1$). The upper four graphs show the effects using random separation dates in households that do not separate, while the lower four graphs show the effects of using randomly reassigned dates of separation in the households that separate. The dependent variable are the logarithm of income, food quantities purchased, remaining spouse's BMI, and the share of unhealthy food products purchased in household i in year t. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015.
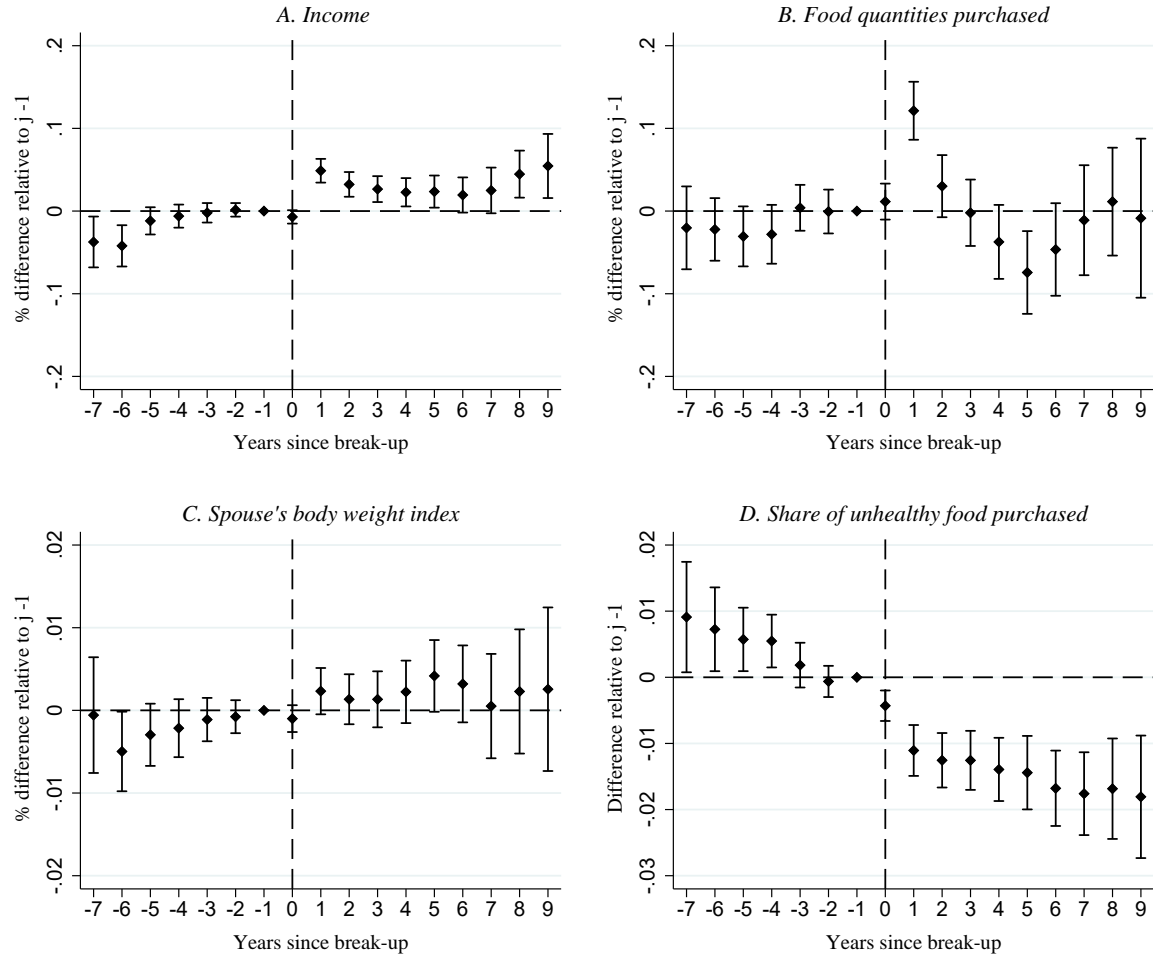
Figure A3: Trend in outcome variables around the time another person than the spouse leaves the household.

*Note:* The figure shows event time coefficients relative to the control group of households where no person other than the spouse leaves the household and relative to the year just before the person other than the spouse leaves the household ($j = -1$). The dependent variable are the logarithm of income, food quantities purchased, female spouse's BMI, and the share of unhealthy food products purchased in household i in year t. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.
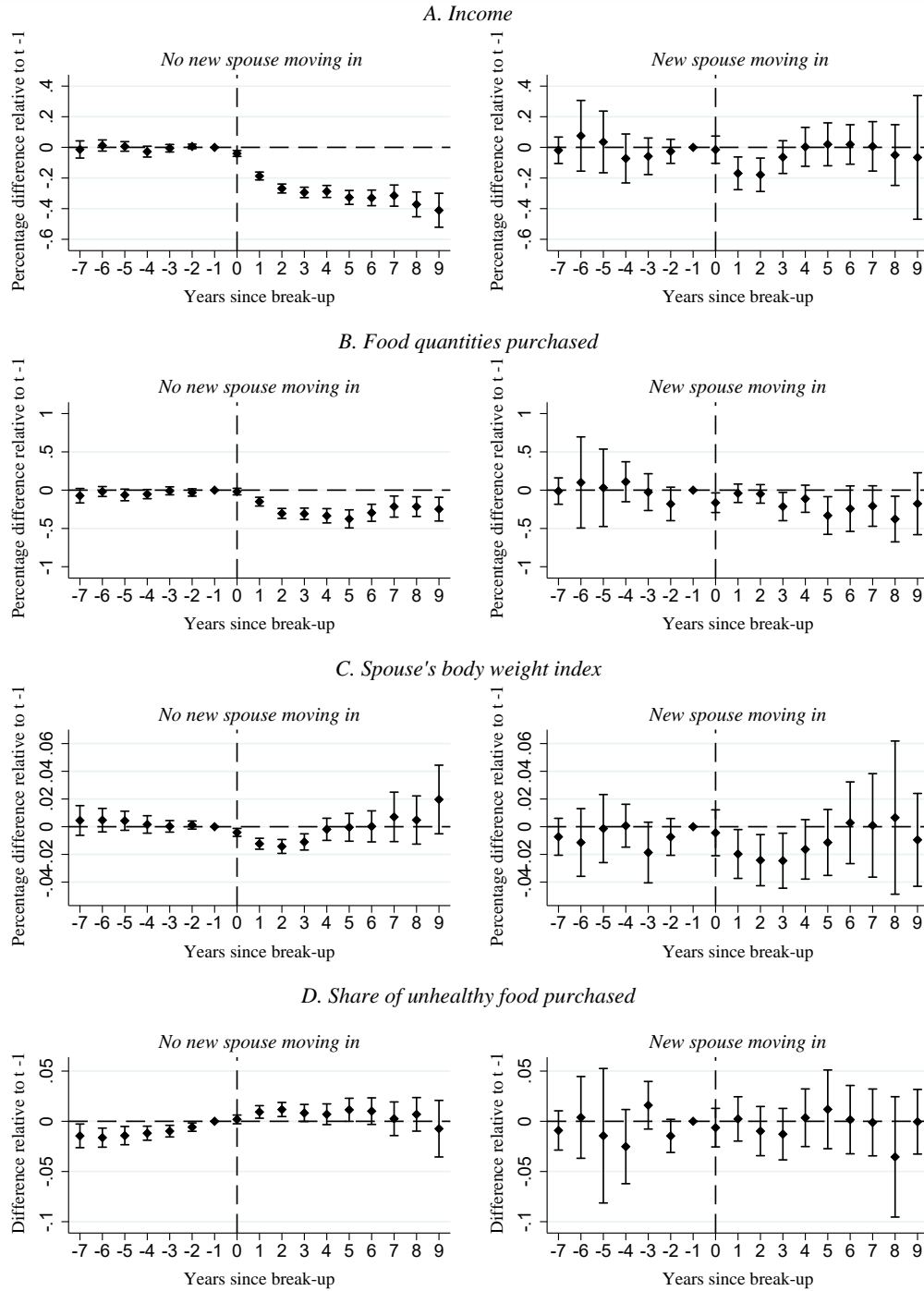
*A. Income*

*B. Food quantities purchased*

*C. Spouse's body weight index*

*D. Share of unhealthy food purchased*

Figure A4: Trend in outcome variables around separation, by subsequent relationship status of the spouse who remains in the household.

*Note:* The figure shows event time coefficients relative to the control group of households where no separation occurs and relative to the year just before separation ($j = -1$). The left-hand panels present results for households where the remaining spouse stays single, while the right-hand panels show results for households that form a new couple. The dependent variable are the logarithm of income, food quantities purchased, remaining spouse's BMI, and the share of unhealthy food products purchased in household i in year t. The controls include household and year fixed effects, spouse's age and labor market status and household size (to adjust for changes in household size besides separation). The data cover the period from 2005 to 2015. The 95% confidence intervals are based on standard errors clustered at the level of the household.