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How valid are synthetic panel estimates of poverty dynamics?

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Non-technical summary

The prevalence of moves into and out of poverty has long been of a topic of interest for social policy. We would like to know the proportion of the population that is always poor over a period of time, what fraction move into or out of poverty, and what fraction are never poor. Estimation of these poverty dynamics statistics requires data in which individuals are followed over time, i.e. data from household panel surveys or linked administrative record data. In many developing countries, these longitudinal data are simply unavailable or of poor quality.

Faced with the combination of policy interest and data problems, researchers have developed innovative statistical methods to derive estimates of the poverty dynamics of interest from cross-sectional household survey data – so-called ‘synthetic panel’ methods. Virtually all the applications of these methods to date have been to developing countries. This research includes a small number of validation studies that benchmark the synthetic panel estimates against the ‘true’ estimates that can be derived from genuine household panel survey data. These validation studies conclude that synthetic panel methods work quite well.

Our research provides new evidence about the accuracy of synthetic panel estimates relative to benchmarks based on estimates derived from genuine household panel data, employing high quality data from Australia and Britain, while also examining the sensitivity of results to a number of analytical choices.

Our analysis shows that the DL method works less well when it is applied to Australian and British data than when it is applied to data for middle- and low-income countries. For our two countries, we also demonstrate that the quality of the estimates is sensitive to analytical choices about the way in which the methods are implemented. These choices include sample selection criteria such as the age range of the household heads and the level at which the poverty line is set. We also show that the accuracy of the synthetic panel estimates can depend on the particular time period that is analysed.

We discuss the extent to which our findings are generally applicable and to which they arise from having analysed two particular rich countries for which high-quality panel data exist. We set out a number of topics for further research to help explain the differences between our findings about validity and those of other validation studies (which focused on developing countries).

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Abstract

A growing literature uses repeated cross-section surveys to derive 'synthetic panel' data estimates of poverty dynamics statistics. It builds on the pioneering study by Dang, Lanjouw, Luoto, and McKenzie (Journal of Development Economics, 2014) providing bounds estimates and the innovative refinement proposed by Dang and Lanjouw (World Bank Policy Research Working Paper 6504, 2013) providing point estimates of the statistics of interest. We provide new evidence about the accuracy of synthetic panel estimates relative to benchmarks based on estimates derived from genuine household panel data, employing high quality data from Australia and Britain, while also examining the sensitivity of results to a number of analytical choices. Overall, we are more agnostic about the validity of the synthetic panel approach applied to these two rich countries than are earlier validity studies in their applications focusing on middle- and low-income countries.

Keywords: synthetic panel, pseudo panel, poverty dynamics, poverty entry, poverty exit, BHPS, HILDA

JEL Classifications: I32, D31, C52

1. Introduction

There is a growing literature that employs repeated cross-section surveys to derive 'synthetic panel' data estimates of poverty dynamics statistics building on the pioneering study by Dang, Lanjouw, Luoto, and McKenzie (2014, hereafter 'DLLM') providing bounds estimates and the innovative refinement proposed by Dang and Lanjouw (2013, hereafter 'DL') providing point estimates of the statistics of interest. All but one of the applications to date of these methods, of which there are many, have been to middle- and low-income countries. This paper provides new evidence about the validity of synthetic panel estimates, employing high-quality household panel data from two rich countries, the British Household Panel Survey (BHPS) and the Households, Income, and Labour Dynamics in Australia survey (HILDA).

DLLM state clearly the reasons for employing a synthetic panel approach:

> Genuine panel data are still rare in the developing world, and when they are available, the samples are often relatively small, with limited or infrequent duration, and in some cases, occur with significant attrition. This has limited the feasibility of constructing even relatively simple descriptions of transitions in and out of poverty for most countries. Yet policymakers and researchers do care about such transitions, and most countries do field repeated cross-sectional surveys of income or consumption on a reasonably regular basis. (DLLM: 123–4.)

DLLM focus on statistics summarising poverty status in two years, e.g. the joint probability of being poor in one year and poor in the second year, and develop methods that provide both non-parametric and parametric bounds on this probability and each of the three other joint poverty probabilities. They assess the validity of their approach using panel data: synthetic estimates, derived by treating the panel data as two independent cross-sections, are compared with the 'true' estimates derived from the longitudinal data per se (more about this below).

DLLM conclude, using data for Indonesia and Vietnam, that 'the bounds can be narrow enough in practice to make the estimates useful' (DLLM: 124). Cruces et al. (2015) assess the DLLM bounds method using data from Chile, Nicaragua, and Peru, incorporating extensive examination of the sensitivity of their results to a number of analytical choices about definitions, and conclude that 'the methodology performs reasonably well' (2015: 163). Perez (2016) also assesses the DLLM bounds method but using Mexican data.

DL refine the DLLM method and derive point estimates of poverty probabilities rather than bounds. Their empirical analysis, based on data for Bosnia-Herzgovina, Laos, Peru, Vietnam, and the USA, supports the validity of their refined method:

> [W]e show that our estimates are quite accurate … We find that estimation results are good not only for the general population but for smaller population groups as well, and are associated with much tighter confidence intervals than even direct, panel-data based estimates in those settings where the sample sizes for the cross sections are large enough. (DL: 36.)

The only other validation study of the DL method to date is by Garcés Urzainqui (2017), who concludes from his analysis of data for Thailand that 'the general patterns of mobility described by synthetic panel estimates are well in line with the true dynamics' (2017: 35).

DLLM's and DL's synthetic panel methods have also been used to derive poverty dynamics estimates for a large number of middle- and low-income countries without any accompanying validation exercise. Three studies have applied the DLLM bounds method: Ferreira et al. (2013) study 18 Latin American countries; Rama et al. (2014), India and Bangladesh; and Perez (2016) using a different Mexican data set from that used in his validation exercise. There are (at least) five studies applying the DL point estimates method: Dang et al. (2014) to Senegal; Dang and Ianchovichina (2016) to 6 Middle-Eastern and North African countries; Rigolini et al. (2016), 17 Latin American countries; and Dang and Dabalen, 20 Sub-Saharan African countries. OECD (2015: Appendix 5.A1) applied the DL method to measure transitions into and out of low-pay status for individual workers in 10 emerging economies.

In sum, previous research suggests that synthetic panel methods produce valid estimates and there are now many applications to a large number of countries in the developing world. However, there is a need for further validation studies of synthetic panel methods of estimating poverty dynamics statistics. This paper meets that need and makes a number of contributions in addition.

There are few validation studies of the DL method. We assess the DL method in detail, also incorporating sensitivity checks to a number of analytical choices about definitions analogous to the way in which DLLM and Cruces et al. (2015) assessed the performance of the DLLM method. We also provide DLLM parametric bounds estimates.

We add substantially to analysis of the DL and DLLM methods in rich country contexts with our study of Australia and Britain; DL's US case study is the only previous rich country application of the synthetic panel approach. Our paper is the first to consider how variations in the age range of the household head used to define analysis samples affects results for a given country. (Age ranges vary across earlier studies but not within them.) We also consider the impact of using different definitions of the cohorts used to derive the parameter ρ which is a fundamental ingredient of the DL method (explained below). Only Garcés Urzainqui (2017) has done this before.

Our research is also distinctive because we examine the sensitivity of the DL method to the choice of the poverty line for the first time. DLLM and Cruces et al. 2015 examined sensitivity of the DLLM bounds approach (not the DL one). This turns out to be important. In addition, we derive poverty dynamics estimates for subgroups of individuals defined by age (0–17, 18–59, and 60+ years).

Further distinctive features of our work are as follows. For all sets of analytical choices about definitions, we derive estimates of poverty exit and entry rates, i.e. estimates of two conditional probabilities, in addition to estimates of the four joint probabilities that have been the focus of previous work. In this respect, we are taking up the challenge of Fields and Viollaz (2013: 20) who argue that it is these conditional probabilities that are more relevant to the essence of 'poverty dynamics' and who contend that the DLLM method estimates them less accurately. DL provide conditional probability estimates, noting that they are 'slightly less accurate' than the joint probability estimates (p. 33). We provide new and more extensive evidence about whether estimates of conditional poverty probabilities are more or less accurately estimated than joint probabilities.

In addition, because the BHPS and HILDA are much longer-running household panels than those for any developing country – we use data collected annually over 18 years for the BHPS, and over 15 years for HILDA – we can provide a detailed assessment of the extent to which the accuracy of synthetic panel estimates of poverty dynamics statistics vary according to the year or period studied. This turns out to be important.

Finally, we consider the benchmarks used to assess the accuracy of the synthetic panel estimates. As we discuss below, and has not been pointed out before, the 'true' benchmarks employed by DL differ from those that are typically used in 'standard' panel data approaches to poverty dynamics. We show how the benchmark estimates shift if one changes the following rule and consider the implications for assessments of accuracy of synthetic panel estimates.

Although the application of DLLM and DL methods has focused on developing countries, there is value in assessing their validity in rich country contexts even though panel data are more common. For example, there are long-standing concerns about attrition in the longitudinal data components of the EU's Statistics on Income and Living Conditions (EU-SILC), i.e. the sources used to calculate the EU's measure of persistent poverty. Among the countries using household panel surveys to collect data about income and poverty annually over a four-year period, there is substantial loss to follow-up. For example, Jenkins and Van Kerm (2017: Figure 22.1) show that around one half of the countries using surveys have four-year (2008–2011) retention rates of less than 70% with the smallest rate just over 40% (UK). By comparison, the four-year retention rates following the first waves of high-quality panels such as the BHPS and HILDA are nearly 80% (Watson and Wooden 2011, Figure 3).

The rest of our paper unfolds as follows. In Section 2, we review how the DLLM and DL methods work, and point out the key analytical choices that are required to implement them. In Section 3, we describe our HILDA and BHPS data and explain our various definitional choices. We report our empirical results in Sections 4 and 5. Section 4 examines the accuracy of estimation of the cross-year correlation parameter (ρ, i.e. 'DL rho') that underpins the DL method, and which is derived using pseudo-panel methods. We show that, depending on the definition of the cohorts and the age range of the household head used to define the analysis sample, DL-method estimates of ρ can vary substantially depending on the time period considered and also be very different from the 'true' panel data benchmark estimates.

In Section 5, we report our assessments of the validity of DL method estimates of joint and conditional poverty statistics, focusing on a 'leading case' set of choices relating to the definition of cohorts, sample selection (the age range of household heads), and the poverty line. In Section 6, we document how assessments change as we vary, in turn, choices about the 'true' panel benchmark (the following rule issue), the age range of household heads, and the poverty line. Finally, we look at estimates of poverty dynamics statistics for three age groups of individuals (aged 0–17, 18–59, and 60+ years). Our conclusions are in Section 7. Overall, we are more agnostic about the validity of applications of the synthetic panel approach in the context of these two rich countries than the earlier validity studies are about their applications which focused on middle- and low-income countries.

For brevity we report only a selection of results in the main text. Appendices A (HILDA) and B (BHPS) in the Supplementary Material report the estimates of the DL(LM) income model regressions, the means of the income predictors, and kernel density plots of predicted log incomes compared to a normal distribution benchmark, year by year. We also provide a full set of estimates of all poverty dynamics statistics for each of the 28 different combinations of definitions we use. Estimates of the cohort regressions used to derive DL rho (see Section 2) are available from the authors on request.

2. How do the DLLM and DL methods work?

With cross-sectional survey data for a pair of years (Year 1, Year 2), one has information about the marginal distributions of income in each year. (The outcome variable might be consumption rather than income; we refer to the latter.) Clearly, there is no information about the joint distribution of income in the two years, nor thence information about poverty dynamics. The DLLM and DL methods work by using a model and associated assumptions to fill in the missing longitudinal information. In this section, we review the key elements of the two methods, drawing heavily on the original expositions.

The first step, common to DLLM and DL methods, is an *income model* for each of Year 1 and Year 2. Suppose that income y_{it} for household head i in year t is described by

$$\log(y_{i1}) = \beta_1'x_{i1} + \varepsilon_{i1} \tag{1}$$

$$\log(y_{j2}) = \beta_2'x_{j2} + \varepsilon_{j2} \tag{2}$$

where x_{i1} and x_{j2} are vectors of time-invariant predictors in Years 1 and 2.

The Year 1 income for each household head j observed in Year 2 is unobserved but it can be predicted using model estimates and two auxiliary assumptions. Ordinary least squares regression applied to each of (1) and (2) yields parameter estimates $\hat{\beta}_1$, $\hat{\beta}_2$ (the regression coefficients), $\hat{\sigma}_1$, $\hat{\sigma}_2$ (the variances of the residuals in each year), and also of the residuals $\hat{\epsilon}_{i1}$, $\hat{\epsilon}_{j2}$ for each i, j. DLLM's Assumption 1 is that the population sampled by the two cross-section surveys is the same in Year 1 and Year 2 and so, for instance, the distributions of the time-invariant regressors are the same. DLLM's Assumption 2 states that the residual errors ε_{i1} and ε_{i2} are 'positive quadrant dependent', a property that includes being positively correlated.

DLLM show that with these assumptions one can derive *nonparametric bounds* on the four joint poverty probabilities. The Upper Bound scenario (with maximum income mobility) arises when the error terms in the Year 1 and 2 income equations are independent. The Year 1 income distribution can then be predicted as follows. For every observation j in the Year 2 sample, take a random draw with replacement from empirical distribution of residuals for

Year 1 (with mean 0, s.d. $\hat{\sigma}_1$) and predict the outcome in Year 1 using the expression $\widehat{\log(y_{j1}^U)} = \hat{\beta}_1{}'x_{j2} + \check{\epsilon}_{j1}$, where $\check{\epsilon}_{j1}$ is the residual imputed to each *j*. We now have synthetic panel data from which poverty dynamics statistics can be calculated. Although the observation unit is the household head, application of appropriate survey weights (that also account for the number of individuals in each head's household) provides estimates referring to the population. To counter the variability introduced by the stochastic nature of the imputations, one repeats the random-draw-and-calculation step *R* times and averages the resulting estimates. We find that setting *R* = 50 is sufficient.

DLLM's Lower Bound scenario arises when the residual errors are perfectly correlated across Year 1 and Year 2. In this case, the Year 1 income prediction for each *j* from the Year 2 sample is $\widehat{\log(y_{j1}^L)} = \hat{\beta}_1{}'x_{j2} + \gamma\hat{\epsilon}_{j2}$, where scalar γ is chosen to ensure the standard deviation of the imputed Year 1 residuals distribution equals $\hat{\sigma}_1$. Again, we now have synthetic panel data and can calculate the poverty dynamics statistics of interest, again using weights to derive population-level estimates.

DLLM also proposed a *parametric bounds* approach in order to narrow the bounds, arguing that non-parametric bounds for the poverty dynamics statistics may be wide and hence not particularly useful in practice. DLLM's key additional assumption is that the distribution of errors in (1) and (2) is bivariate normally distributed. This means that all the poverty dynamics statistics can be calculated if one has an estimate of the correlation of the errors, ρ. The bivariate distribution of income is fully characterised ρ, the estimates of the standard deviations of the cross-section marginal distributions (σ_1, σ_2), and the other income model parameters. For example, the probability of being poor in Year 1 and also poor in Year 2 is

$$\text{Prob}(y_{j1} < z_1 \text{ and } y_{j2} < z_2) = \Phi\left(\frac{ln(z_1) - \beta_1{}'x_{j1}}{\sigma_1}, \frac{ln(z_2) - \beta_2{}'x_{j2}}{\sigma_2}, \rho\right) \qquad (3)$$

where Φ(.) is the bivariate normal cumulative distribution function, and z_1 and z_2 are the poverty lines for Year 1 and Year 2. There are analogous expressions for the other three joint poverty dynamics probabilities (DLLM, section 4).

DLLM suggest choosing bounds for ρ by drawing on information from longitudinal surveys for the same country or other similar countries. In their applications, they use ρ values of (0.2, 0.8) and (0.3, 0.7).

DL build on DLLM's parametric bounds approach, innovatively showing that one can derive a point estimate for ρ (and thence for each of the poverty statistics of interest) from the data already to hand rather than by relying on auxiliary estimates from other surveys to provide bounds. (There are also a number of other extensions, including applications to income dynamics over more than two years, and to mobility between more than two income classes, but we do not examine these aspects here.) DL's key insight is that pseudo-panel methods utilising panels based on cell mean data about cohorts can be deployed. Cohorts are defined by grouping together individuals sharing the same (or similar) age and other time-invariant characteristics (e.g. sex, ethnic background). Important references that DLLM draw on include Deaton (1985), Moffitt (1993), and Verbeek (2008).

DL show first, in their Proposition 1, that an approximate estimate of the correlation between $\ln(y_1)$ and $\ln(y_2)$, $\rho_{y_1 y_2}$, can be derived from a cohort-level regression of Year 1 on Year 2 cohort mean incomes. (Our derivation follows DL Appendix 1 eq. 1.6.) This is an Instrumental Variables estimator and hence (as DL point out) reliant on a number of assumptions, some of which untestable and have to be maintained. Intuitively, one needs substantial income variation across cohorts so that cohort means are sufficiently predictive and also sufficiently large cohort sizes to ensure sufficient precision.

Second, DL show in their Proposition 2 that the all-important cross-year correlation of residuals, ρ, can be derived from $\rho_{y_1 y_2}$ and other information already to hand from the income models:

$$\rho = \frac{\rho_{y_1 y_2}\sqrt{var(\ln(y_{j1}))var(\ln(y_{j2}))} - \beta_1' var(x_j)\beta_2}{\sigma_1 \sigma_2}. \tag{4}$$

This is the 'DL rho' estimate that we report below. DL also show that another estimate of ρ can be derived (Corollary 2.1), though they state (p. 13) that it typically provides very similar estimates. We find this too, and so do not report this other estimate.

Given the estimate of ρ, estimates of poverty dynamics statistics can be derived using the same approach as set out for the DLLM parametric bounds approach: cf. (3) above, and analogous expressions for the other joint probabilities as well as poverty entry and exit rates.

DL's theoretical results provide little direct guidance to analysts about how to define the cohorts in practice. Their own empirical analysis uses cohorts defined in terms of age only (DL: 30), with samples restricted to households for which the household head in Year 1 is aged 25–55 years, and they do not consider the practical implications of alternative definitions. In contrast, Garcés Urzainqui (2017, especially section 5.3) discusses theoretical and practical issues concerning cohort definitions extensively.

We conclude from this research that there is no single definition of cohorts that is clearly the 'best' for empirical work and, correspondingly, there is substantial scope for analysts to choose among a relatively large number of potential definitions. Put differently, the choice of cohort definition, and the closely related sample selection decision concerning the age range of the household head, is a potential source of sensitivity for synthetic panel estimates of poverty dynamics statistics that needs to be investigated because it is fundamental to the DL method. We provide this analysis. Further information about our analytical choices is provided in the next section.

We assess *accuracy* ('validity') as previous researchers do by examining how close each of the synthetic panel estimates is to the corresponding estimate derived from genuine panel data. The latter is treated as the 'true' estimate, with the quotation marks used to indicate that the benchmark is itself an estimate. We follow DLLM and DL by counting a synthetic panel estimate as sufficiently accurate if it lies with a 95% confidence interval of the 'true' estimate. DL also use a tighter criterion (within one standard deviation of the 'true' estimate) and also some coverage criteria, but we find these unnecessary in our applications for reasons that will become apparent later.

3. HILDA and BHPS: data and definitions

We use household panel data from waves 1–15 of HILDA (covering 2001–2015) and from waves 1–18 of the BHPS (covering from 1991 to 2008, its final year). The surveys share a common design: the original respondents are a sample of the private household population of the country concerned and are re-interviewed annually. Both HILDA and the BHPS follow individuals from originally-sampled and split-off households, like the US Panel Study of Income Dynamics and the German Socio-Economic Panel. As in the SOEP (but not the PSID), HILDA and the BHPS interview all adults within a household. HILDA and the BHPS are widely renowned as very high-quality datasets. For example, attrition rates are low, around 5 percent or less each year after wave 1 (Watson and Wooden 2015). Both surveys provide weights to derive population-level estimates that account for non-response (including attrition). For an overview of HILDA and the BHPS, see Frick et al. (2007).

The measure of living standards is the same in HILDA and the BHPS, i.e. equivalised net household income. See Wilkins (2017: Chapter 3) for HILDA and Jenkins (2011, chapter 4) for the BHPS. Household net income is (a) total money income earned in the labour market from employment or self-employment, income from the capital market (e.g. stocks, shares, interest-bearing accounts, and other financial assets), cash transfers from the government, plus private transfers, from which is deducted (b) national and local income taxes and (in Britain) social insurance payments, and a small number of other deductions. Net income is adjusted to account for differences in household size and composition using the 'Modified OECD' equivalence scale. The income definition is consistent with the recommendations of international bodies such as the Canberra Group (2011), and is the definition used by the OECD and Eurostat to produce their inequality and poverty statistics. To include a very small number of zero values for income, we follow DL (p. 6) and apply a modified Box-Cox transformation to observed incomes.

We set the poverty line at 60% of contemporary national median income in most of our analysis, but also consider 50% of contemporary national median income as an alternative. The 60% cut-off is used by UK official statistics and Eurostat to derive their 'headline' poverty statistics. Australia and the OECD have commonly used the 50% threshold. DL(LM) mostly use official poverty lines in their studies and so we are following them in this respect. An important difference is that our poverty lines are relative lines whereas the official poverty lines for the countries that DL(LM) consider are absolute poverty lines typically derived with reference to calculations of minimum cost food and non-food budgets.

We undertake analysis using samples selected according to two definitions of the age of the household head: 25–55 years and 25–75 years. (These refer to the age in Year 1; the Year 2 age range is adjusted upwards accordingly.) This range encompasses those used in previous research and also allows us to check how the validity of synthetic panel estimates varies with the choice. The HILDA sample sizes are between 5,190 and 7,198 household heads per year for samples with heads aged 25–75 years, and between about 3,618 and 4,880 for the samples with heads aged 25–55. For the BHPS, the corresponding sample sizes are between 2,464 and 3,190 and 1,526 and 2,176, respectively.

DLLM state that they use the 25–55 age range because 'analysis of poverty transitions among households headed by those younger than 25 or older than 55 or 60 is more difficult since at those ages households are often beginning to form, or starting to dissolve' (DLLM: 114). DL state that their choice is 'consistent with the literature on pseudo-panel data … While this age range can be extended to include older people, it may be ill-advised to include those who are younger, at least since most household heads tend to be older than 25 in all the countries we look at' (DL: 30). Cruces et al. (2015) used the range 25–65 years, 'in order to avoid lifecycle effects which can invalidate the time invariance assumption' (2015: 166). Garcés Urzainqui selects heads aged 25–70, remarking that 'limiting the age of the household head is a standard procedure in this literature to restrict attention to stable households, avoiding the age segments most associated with household formation and household dissolution. … I am more relaxed … [Thai] households with older heads tend to be poorer so that strict age limits may lead to a distorted view on poverty dynamics' (2017: 21–22).

There are two issues here. One is the need to ensure the time-invariance assumption is satisfied. The second concerns the treatment of household formation and dissolution, but this is more an issue concerning the definition of the benchmark 'true' panel estimates of poverty probabilities and the panel survey's following rule (the issue we flagged in the Introduction). Relevant to both issues is the question of the age ranges in which household formation and dissolution is most prevalent. By comparison with developing countries, in rich countries, households with heads aged 55–75 may be more stable than those with a head aged 25–55 because divorce and partnering is more common among the latter group, and longevity is greater. In any case, there is a separate argument in favour of using as wide an age range as possible because this provides estimates with greater coverage of the population and includes groups of policy interest such as elderly people.

The predictors that we include in the Year 1 and 2 income models are much the same as those employed by DL (see their Appendix 2). More specifically, for HILDA, the predictors are the household head's sex, birth cohort (by half decade), education level (four categories), and country of birth (whether of Australian origin, or a migrant from English speaking country or non-English speaking country). For the BHPS, the predictors are the household head's sex, birth cohort (by half decade), education level (five categories), and whether of non-white ethnic origin. Both models also include interactions between education and sex and education and birth cohort. All predictors are time-invariant, as assumed by the DL(LM) method. In preliminary work, we also considered simpler income model specifications, without the educational level variables and associated interactions. This choice led to reduced goodness of fit (i.e., smaller adjusted-R^2) but made little difference to our estimates of poverty dynamics statistics and so we do not report these results.

We use a one-year gap between Year 1 and Year 2. 'One year' corresponds to within a month of the anniversary of the previous year's interview for the vast majority of households in HILDA (Summerfield et al. 2016, Tables 8.5, 8.6) and the BHPS (calculations by the authors). Thus HILDA provides us with 14 year-pairs of data (2001/2002 through to 2014/2015), and the BHPS 17 year-pairs of data (1991/1992 through to 2007/2008).

Use of the one-year gap enables us to examine the sensitivity of validity checks to the period considered much more extensively than in other studies. Using a one-year gap is also favourable to the DL(LM) method because it is more likely that the population sampled by Year 1 and Year 2 cross-sections is the same (cf. Assumption 2). We found no evidence of a substantial reduction in the accuracy of DL(LM) estimates of poverty dynamics when we considered five-year gaps in preliminary analysis.

Estimates of ρ are contingent on the definition of the cohorts used, and so to analyse sensitivity, we consider multiple definitions. For HILDA, the first two of the seven cohort definitions are based on year of birth, YOB(*s*) where *s*, the number of birth years covered, is 1 and 5. (DL use the YOB(1) definition.) The third and fourth definitions are based on sex interacted with each of YOB(5) and YOB(10). Definitions 5 to 7 are based on YOB(5), YOB(3) and YOB(10), each interacted with country of birth (Australia, English-speaking, or non-English-speaking country). For the BHPS, the six cohort definitions are specified similarly, with cross-country differences reflecting variable availability and cell size considerations. Four definitions are based on YOB(*s*) where *s* is 1, 3, 5, and 10. The other two definitions use sex interacted with each of YOB(5) and YOB(10).

Numbers of cohorts and cohort size for each definition and country are shown in Table 1 (HILDA) and Table 2 (BHPS) below. There are two panels in each table corresponding to whether the sample selected refers to heads aged 25–55 or 25–75. The greater the number of cohorts, the smaller the average cell size. For example, for HILDA, definition YOB(1) has 51 cohorts with average size 123; for definition SEX*YOB(10), there are 10 cohorts with average size 619.

For the validation analysis per se, our data sets are constructed in the same way as DLLM's (see their pp. 116–117). Each two-year longitudinal sample is split randomly into two samples A and B. The 'true' panel estimates are derived using sample A's data for Year 1 and Year 2. The two cross-sections are the Year 1 data for sample A and the Year 2 data for sample B. This ensures that no individuals appear in both cross-sections; if they did, it could contaminate the exercise by introducing spurious cross-unit correlation. Because the sample splitting is done randomly, we report results for each country-year-pair based on the averages of 50 splits.

4. Estimates of DL rho using pseudo-panel methods

We report estimates of ρ for each cohort definition and sample selection criterion, as well as information about numbers of cohorts and cohort size, in Table 1 (HILDA) and Table 2 (BHPS). We do not show the results for every Year 1–Year 2 pair here; instead, and in order to highlight differences arising from cohort definitions and sample selection, Tables 1 and 2 show averages across year-pairs (14 for HILDA, 17 for the BHPS). Variability in estimates by year-pair is addressed shortly.

<Tables 1 and 2 near here>

For assessing the accuracy of the DL method, the most important rows of Tables 1 and 2 are the ones labelled 'panel rho' and 'DL rho'. The former is the 'true' correlation of the residuals from the Year 1 and 2 income regressions, derived from the longitudinal sample defined earlier. The (averaged) 'true' rho is almost 0.75 for Australia and slightly smaller for Britain (nearer 0.70), but hardly varies with the household head's age range in both countries.

DL rho is the (averaged) estimate of ρ derived from the income-cohort correlations and the transformation shown in (4). For both Australia and Britain, there is substantial variation according to cohort definition, and many estimates differ substantially from the 'true' panel rho. For the YOB(1) cohort definition and sample with head aged 25–55, the definitions closest to DL's, the HILDA panel rho is more than five times larger than the DL rho (Table 1) and the BHPS one is more than three times larger (Table 2). Yet, at the same time, the HILDA panel rho is within 15 percent of DL rho in six of the 14 cohort-age-range combinations. For the BHPS, the corresponding number is six out of 12 combinations. Estimates tend to be better when the head's age is 25–75, a result that also applies to both countries. Indeed, for this head age range and for cohort definition COB*YOB(5) for Australia and Sex*YOB(5) for Britain, the averaged DL rho is virtually the same as the 'true' benchmark.

Our finding that the quality of DL rho estimates is sensitive to the choice of cohort definition is worrying because researchers applying the DL method (and without longitudinal data) might choose the 'wrong' definitions and sample selection criterion, if only because of data constraints. This could lead to inaccurate estimates of ρ and thence of the poverty dynamics statistics of interest.

The averaged estimates in Table 1 do not show how estimates vary across year-pairs. For brevity, we document temporal variation for only four combinations of cohort definition and household head's age range. (These encapsulate the range of results derived from all the combinations.) Figure 1, panel (a) for HILDA and panel (b) for the BHPS, shows the year-by-year estimates of the 'true' panel rho (with pointwise 95% confidence interval) as well as the estimates of DL rho. Also shown are estimates of DL's cohort-mean correlation coefficient, $\rho_{y_1 y_2}$, labelled 'simple cohort correlation' in the Figures. These estimates represent the first step in deriving DL rho estimates before information from the income model is incorporated in a second step (see eq. 4). DL rho estimates track the cohort correlations closely but tend to be lower. As the cohort correlations are more often an overestimate than an underestimate of the 'true' panel rho, DL rho is a closer approximation to the 'truth' than the cohort correlation on average, though that is not the case for all year-pairs.

<Figure 1 near here>

For Australia, the 'true' panel rho increases slightly over the period. However, for only one combination (head aged 25–75, cohort definition COB*YOB(5)) of the three is the 'true' panel rho tracked well by DL rho and, even in this case, there are some noticeable differences between them in the very earliest and very latest year-pairs. For the other three combinations, differences are markedly larger, and it is clear the choice of household head's age range is the principal contributor to the differences between the estimates. In the two charts on the right-hand side of Figure 1(a), DL rho differs substantially from the 'true' panel estimate, especially in the second half of the period, and fluctuates substantially. In addition the DL rho estimate generally declines over time, contrary to the slight rise in the 'true' panel rho.

For Britain (Figure 1(b)), many of the same patterns are apparent. The main differences compared to Australia are, first, that there is slightly more variation over time in the estimates of the 'true' panel rho. Second, the differences between estimates of DL rho and the 'true' panel rho are not as large as those for Australia, even for the two combinations with household head aged 25–55. This suggests that BHPS synthetic panel estimates of poverty dynamics statistics are likely to be more accurate than their HILDA counterparts, and less sensitive to the choice of definitions and sample selection.

Why there are large changes in DL rho estimates over time is unclear. There were no changes in HILDA or BHPS design over the period that explain this; nor are they correlated with changes in, for example, changes in average cohort size or some other feature of the cohort regressions.

A more general lesson from Figure 1 is that the accuracy of DL rho estimates depends on the precise years considered. (This is also clear from DL's results – observe the 'relative difference (%)' summaries reported in their Table 2 for countries with more than one year-pair of estimates – but our more complete coverage of long time periods for each country makes the finding more manifest.) For each cohort definition and head's age range in our Table 1, there is at least one year-pair for which the DL rho estimate is very close to its 'true' panel counterpart. But it is rare for researchers to have access to panel data for many year-pairs as we have, particularly in developing countries. There are typically data covering only one or two subperiods.

Our analysis shows that the quality of DL rho estimates depends on the data that happen to be available for a particular time period. Put differently, if researchers do have access to data for multiple year-pairs, then there may be a pay-off to averaging the DL rho estimates over time in order to remove what might be spurious volatility.

In the next section, we put these issues on one side, and use the estimated values of DL rho, along with the other parameters of the income models, to derive estimates of poverty dynamics statistics.

5. Synthetic panel estimates of poverty dynamics statistics: leading case

In this section we provide synthetic panel estimates of the four joint poverty probabilities and two conditional poverty probabilities, for Australia and Britain. We focus on a 'leading case' set of definitions, and in Section 6 consider the impact on the estimates and their validity of changes to these definitions. Our leading case is based on the combinations of sample selection criterion and cohort definition that provide estimates of DL rho that are the closest to the 'true' panel value (see Figure 1). This maximizes the chances that the DL methods estimates are accurate, other things being equal. Thus, the leading case is based on the following criteria: household head is aged 25–75; the cohort definition is COB*YOB(5) for Australia and Sex*YOB(5) for Britain; the poverty line is 60% of contemporary median income; and the estimates refer to 'all individuals'.

Our leading case estimates of the four joint poverty probabilities for each year-pair are shown in Figure 2 (HILDA) and Figure 3 (BHPS), together with related benchmarks to compare them with. Figure 4 shows the estimates of poverty exit and entry probabilities for both countries. Each figure has the same format. We show DLLM parametric bounds estimates, assuming $0.5 < \rho < 0.9$. Although these ρ bounds differ from those used by DLLM for developing countries, they are consistent with the 'true' panel estimates that DL report for the USA (Table 2) and with Tables 1 and 2, and Figure 1 above. The black dots labelled 'parametric estimate' are the DL-method probability estimates, derived using the approach discussed earlier. We also show what the estimates would be were the derivation undertaken using the 'true' panel rho rather than DL rho. The benchmarks for assessing the accuracy of the DL-method estimates are shown by the 'true' estimates and their pointwise 95% confidence intervals (dark grey band).

Consider first the HILDA estimates of the joint exit probability shown in the bottom-left panel of Figure 2. The parametric bounds estimates fluctuate slightly from one year-pair to the next, but are consistently between around 4% and 9%, a range of some 5 percentage points, and hence relatively wide. The DL parametric estimates also fluctuate somewhat, but tend to lie in the middle of bounds estimates (apart from at the end of the period): the values are around 7% to 8%. If the 'true' panel rho had been known, the estimates of the joint probability would have been quite similar – except at the very beginning of the period and at the end of the period, which is when the DL rho and 'true' panel rho estimates differ the most (see Figure 1(a)). The similarities between the series are a reminder that the accuracy of the DL-method probability estimates is also contingent on the income model predictions and related assumptions, a point to which we return in Section 7.

<Figure 2 near here>

We assess the accuracy of the DL-method estimates of the joint exit probability by considering whether they lie within the 95% confidence interval of the 'true' estimates. It is clear from Figure 2 that, for the vast majority of year-pairs (11 out of 14), the DL estimate is outside the 95% confidence interval of the 'true' estimate. On average, it is around 2 percentage points larger than the benchmark 'true' joint probability (more at the end of the period).

For the other three joint probabilities, the headline message regarding accuracy is mixed. For the joint persistence probability (top left hand figure in Figure 2), the DL-method estimates are accurate in the sense that they lie with the 95% confidence interval of the corresponding 'true' estimate in 11 out of the 14 comparisons. The DL estimates of the joint persistence probability tend to be slightly smaller than their 'true' counterparts, but both show a small decline from around 11% at the beginning of the 2000s to around 10% just over a decade later.

However, although the DL method estimates the joint persistence probability relatively accurately, it does not do so for the other two joint probabilities. The 'true' joint probability of being non-poor in two consecutive years increases by around 4 percentage points over the period, from around 76% to around 80%. By contrast, the DL estimates show no rising trend (around fluctuating values). The DL estimates are within the 95% confidence interval of the 'true' estimates for only four of the 14 year-pairs (all of which are at the start of the period). The joint entry probability is also inaccurately estimated, with only two of the 14 DL-method estimates within the benchmark confidence band. The 'true' estimate fluctuates around 5% to 6% and the DL-method estimate is somewhat larger. For 2006-2007 and the three years at the end of the period, the DL-method estimate is up to 2 percentage points greater than the upper bound of the confidence interval, which is a large gap when assessed relative to the 'true' point estimate.

The findings for the BHPS contain both differences and similarities to the HILDA ones: see Figure 3. On the one hand, the headline results regarding accuracy of the DL method are more favourable. For the joint persistence probability (top left hand figure), all 17 of the DL-method estimates lie within the benchmark confidence interval, and well within it in the majority of year-pairs. For each of the other three joint probabilities, around half of the DL-method estimates lie within the 95% band, and almost all of these are in the first half of the period. As with HILDA, inaccuracy is greatest towards the end of the period and at the very beginning and, again, these are precisely the year-pairs when there are the greatest differences between DL rho and 'true' rho. Interestingly, the point estimates of the joint probabilities, and trends over time (or lack of trend), are similar for both Australia and Britain. The BHPS estimates tend to fluctuate a bit more over time, and the benchmark confidence interval is a little wider, with both features reflecting the smaller sample sizes in the British dataset.

<Figure 3 near here>

Our findings for the conditional probabilities are shown in Figure 4, with panel (a) displaying HILDA estimates and panel (b) the BHPS estimates. Contrary to Fields and Viollaz (2013) as cited in the Introduction, but consistent with DL, we do not find that poverty exit and entry rate estimates are markedly less accurate than joint probability estimates. Our results for conditional and joint probabilities have more similarities than differences. Benchmark confidence bands tend to be larger, especially for exit rates, reflecting the smaller sample numbers 'at risk' that underlie the calculations. But we also see that BHPS exit and entry rates are more accurately estimated than HILDA exit and entry rates. As well, for both countries, inaccuracies tend to be more prevalent towards the end of the time periods covered, and the DL-method estimates of exit and entry rates tend to be larger than the corresponding 'true' estimates.

<Figure 4 near here>

6. Synthetic panel estimates of poverty dynamics statistics: variants

Our results so far show that the accuracy of the DL method depends on the time period considered and the country context. But these findings are contingent on a number of definitional assumptions. In this section, we consider the robustness of our conclusions to variations in definitions around the leading case considered so far. For brevity, we show only a selection of our results here; the complete set is provided in the Supplementary Material.

6.1 Changing the 'true' panel benchmark

The DL(LM) approach is implemented at the household level, as explained in the Introduction. The time-invariant household characteristics used in the DL(LM) income models are the characteristics of the household head, and population-level estimates (i.e. for individuals, not households) are derived using sample weights. This means that DL(LM)'s income projections are based on the implicit assumption that household composition is unchanged between Year 1 and Year 2. The characteristics of a head of household are used to predict the income of all the members of his or her household in both years. DL(LM) applications (and our Section 5) employ benchmarks in which individuals' predicted Year 1 outcomes are compared with the Year 1 income of their Year 2 household head, ignoring any changes in household head.

These benchmarks differ from what standard analysis of poverty dynamics would use when genuine longitudinal data are available. The standard approach recognises that the concept of a 'longitudinal household' cannot be defined satisfactorily because households dissolve and form over time. Only individuals can be consistently linked over time. Thus poverty dynamics according to the standard panel approach are assessed by tracking each individual in the base year sample over time and comparing their Year 1 and Year 2 household incomes. Only if there is no household change over time does the approach of tracking household heads over time lead to the same poverty dynamics estimates. But household change is prevalent and poverty entry and exit risks are correlated with household change. For a review of links between panel following rules, household change and income mobility in rich countries, see Jenkins (2011). For similar arguments in a developing country context, see Rosenzweig (2003).

In sum, taking a standard panel approach to calculating poverty dynamics statistics can potentially lead to a difference between DL's 'true' panel estimates and 'standard' panel estimates of poverty statistics which are based on data derived by following individuals, not household heads. But does the change of benchmark affect assessments of the validity of the synthetic panel approach?

We answer this question focusing on estimates of poverty exit and entry rates. Figure 5 displays estimates of these for HILDA (panel a) and BHPS (panel b). The figures have exactly the format as Figure 4, except that we have removed the parametric bounds for clarity, and added the alternative 'standard' panel estimates and their pointwise 95% confidence bands. These are shown in light grey and may be contrasted with the DL 'true' panel benchmark shown in dark grey. We also include the estimates derived applying the standard panel approach to data on all individuals in all households regardless of head's age that thus cover the whole population (long-dashed line labelled 'all hh').

<Figure 5 near here>

Figure 5 shows that the standard panel approach leads to estimates of poverty exit rates that are slightly larger in magnitude and more noticeably larger estimates of poverty entry rates. Using the standard panel benchmarks leads to a more favourable assessment of the accuracy of DL-method synthetic panel estimates of poverty entry rates. For HILDA, the number of year-pair estimates lying outside the reference confidence band falls from 12 out of 14 ('true' panel benchmarks) to 5 ('standard' panel benchmarks). For the BHPS estimates of poverty entry rates, the corresponding fall is from 9 out of 17 to 4.

Whether changing the benchmark definition would make a difference in other contexts is difficult to assess. Taking account of household change is likely to raise poverty entry rate estimates rather than exit rate estimates in most countries compared to the 'true' panel approach. This is consistent with the well-known finding for rich countries that household change is particularly associated with poverty entries rather than poverty exits (Bane and Ellwood 1986, Jenkins 2011). However, synthetic panel estimates will only be assessed as more accurate according to the standard panel benchmarks if, as well, the synthetic estimates are larger than the 'true' benchmark. Although this is the situation in our datasets, it may not always be the case, as shown by the case of the USA in DL's Table 5 (the synthetic panel entry rate estimate is 4.4%; the 'true' estimate is 5%).

We leave open for further research the issue of what is the appropriate benchmark to use to assess the accuracy of synthetic panel estimates and, for the rest of this paper, we return to using the ‘true’ panel estimates given our DL reference point.

6.2 Changing the household head’s age range

We now consider the impact of narrowing the age range of the household head from 25–75 to 25–55, but we retain all other definitions associated with our leading case. Figure 6 displays estimates for HILDA (panel a) and BHPS (panel b) and is directly comparable with Figure 4 (based on the wider household head age range).

<Figure 6 near here>

Using the narrower age range is associated with a substantial deterioration in the accuracy of the HILDA estimates. Now none of the DL-method point estimates of the poverty exit rate lie within the reference 95% confidence band, and only one of the entry rate estimates does. Indeed several of the point estimates lie outside the corresponding upper bound estimate. The poorer quality of the estimates in this case can be traced back to the poorer accuracy estimate of the DL rho estimates in this case: compare the ‘Parametric est.’ and ‘Parametric est. true rho’ series in Figure 6 and see also the two corresponding bottom figures in Figure 1(a).

For the BHPS, use of the narrower age range also leads to poorer quality estimates of poverty exit and entry rates, but the effect is not nearly as marked as in the Australian case. The deterioration in quality is also related to the poorer accuracy of DL rho estimates relative to the leading case, but the effects are not as large as for HILDA (Figure 1, panel (b)).

The Supplementary Material contains a complete collection of figures showing the impact of using the 25–55 age range compared to the 25–75 one, and for joint probabilities as well as the conditional probabilities discussed here. The appendices confirm that changing the definitions away from the leading case scenario generally leads to less accurate estimates of all poverty dynamics statistics.

6.3 Changing the poverty line to 50% of the contemporary median

We now consider the impact of changing the poverty line to 50% of contemporary national median income (from 60%), but otherwise retaining all other leading case definitions. Figure 7 shows the joint probability estimates for HILDA and Figure 8 shows them for the BHPS. Figure 9 shows the estimates of poverty exit and entry probabilities for both countries. Compare these figures with Figures 2, 3 and 4 respectively for the leading case.

The most important finding is that, with the lower poverty line, the DL method estimates for Australia are more accurate. For example, the number of estimates of the joint exit probability that lie within benchmark 95% confidence interval increases from 3 out of 14 to 10. For the joint persistently non-poor probability, the corresponding numbers are an increase from 3 to 9 and, for the joint entry probability, an increase from 2 to 7. There are corresponding improvements in the accuracy of the DL-method estimates of poverty exit rates (the number within the reference confidence band increasing from 2 to 10) and of poverty entry rates (the number increasing from 2 to 7): see Figure 9(a).

<Figures 7, 8, and 9 near here>

There is also some increase in estimate accuracy associated with using the lower poverty line in the British case though the effect is less noticeable. Indeed, the joint poverty persistence probability is now less accurately estimated by the DL method, with number of estimates lying in the reference 95% confidence band falling to 9/17 compared to 17/17 in the leading case scenario. There is no change in the number of estimates of the joint non-poverty persistence probability within the reference band (9/17), but the number increases to 11 from 9 for the joint exit probability and to 13 from 8 for the joint entry probability. See Figure 8. The accuracy of the DL-method estimates of poverty exit rates also improves compared to the leading case scenario (the number within the reference confidence band increasing from 9 to 14) and of poverty entry rates (the number increasing from 9 to 13): see Figure 9(b).

Our analysis demonstrates that the accuracy of the DL-method estimates of poverty dynamics statistics is sensitive to the choice of poverty line. DLLM undertook extensive analysis of the robustness of their non-parametric bounds method to a wide range of poverty lines, for Indonesia and also Vietnam, and they conclude that 'our approach is found to work well for the full possible range of poverty lines that might be specified' (DL: 122). Cruces et al. (2015, section 5.4) report similar findings for Peru, Chile, and Nicaragua. By working well, the authors mean that 'true' panel estimate lies between the upper and lower bound estimates regardless of the poverty line chosen. We find this result too, as our Figures show. But our new finding concerns the sensitivity of the DL method's point estimates. It appears that going beyond estimation of bounds to derive point estimates also runs the risk of lack of robustness. We have focused on poverty line specifications that are in common use in rich countries. An interesting task for future research is analysis of the robustness of the DL method to poverty line choice in developing country settings.

6.4 Estimates for population subgroups

DL argue that their method provides good estimates for population subgroups as well as the population as a whole, using regional breakdowns to illustrate their case. Here we consider the accuracy of subgroup estimates using breakdowns by age, reflecting rich country policy interest. Figure 10 shows estimates of poverty exit rates and entry rates for HILDA (panel a) and the BHPS (panel b) for individuals aged 18–59 rather than all individuals in households with heads aged 25–75 (as in Figure 4). For corresponding estimates for individuals aged 0–17, and aged 60–75, see the Supplementary Material, which also shows subgroup estimates of joint probabilities.

The HILDA estimates of poverty exit rates for the 18–59 subgroup are noticeably more accurate than those for all individuals, with 10/14 estimates within the 95% confidence interval around the 'true' estimates. The figures in the Supplementary Material show that the poor performance of the estimates for all individuals (only 3/14 estimates within the reference band; see Figure 4) is due to the poor accuracy of the estimates for the 60–75 subgroup (and not the 0–17 subgroup). The HILDA estimates of the poverty entry rates for the 18–59 subgroup are less accurate than those for all individuals. The number of estimates within the benchmark band is 1/14 (rather than 2/14) and the synthetic panel estimates over-estimate the 'true' panel estimates by a greater amount. In contrast, the estimates for the 0–17 and 60–75 subgroups are noticeably more accurate than the estimates for all individuals.

<Figure 10 near here>

The BHPS results have similarities to the HILDA ones. The estimates of poverty exit rates for individuals aged 18–59 are slightly more accurate than the corresponding estimates for all individuals (14/17 estimates within the benchmark confidence interval rather than 10/17) but, by contrast with the HILDA estimates, the inaccuracy in the estimates for all individuals is accounted for by the estimates for the 0–17 subgroup rather than the 60–75 subgroup. The BHPS estimates of the poverty entry rates for the 18–59 subgroup are less accurate than their counterparts for all individuals, with the number of estimates within the benchmark confidence interval being only 1/17 (compared with 8/17). As for HILDA, the estimates for the 0–17 and 60–75 subgroups are more accurate than the estimates for all individuals.

Our overall conclusion regarding the accuracy of subgroup estimates is more equivocal than DL's. In our analysis, some of the estimates for some subgroups and for some statistics (conditional or joint probabilities) are more accurate than the corresponding estimates for all individuals. At the same time, some are noticeably less accurate.

7. Conclusions

Our analysis shows that the DL method works less well when it is applied to Australian and British data than when it is applied to data for middle- and low-income countries. To what extent are our findings generally applicable and to what extent do they arise from having analysed two particular rich countries for which high-quality panel data exist?

Clearly, our findings about the potentially poor accuracy of synthetic panel estimates are less of an issue in contexts where there are no panel data at all. As DL point out, '… this basic methodology offers significant potential towards a better understanding of poverty dynamics in *settings where panel data are absent* and can serve as *a rather promising avenue for further research*' (p. 37; emphasis added). Thus, synthetic panel estimates have potential in many developing countries, and also in rich country contexts where panel data are unavailable or of doubtful quality.

Our research shows that there is scope for further research that is relevant for developing as well as developed countries. For example, it would be useful to know whether some of the DL method estimates sensitivities we have found, such as to the choice of head's age range and to the poverty line, are also present in other country contexts. We also need further research comparing the DL method with other synthetic panel approaches such as that proposed by Bourguignon and Moreno (2015). Garcés Urzainqui (2017) is the only study to do this to date.

Aside from data availability and quality issues, there is the question of whether the synthetic panel approach is less applicable to high-income countries rather than middle- or low-income countries because the underlying assumptions are less appropriate or the income modelling does not work so well in high-income country contexts. In this connection we note that, of the five countries used in DL's validation study, the synthetic panel estimates are slightly less accurate for the one rich country they included (USA): compare the 'goodness of fit' statistics in their Tables 3–5.

Key assumptions in DLLM's parametric bounds and DL's point estimate approaches are that Year 1 and Year 2 incomes are bivariate lognormally distributed and that income predictors are time-invariant (see Section 2). However, our checks of these assumptions based on the same methods as DL indicate that these issues are no greater a problem in

HILDA and the BHPS than they were for DL's study countries (see the Supplementary Material). These checks do not consider the way cross-year income dependence is characterised, and it may be that a different approach from bivariate normality, e.g. involving copula specifications for dependence, is more fruitful.

Regarding the success of the income modelling in different country contexts, we note that the adjusted-R^2 of our income regressions based on HILDA and BHPS data are lower than the adjusted-R^2 that DLLM and DL report. (Cruces et al. 2015 do not report R^2.) For example, DL report adjusted-R^2 for the USA between 0.29 and 0.34 (Appendix 2, Table 2.1) whereas our adjusted-R^2 for Australia and Britain are around two-thirds of the US values (see the Supplementary Material), although the income predictors are much the same in all three countries.

The income predictions are likely to be one source of the different validity findings, but they are unlikely to be the main one. DL undertake simulation analysis comparing estimate validity for a scenario in which analysts have access to the full set of income predictor variables with other scenarios in which analysts have fewer variables (the bivariate normality assumption is maintained). DL (p. 27) report that, even when few time-invariant variables are available, the synthetic panel estimates compare favourably with their true counterparts (as long as the sample size is not very large – larger than the samples we have used in our study). DL's simulation finding is consistent with our finding (cited in Section 3) that using a smaller set of income predictors led to very similar synthetic panel estimates and hence assessments of accuracy. More extensive simulation analysis, building in a number of other departures from the DL modelling assumptions (including bivariate lognormality), may help unravel which factors contribute most to the differences in synthetic panel estimate validity across countries.

Although our study focuses on the DL method, we have also derived DLLM parametric bounds estimates for the same sets of assumptions and definitions. The important finding is that the bounds virtually always include the 'true' panel estimate for each poverty dynamics statistic, year, and country. (The exceptions concern the joint non-poor persistence probability: see Figures 2 and 3. But even in these cases the 95% confidence interval includes the upper bound.) This suggests, first, that researchers employing the DL (or related) method should always show DLLM parametric bounds estimates as well as point estimates. Second, there may be significant returns to investments in getting estimates of ρ from external sources that are as credible and as narrow as possible.

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Table 1. Estimates of ρ (year-pair averages), by cohort definition and household head's age range: (a) HILDA

	Cohort definition						
	YOB(1)	YOB(5)	Sex* YOB(5)	Sex* YOB(10)	COB* YOB(3)	COB* YOB(5)	COB* YOB(10)
(i) Sample: household head aged 25–55							
Panel rho	0.74	0.74	0.74	0.74	0.74	0.74	0.74
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
DL rho	0.14	0.61	0.55	0.74	0.35	0.49	0.67
	(0.19)	(0.29)	(0.20)	(0.19)	(0.21)	(0.21)	(0.19)
No. of cohorts	31	6	12	6	20	16	9
Av. cohort size	135	689	345	686	318	467	901
Cohort R^2	0.02	0.01	0.02	0.01	0.02	0.02	0.02
(ii) Sample: household head aged 25–75							
Panel rho	0.73	0.73	0.73	0.73	0.73	0.73	0.73
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
DL rho	0.54	0.87	0.78	0.88	0.64	0.71	0.82
	(0.10)	(0.07)	(0.08)	(0.07)	(0.11)	(0.09)	(0.08)
No. of cohorts	51	10	20	10	32	27	15
Av. cohort size	123	621	312	619	304	404	781
Cohort R^2	0.05	0.04	0.05	0.04	0.05	0.05	0.05

Notes. The rho estimates are the average of the estimates for each of the 14 consecutive year-pairs of HILDA data (2001/2002 to 2014/2015). The estimates for each year-pair are based on disjoint subsamples representing averages over 50 sample splits. Shown in parentheses are the standard deviations of the corresponding rho estimates, calculated over all 50 sample splits and 14 year-pairs. Each column represents a different cohort definition, where YOB(s) = year of birth (at intervals of s years), COB = Country of birth (Australia, English speaking country, non-English-speaking country). All estimates are weighted and adjusted for survey design, with the exception of the number of cohorts and average cohort size (which are unweighted). Panel rho: 'true' correlation between residuals of Year 1 and Year 2 income model (see eqn. 3 in main text). Cohort R^2: adjusted R^2 of the regression of income on cohort variables.

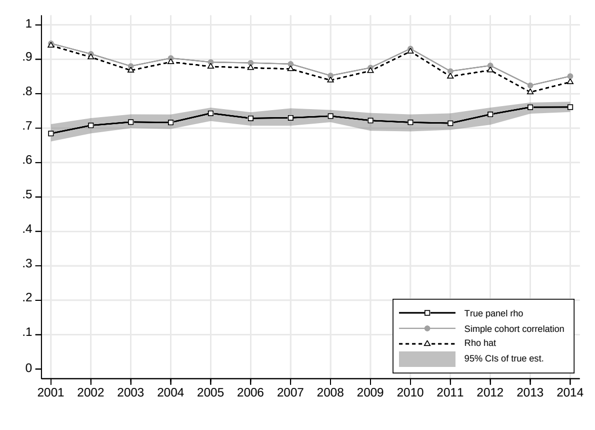
Table 2. Estimates of ρ (year-pair averages), by cohort definition and household head's age range: (b) BHPS

	Cohort definition					
	YOB(1)	YOB(3)	YOB(5)	YOB(10)	Sex*YOB(5)	Sex*YOB(10)
(i) Sample: household head aged 25–55						
Panel rho	0.71	0.71	0.71	0.71	0.71	0.71
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
DL rho	0.23	0.52	0.65	0.87	0.68	0.84
	(0.24)	(0.30)	(0.30)	(0.20)	(0.16)	(0.13)
No. of cohorts	28	10	6	3	12	6
Av. cohort size	72	194	323	641	174	345
Cohort R^2	0.03	0.02	0.02	0.02	0.04	0.04
(ii) Sample: household head aged 25–75						
Panel rho	0.71	0.71	0.71	0.71	0.71	0.71
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
DL rho	0.43	0.69	0.79	0.89	0.73	0.85
	(0.17)	(0.16)	(0.13)	(0.10)	(0.11)	(0.08)
No. of cohorts	42	17	10	5	20	10
Av. cohort size	75	181	297	590	159	315
Cohort R^2	0.05	0.04	0.04	0.03	0.06	0.05

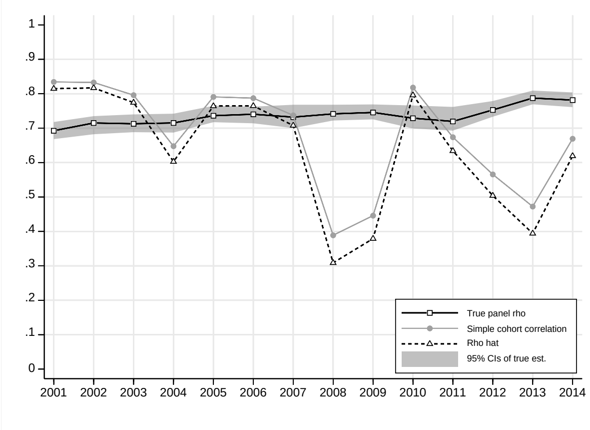
Notes. The rho estimates are the average of the estimates for each of the 17 consecutive year-pairs of BHPS data (1991/1992 to 2007/2008). The estimates for each year-pair are based on disjoint subsamples representing averages over 50 sample splits. Shown in parentheses are the standard deviations of the corresponding rho estimates, calculated over all 50 sample splits and 17 year-pairs. Each column represents a different cohort definition, where YOB(s) = year of birth (at intervals of s years). All estimates are weighted and adjusted for survey design, with the exception of the number of cohorts and average cohort size (which are unweighted). Panel rho: 'true' correlation between residuals of Year 1 and Year 2 income model (see eqn. 3 in main text). Cohort R^2: adjusted R^2 of the regression of income on cohort variables.

Figure 1. Year-by-year variation in estimates of ρ, by cohort definition and household head's age range
(a) HILDA

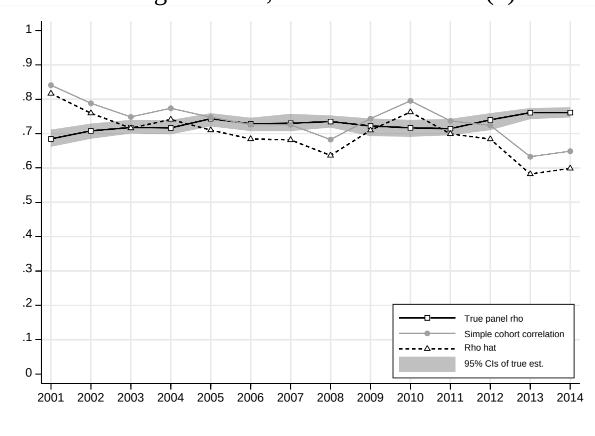
Head aged 25–75; Cohort YOB(5)



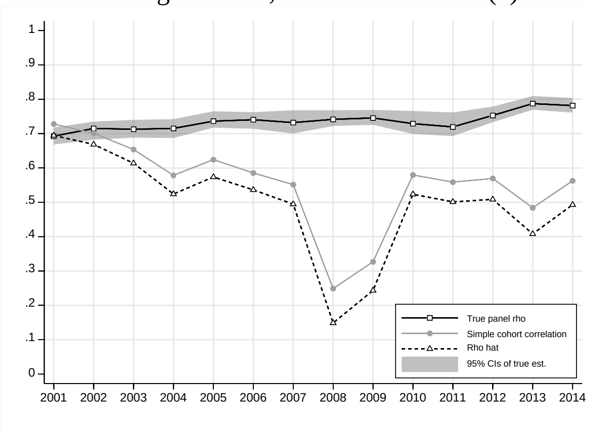
Head aged 25–55; Cohort YOB(5)



Head aged 25–75; Cohort COB*YOB(5)

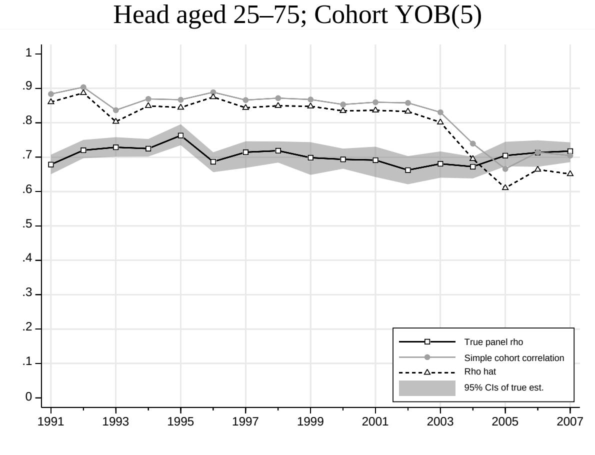


Head aged 25–55; Cohort COB*YOB(5)

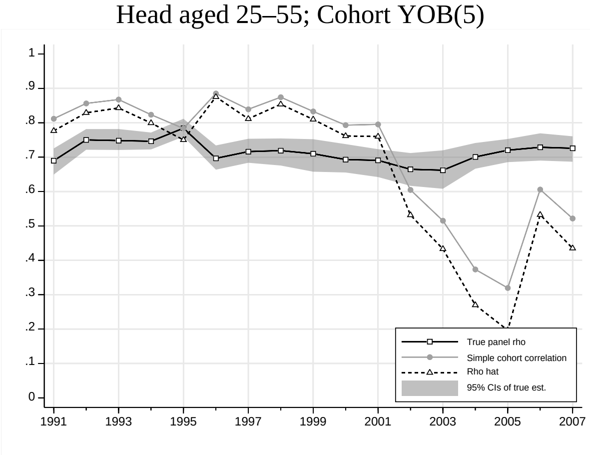


(b) BHPS

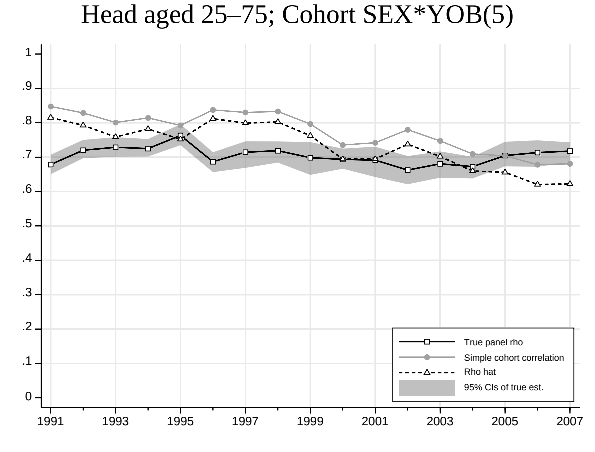
Head aged 25–75; Cohort YOB(5)



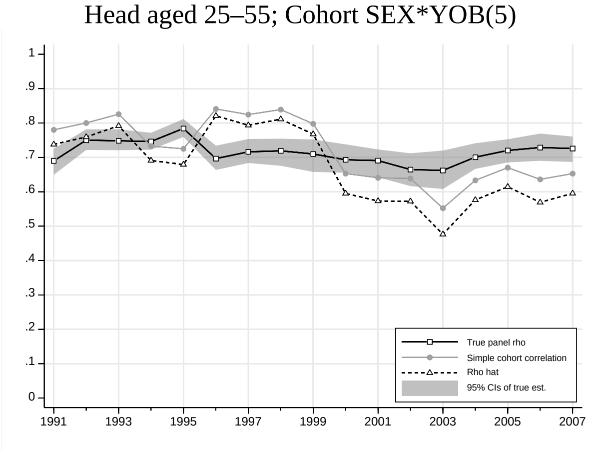
Head aged 25–55; Cohort YOB(5)



Head aged 25–75; Cohort SEX*YOB(5)

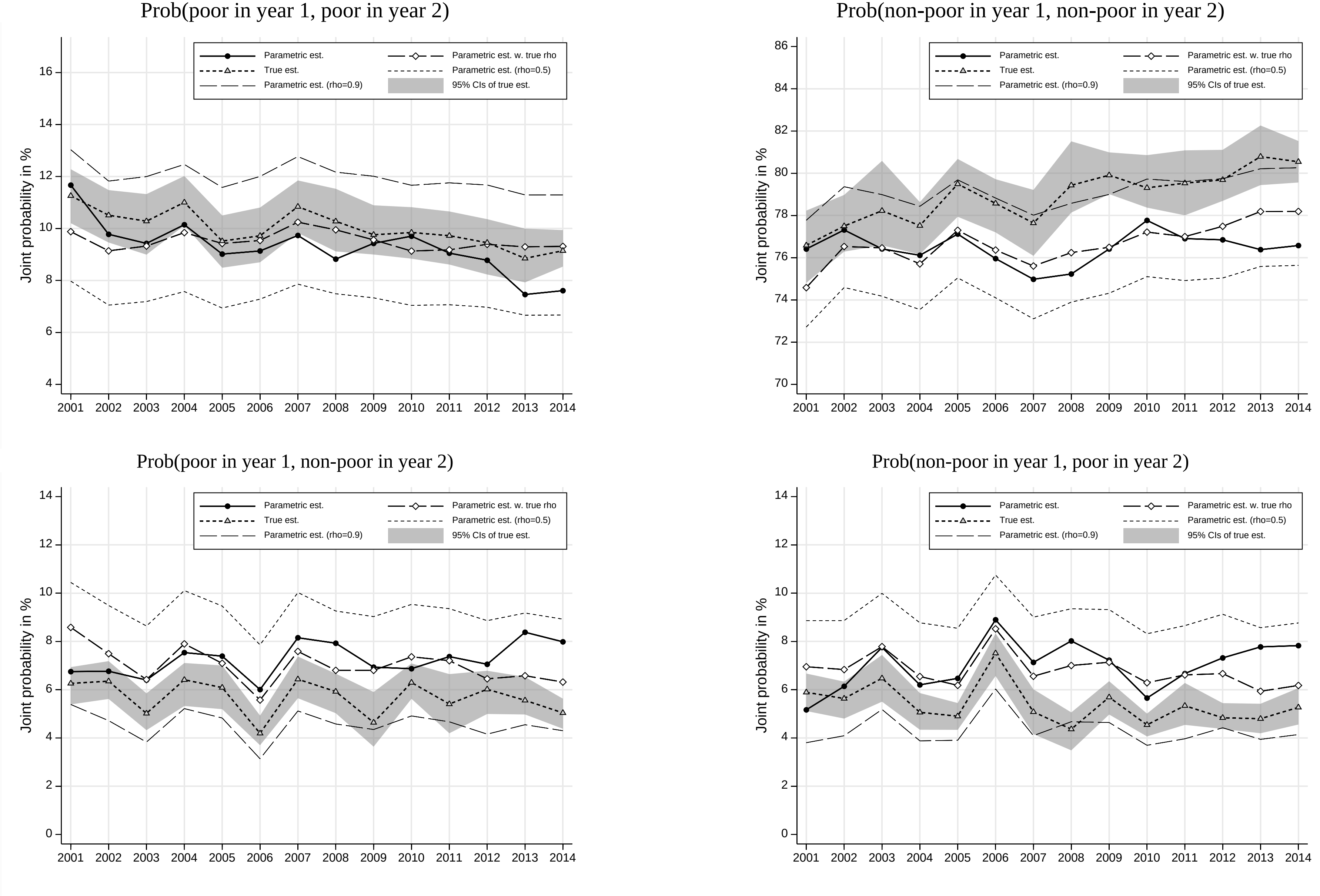


Head aged 25–55; Cohort SEX*YOB(5)



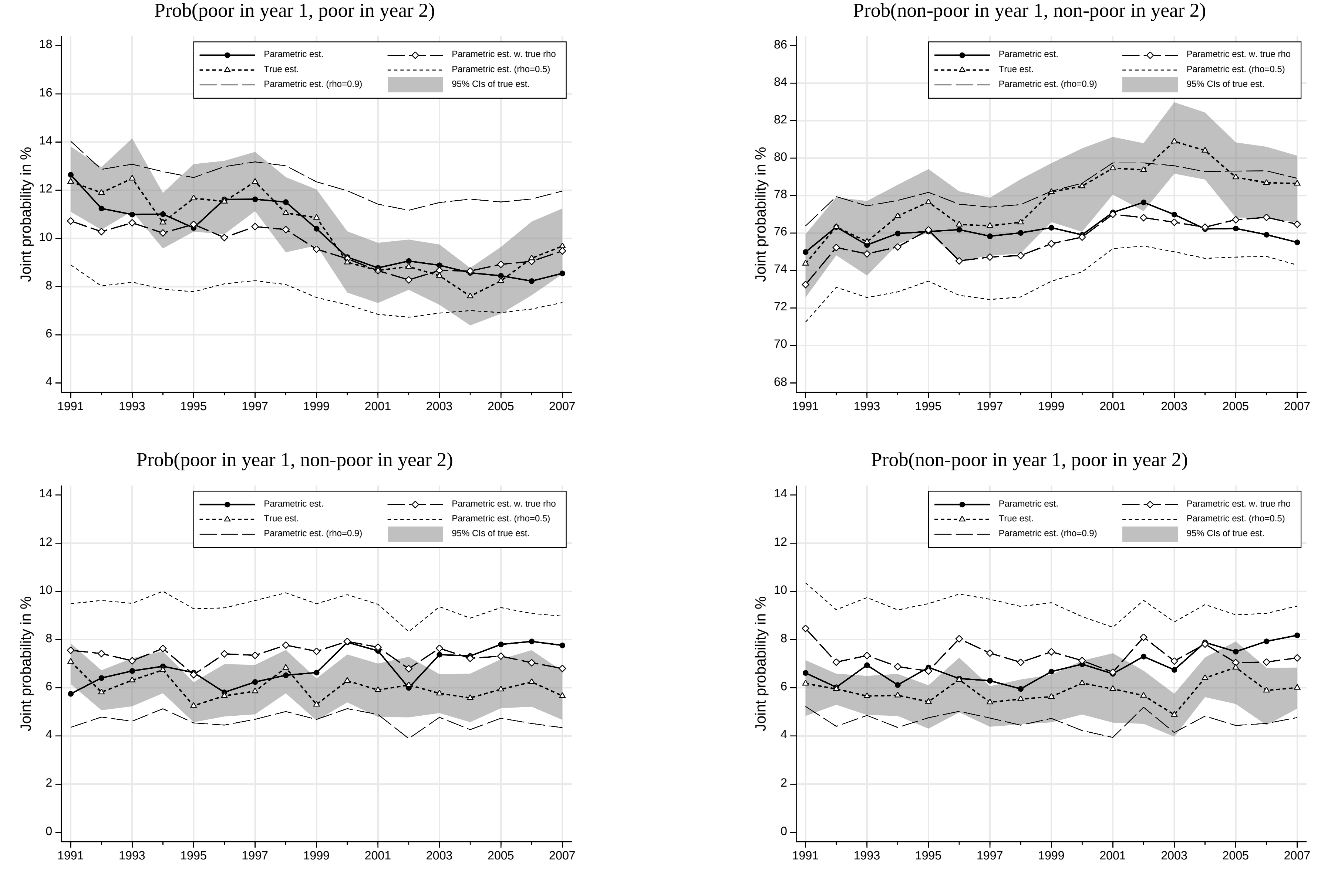
Notes. See main text, and Tables 1 and 2, for explanations of the cohort definitions.

Figure 2. Estimates of joint poverty probabilities, by year (‘leading case’ definitions): HILDA



Notes. Leading case definitions: household head aged 25–75 years in Year 1, cohort definition COB*YOB(5), poverty line is 60% of contemporary median income. Estimates refer to all individuals living in households with a head aged 25–75.

Figure 3. Estimates of joint poverty probabilities, by year (‘leading case’ definitions): BHPS

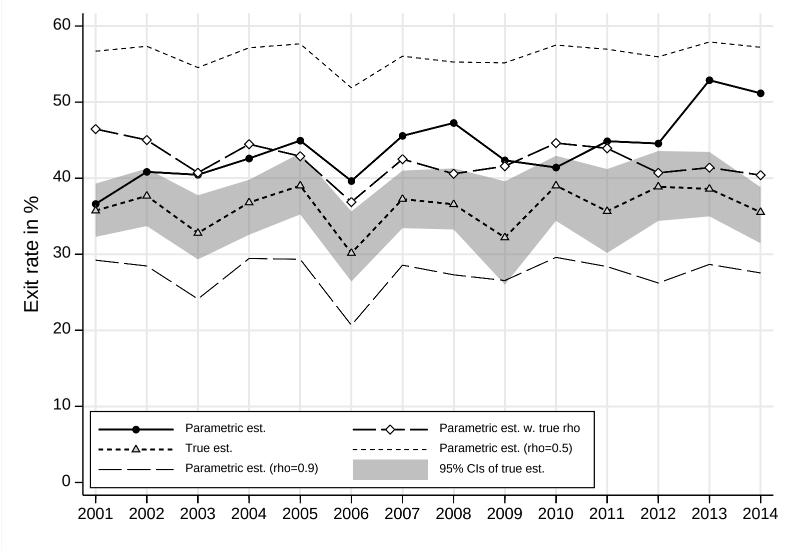


Notes. Leading case definitions: household head aged 25–75 years in Year 1, cohort definition SEX*YOB(5), poverty line is 60% of contemporary median income. Estimates refer to all individuals living in households with a head aged 25–75.

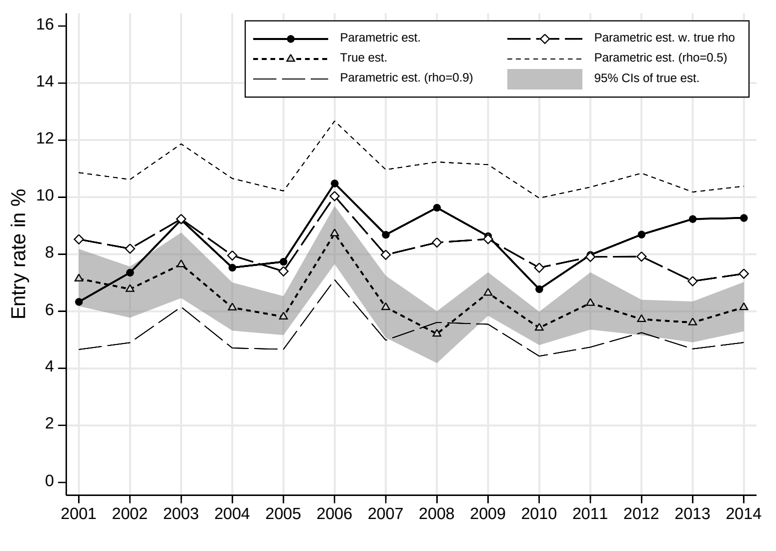
Figure 4. Estimates of poverty exit and entry probabilities, by year (‘leading case’ definitions)

(a) HILDA

Exit rate = Prob(non-poor in year 2 | poor in year 1)

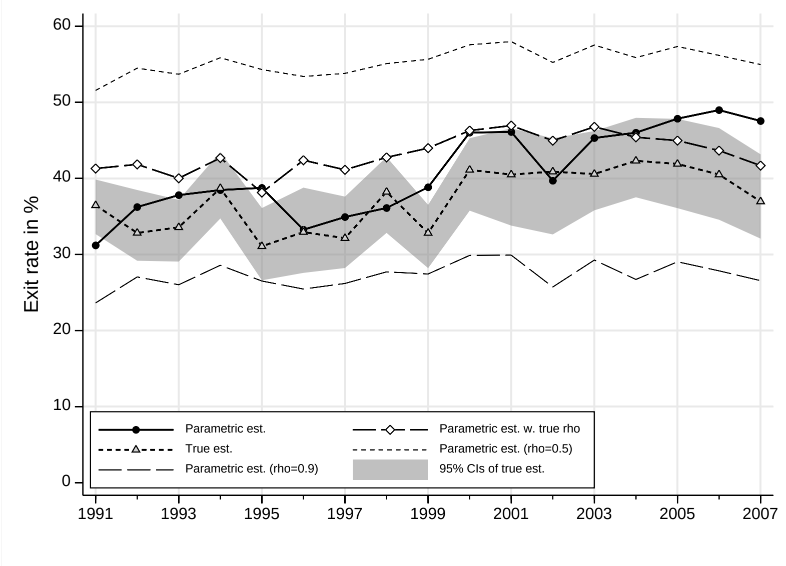


Entry rate = Prob(poor in year 2 | non-poor in year 1)



(b) BHPS

Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

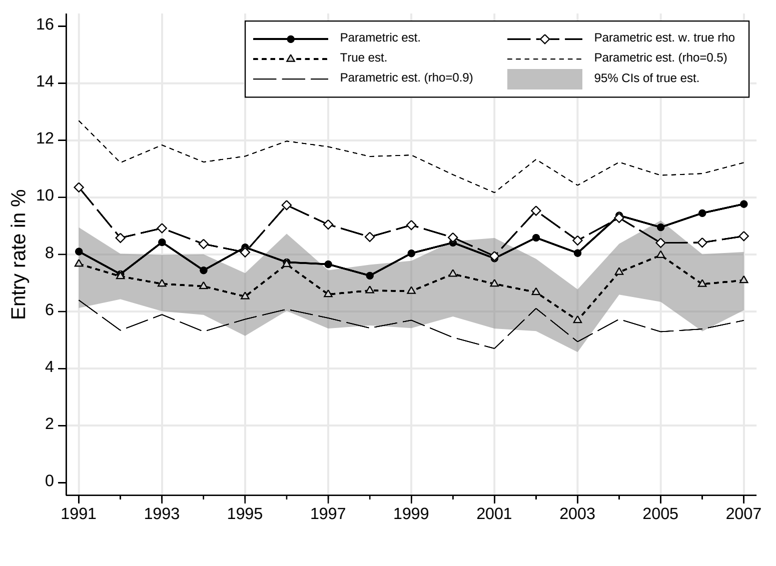
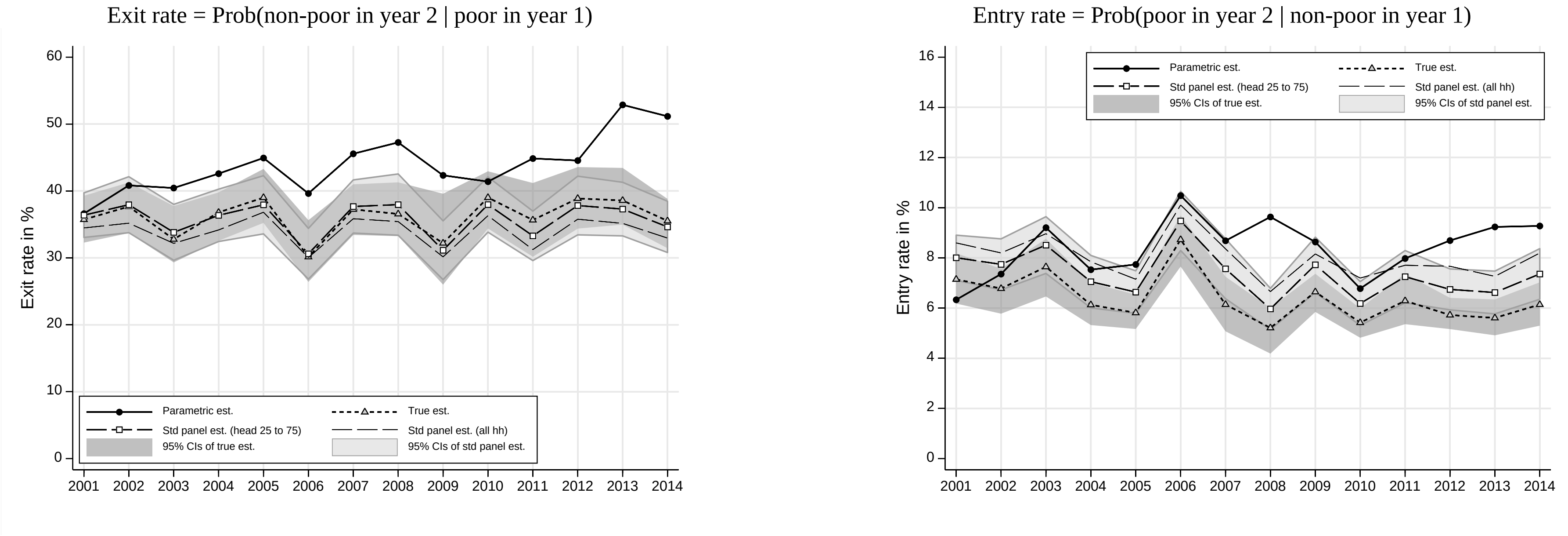


Figure 5. 'True' versus 'standard panel' estimates of poverty exit and entry probabilities, by year ('leading case' definitions)

(a) HILDA



(b) BHPS

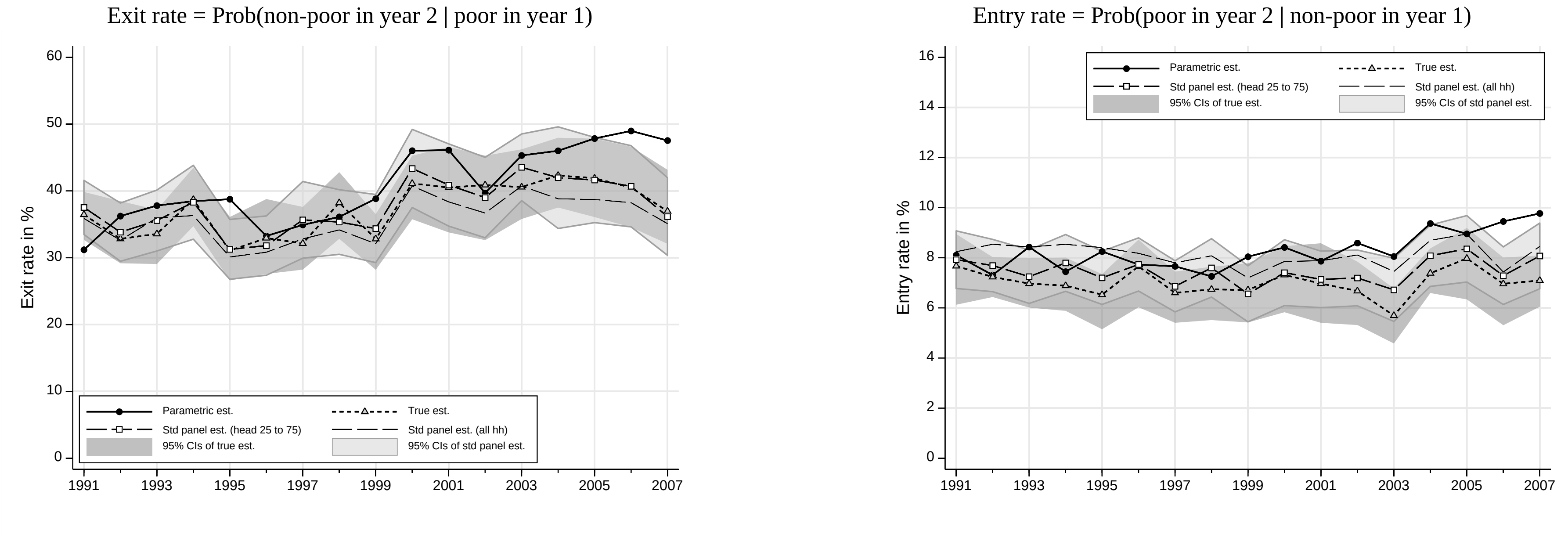
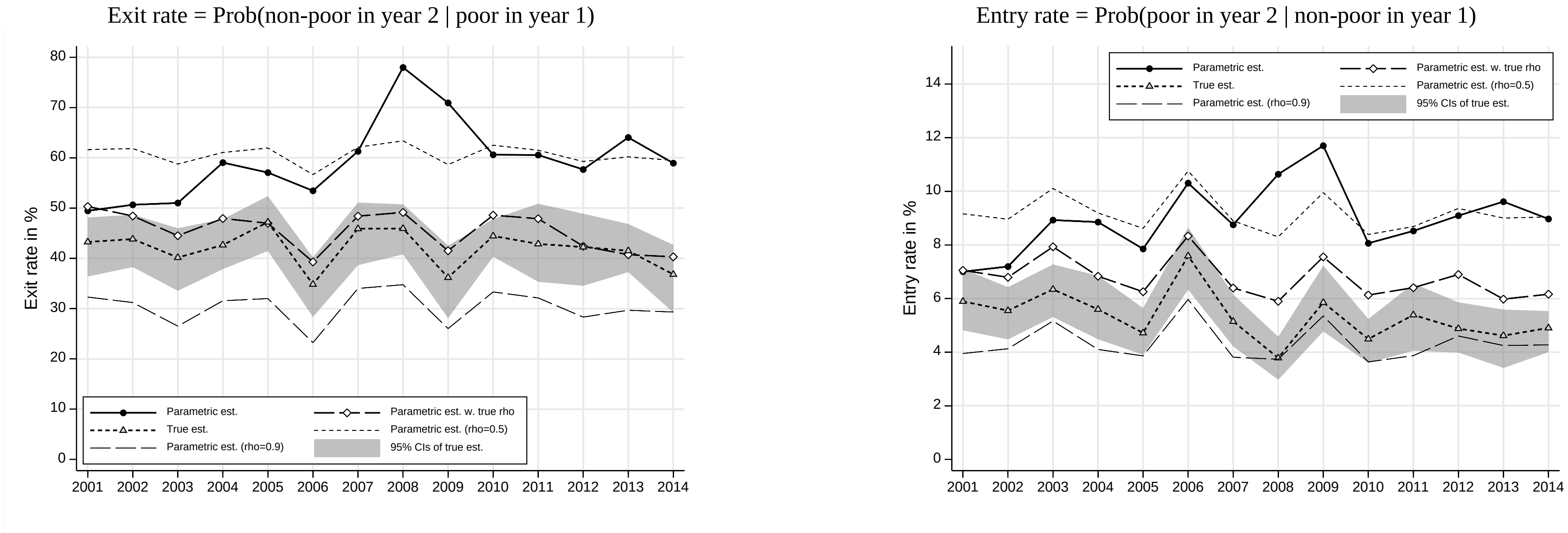


Figure 6. Estimates of poverty exit and entry probabilities, by year, household head aged 25–55 (‘leading case’ definitions otherwise)

(a) HILDA



(b) BHPS

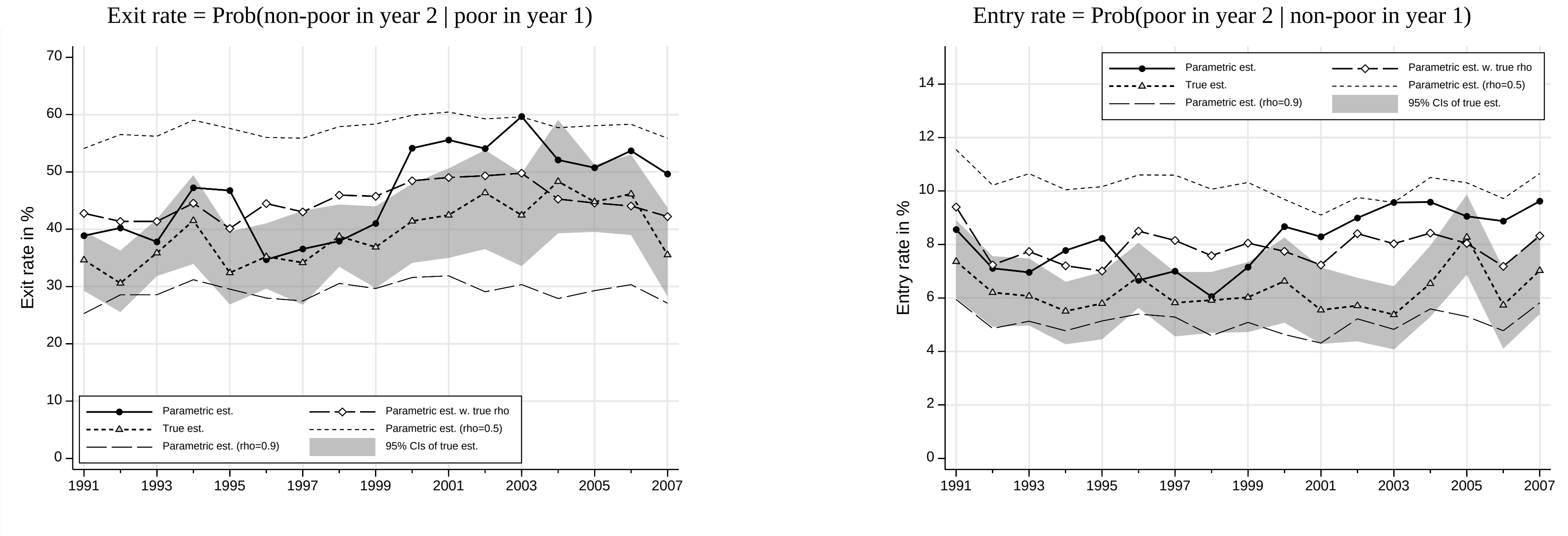


Figure 7. Estimates of joint poverty probabilities, by year, poverty line is 50% contemporary median (‘leading case’ definitions otherwise): HILDA

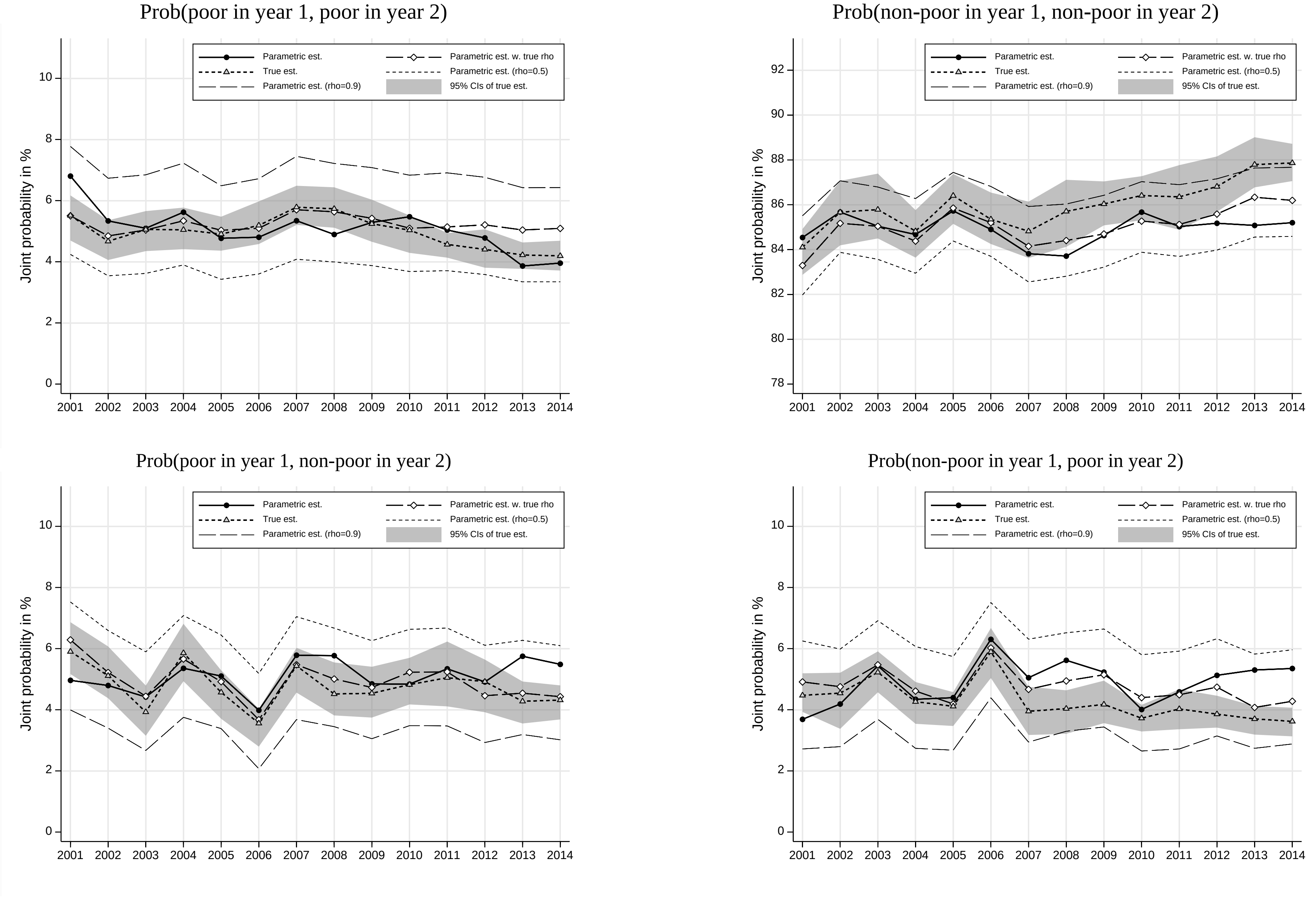


Figure 8. Estimates of joint poverty probabilities, by year, poverty line is 50% contemporary median (‘leading case’ definitions otherwise): BHPS

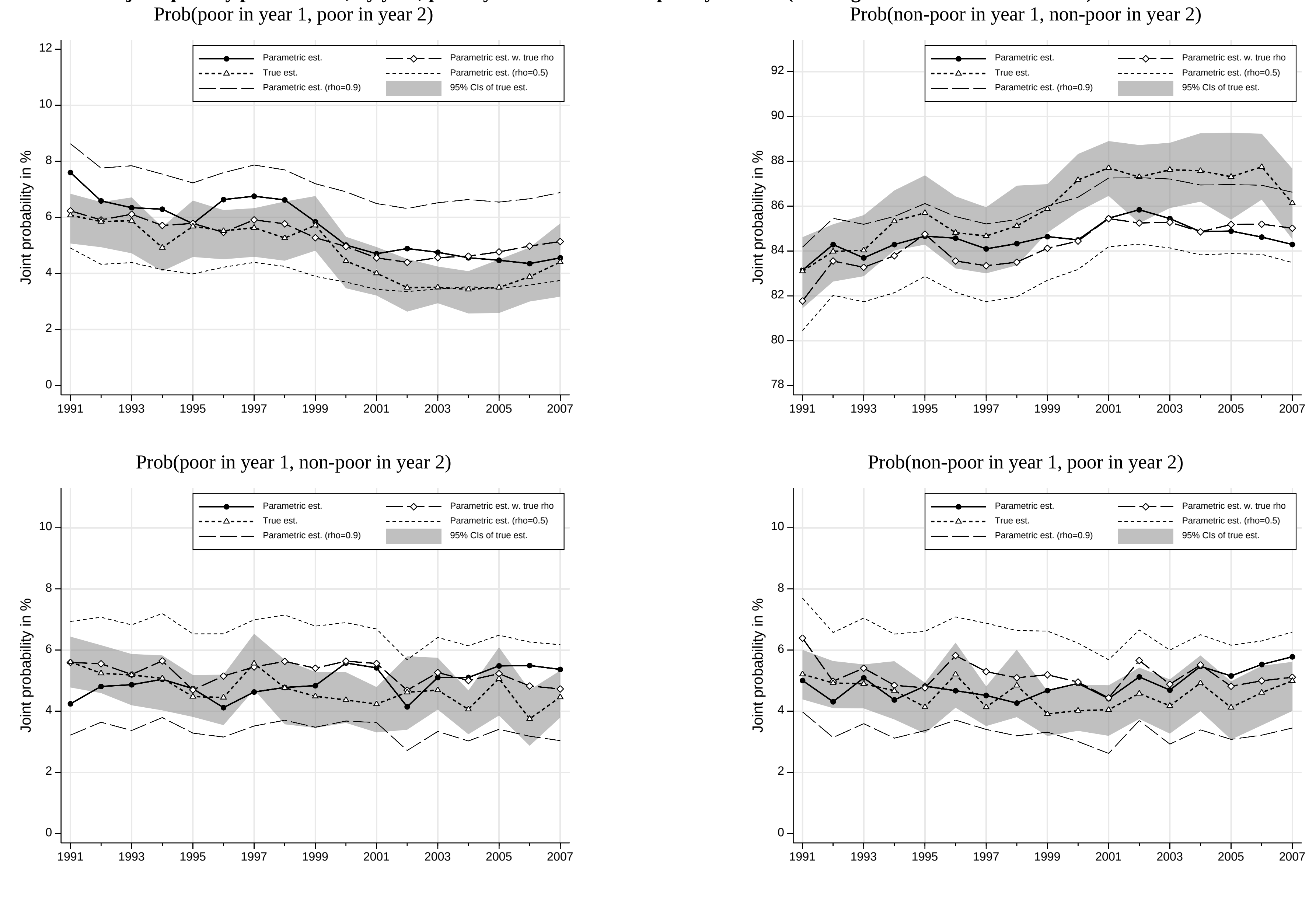
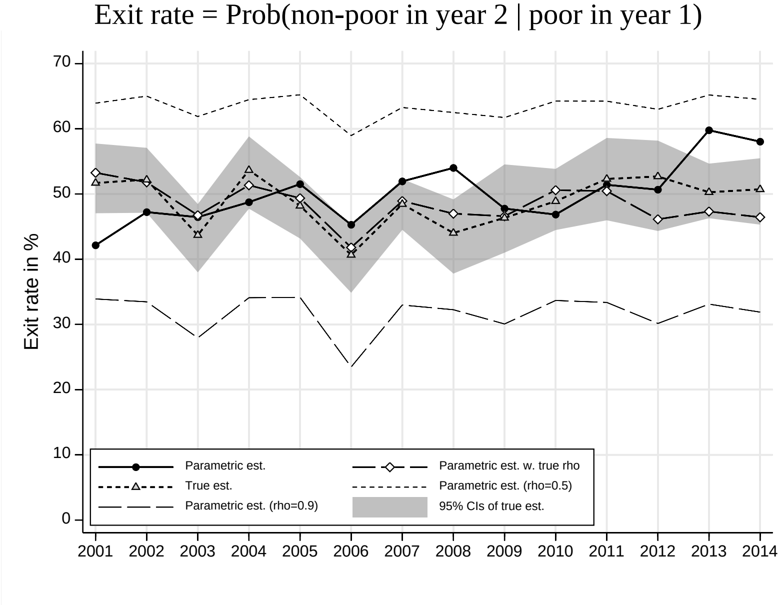
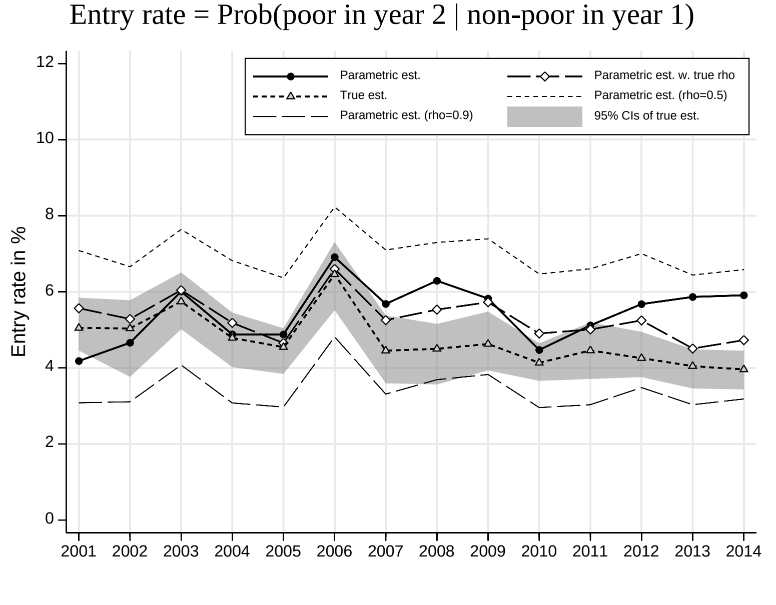


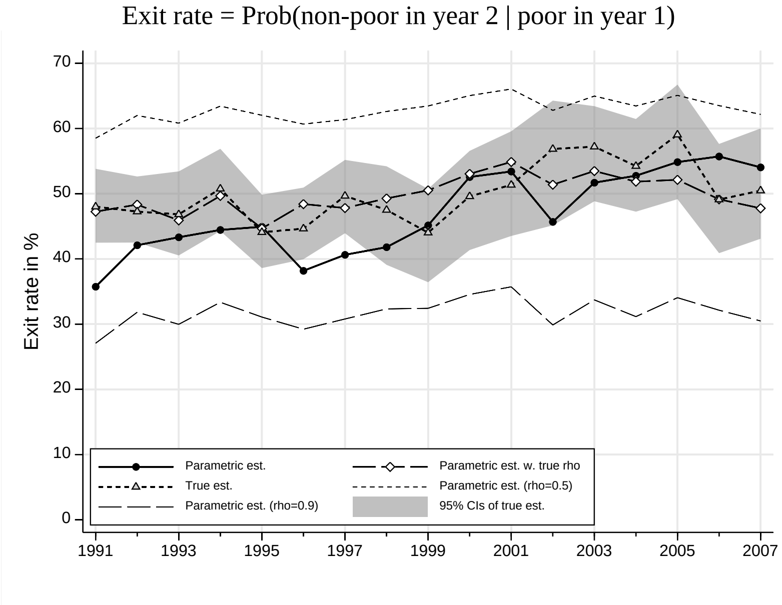
Figure 9. Estimates of poverty exit and entry rates, by year, poverty line is 50% contemporary median ('leading case' definitions otherwise)

(a) HILDA





(b) BHPS



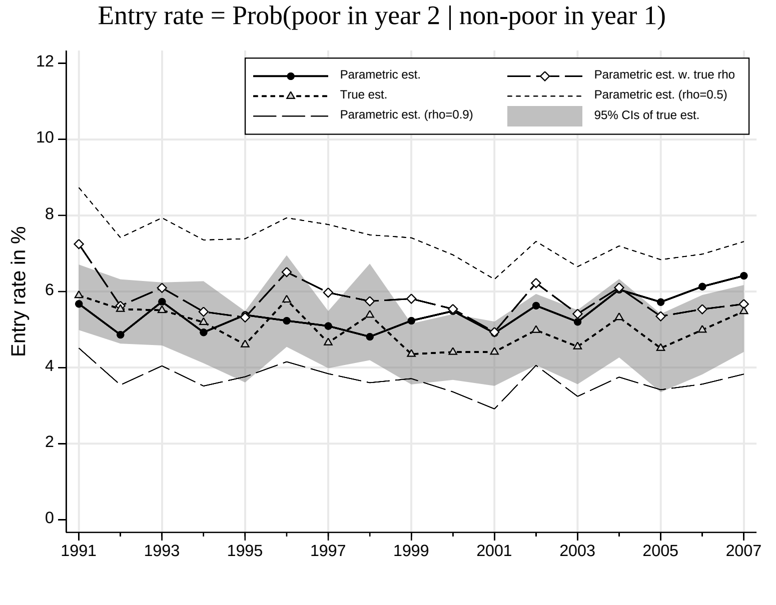
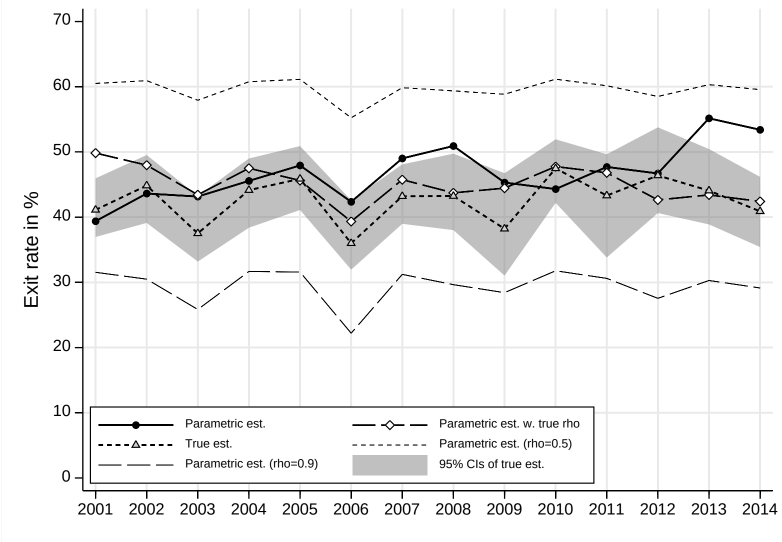


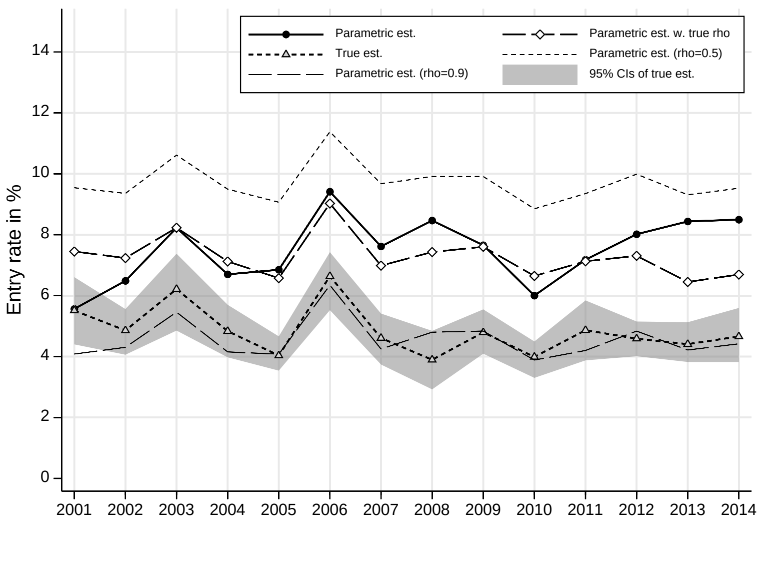
Figure 10. Estimates of poverty exit and entry rates, by year, individuals aged 18–59 ('leading case' definitions otherwise)

(a) HILDA

Exit rate = Prob(non-poor in year 2 | poor in year 1)

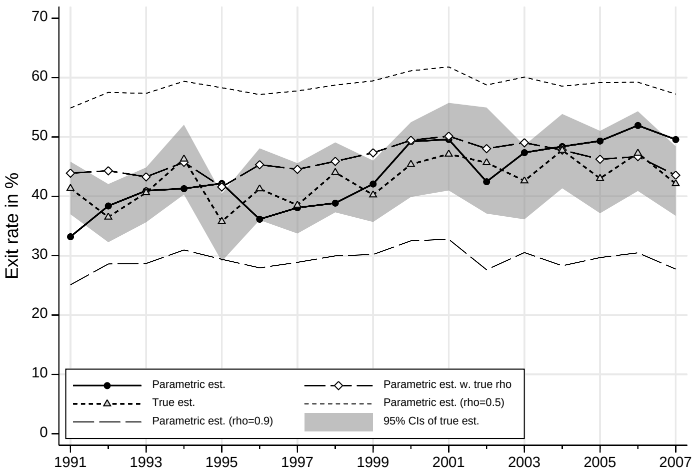


Entry rate = Prob(poor in year 2 | non-poor in year 1)

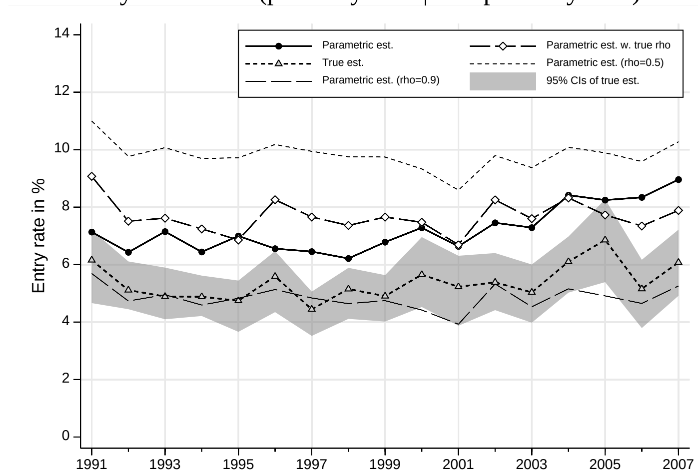


(b) BHPS

Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)



How valid are synthetic panel estimates of poverty dynamics?

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SUPPLEMENTARY MATERIAL

Appendix	Contents
	Australia (HILDA data)
A1	Income model: estimated parameters, by year
A2	Income model: means of predictors, by year
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	Britain (BHPS data)
B1	Income model: estimated parameters, by year
B2	Income model: means of predictors, by year
B3	Lognormality checks (leading case scenario), by year
B4	Estimates of joint and conditional poverty probabilities, by scenario and year

Table A1.1 Estimated coefficients of the income model (household head aged 25–75, household equivalised disposable income)

	2001		2002		2003		2004		2005		2006	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.019	0.052	-0.039	0.063	0.001	0.054	0.057	0.057	0.028	0.064	-0.057	0.065
1925 cohort	-0.273***	0.054	-0.257***	0.055	-0.223***	0.062	-0.183***	0.066	-0.416***	0.121		
1930 cohort	-0.162**	0.072	-0.191***	0.068	-0.208***	0.075	-0.231***	0.067	-0.180**	0.07	-0.283***	0.071
1935 cohort	-0.073	0.077	-0.263***	0.078	-0.115	0.077	-0.135**	0.056	-0.156***	0.058	-0.255***	0.069
1940 cohort	-0.037	0.06	0.043	0.062	0.06	0.074	0.028	0.06	0.147*	0.082	0.027	0.076
1945 cohort	0.175***	0.049	0.071	0.058	0.088	0.058	0.092	0.065	0.04	0.059	0.097	0.072
1950 cohort	0.026	0.045	0.098**	0.047	0.117**	0.058	0.061	0.07	0.045	0.059	0.153***	0.059
1955 cohort	0.004	0.043	-0.011	0.044	-0.007	0.046	0.017	0.047	-0.002	0.047	0.004	0.045
1965 cohort	0.005	0.044	0.004	0.048	-0.042	0.054	-0.054	0.045	0.005	0.045	0.02	0.05
1970 cohort	0.082*	0.042	0.057	0.055	-0.02	0.052	-0.027	0.042	-0.055	0.049	-0.015	0.05
1975 cohort	0.062	0.086	0.111*	0.064	0.067	0.074	0.031	0.066	-0.072	0.072	-0.036	0.066
Indigenous	-0.183***	0.062	-0.238***	0.056	-0.247***	0.049	-0.235***	0.065	-0.261***	0.057	-0.258***	0.082
Migrant (Eng. sp.)	-0.001	0.029	0.050*	0.027	0.023	0.032	-0.011	0.03	0.019	0.034	0.015	0.034
Migrant (non-Eng. sp.)	-0.158***	0.032	-0.109***	0.03	-0.136***	0.03	-0.185***	0.042	-0.157***	0.04	-0.147***	0.032
Year 12	0.162***	0.044	0.137**	0.06	0.111**	0.049	0.212***	0.054	0.262***	0.053	0.183***	0.059
Year 12 + VET	0.060*	0.033	0.081**	0.033	0.114***	0.036	0.094**	0.038	0.172***	0.038	0.110***	0.038
Dipl. or uni. degree	0.313***	0.034	0.313***	0.032	0.313***	0.034	0.332***	0.038	0.371***	0.037	0.324***	0.042
female & Year 12	-0.069	0.058	-0.007	0.074	-0.026	0.075	-0.094	0.08	-0.130*	0.077	-0.007	0.08
female & Year 12 + VET	-0.059	0.057	0.01	0.054	-0.148**	0.06	-0.098	0.069	-0.108*	0.057	-0.134**	0.056
female & Year 12 + VET	-0.07	0.049	-0.039	0.045	-0.033	0.045	-0.066	0.055	-0.032	0.05	0.008	0.057
female & 1925 cohort	-0.067	0.085	0.065	0.089	-0.037	0.094	-0.165	0.103	0.177	0.281		
female & 1930 cohort	-0.132	0.096	-0.067	0.091	-0.114	0.09	-0.168*	0.091	-0.155	0.098	-0.08	0.094
female & 1935 cohort	-0.093	0.095	0.097	0.1	-0.037	0.093	-0.180**	0.083	-0.12	0.087	0.04	0.132
female & 1940 cohort	0.042	0.086	-0.034	0.096	-0.084	0.096	-0.135	0.09	-0.210*	0.113	-0.055	0.109
female & 1945 cohort	-0.039	0.079	0.152*	0.09	0.089	0.096	-0.01	0.098	0.095	0.096	0.142	0.11
female & 1950 cohort	0.106	0.068	0.063	0.071	0.006	0.077	-0.019	0.108	0.038	0.087	0.03	0.093
female & 1955 cohort	0.002	0.065	0.038	0.071	0.103	0.068	0.015	0.07	-0.008	0.069	0.104	0.075
female & 1965 cohort	-0.001	0.062	-0.037	0.069	-0.023	0.071	0.042	0.08	-0.019	0.067	-0.001	0.077
female & 1970 cohort	-0.077	0.063	-0.103	0.079	-0.026	0.07	-0.002	0.065	-0.038	0.067	-0.012	0.075
female & 1975 cohort	-0.114	0.111	-0.190*	0.1	-0.038	0.1	-0.037	0.09	-0.013	0.098	0.028	0.087
1980 cohort											-0.019	0.075
female & 1980 cohort											-0.052	0.118
1985 cohort												
female & 1985 cohort												
Constant	10.606***	0.037	10.638***	0.044	10.571***	0.045	10.622***	0.041	10.641***	0.046	10.668***	0.042
Sample size	2863		2835		2628		2614		2688		2595	
R2 (adj.)	0.148		0.149		0.145		0.143		0.162		0.157	

Table A1.1 (continued)

	2007		2008		2009		2010		2011		2012
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.
female	0.013	0.07	0.034	0.07	0.05	0.057	0.131**	0.058	-0.025	0.06	-0.021
1925 cohort											
1930 cohort	-0.367***	0.057	-0.449***	0.101	-0.374***	0.086	-0.318***	0.052			
1935 cohort	-0.186**	0.075	-0.265***	0.081	-0.215***	0.053	-0.211***	0.06	-0.366***	0.057	-0.416***
1940 cohort	-0.078	0.09	-0.221***	0.068	-0.058	0.104	-0.063	0.071	-0.166**	0.081	-0.264***
1945 cohort	0.112*	0.066	0.12	0.081	-0.023	0.056	0.015	0.054	-0.061	0.07	-0.039
1950 cohort	0.127**	0.058	0.198***	0.064	0.021	0.053	0.099*	0.051	0.069	0.062	0.018
1955 cohort	0.036	0.057	0.105*	0.063	0.081*	0.043	0.068	0.048	0.067	0.048	-0.006
1965 cohort	0.06	0.057	0.047	0.056	0.014	0.04	0.021	0.047	-0.022	0.051	-0.018
1970 cohort	-0.011	0.062	-0.067	0.059	-0.046	0.043	-0.048	0.063	-0.109**	0.051	-0.132***
1975 cohort	0.130*	0.07	0.054	0.061	0.087*	0.051	0.026	0.06	-0.078	0.053	-0.115**
Indigenous	-0.213**	0.099	-0.052	0.091	-0.201***	0.072	-0.098*	0.055	-0.296***	0.058	-0.137***
Migrant (Eng. sp.)	-0.009	0.04	-0.031	0.035	-0.015	0.03	-0.001	0.034	0.033	0.031	0.023
Migrant (non-Eng. sp.)	-0.159***	0.037	-0.072*	0.04	-0.080**	0.035	-0.160***	0.036	-0.122***	0.032	-0.207***
Year 12	0.203***	0.066	0.152***	0.058	0.165***	0.042	0.200***	0.044	0.196***	0.046	0.143***
Year 12 + VET	0.149***	0.039	0.126***	0.041	0.158***	0.039	0.175***	0.033	0.168***	0.034	0.117***
Dipl. or uni. degree	0.393***	0.042	0.346***	0.043	0.304***	0.035	0.351***	0.035	0.381***	0.039	0.319***
female & Year 12	-0.065	0.1	-0.083	0.094	-0.081	0.071	-0.135**	0.068	-0.064	0.07	-0.061
female & Year 12 + VET	-0.115*	0.063	-0.108*	0.062	-0.104**	0.052	-0.105*	0.055	-0.083	0.055	-0.077
female & Year 12 + VET	-0.085	0.062	-0.011	0.059	-0.021	0.05	-0.104**	0.052	-0.042	0.052	-0.03
female & 1925 cohort											
female & 1930 cohort	-0.055	0.104	0.027	0.131	-0.152	0.151	-0.087	0.166			
female & 1935 cohort	-0.068	0.133	-0.158	0.112	-0.179**	0.084	-0.226***	0.083	0.037	0.087	0.022
female & 1940 cohort	-0.062	0.113	-0.002	0.106	-0.097	0.124	-0.207**	0.093	-0.106	0.104	0.05
female & 1945 cohort	0.011	0.11	0.048	0.118	0.039	0.098	-0.192*	0.101	0.085	0.1	-0.072
female & 1950 cohort	-0.002	0.107	-0.077	0.093	-0.017	0.086	0.015	0.126	0.043	0.107	-0.107
female & 1955 cohort	0.102	0.095	0.035	0.095	-0.066	0.069	-0.004	0.075	0.037	0.074	0.024
female & 1965 cohort	-0.043	0.083	-0.052	0.083	-0.017	0.067	-0.078	0.072	0.042	0.07	-0.039
female & 1970 cohort	-0.065	0.088	-0.074	0.096	-0.027	0.062	-0.106	0.086	0.106	0.074	-0.011
female & 1975 cohort	-0.156	0.099	-0.123	0.092	-0.124*	0.072	-0.150*	0.08	0.047	0.072	-0.058
1980 cohort	0.035	0.075	0.083	0.064	-0.002	0.043	0.029	0.046	-0.032	0.056	-0.072
female & 1980 cohort	0.011	0.116	-0.121	0.084	-0.054	0.073	-0.109	0.072	0.048	0.075	-0.001
1985 cohort									0.061	0.07	-0.100*
female & 1985 cohort									-0.12	0.102	-0.02
Constant	10.604***	0.045	10.675***	0.052	10.863***	0.04	10.834***	0.036	10.819***	0.043	10.939***
Sample size	2673		2642		2670		2628		2711		3578
R2 (adj.)	0.135		0.166		0.134		0.162		0.152		0.159

Table A1.1 (continued)

	2013		2014		2015	
	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.061	0.049	-0.011	0.062	0.031	0.059
1925 cohort						
1930 cohort						
1935 cohort	-0.337***	0.068	-0.212***	0.062	-0.397***	0.108
1940 cohort	-0.289***	0.069	-0.187***	0.069	-0.187***	0.053
1945 cohort	-0.209***	0.053	-0.110*	0.059	-0.064	0.06
1950 cohort	-0.094*	0.057	-0.079*	0.047	-0.069	0.05
1955 cohort	-0.056	0.061	0.028	0.055	0.044	0.056
1965 cohort	-0.077	0.05	-0.068	0.05	-0.035	0.048
1970 cohort	-0.121***	0.044	-0.203***	0.044	-0.090*	0.049
1975 cohort	-0.166***	0.045	-0.124**	0.056	-0.068	0.057
Indigenous	-0.154***	0.057	-0.199***	0.061	-0.155***	0.052
Migrant (Eng. sp.)	-0.004	0.033	0.03	0.032	0.045	0.033
Migrant (non-Eng. sp.)	-0.142***	0.031	-0.136***	0.032	-0.175***	0.033
Year 12	0.183***	0.053	0.201***	0.055	0.257***	0.053
Year 12 + VET	0.156***	0.033	0.110**	0.044	0.145***	0.039
Dipl. or uni. degree	0.316***	0.038	0.346***	0.043	0.333***	0.041
female & Year 12	-0.041	0.063	-0.056	0.071	-0.053	0.07
female & Year 12 + VET	-0.06	0.05	-0.084	0.056	-0.071	0.049
female & Year 12 + VET	-0.006	0.047	-0.025	0.053	0.025	0.052
female & 1925 cohort						
female & 1930 cohort						
female & 1935 cohort	-0.047	0.092	-0.269***	0.089	-0.014	0.246
female & 1940 cohort	0.037	0.09	-0.232*	0.119	-0.137	0.101
female & 1945 cohort	0.039	0.086	-0.093	0.087	-0.078	0.081
female & 1950 cohort	0.043	0.081	0.028	0.081	-0.118	0.075
female & 1955 cohort	0.066	0.078	-0.039	0.077	-0.077	0.082
female & 1965 cohort	0.014	0.068	-0.043	0.071	-0.09	0.073
female & 1970 cohort	0.047	0.067	0.092	0.067	-0.094	0.075
female & 1975 cohort	0.099	0.069	-0.058	0.073	-0.095	0.079
1980 cohort	-0.100*	0.054	-0.09	0.063	-0.09	0.055
female & 1980 cohort	0.016	0.068	-0.031	0.081	-0.064	0.085
1985 cohort	-0.213**	0.093	-0.141**	0.056	-0.089	0.058
female & 1985 cohort	0.189*	0.112	0.036	0.078	-0.066	0.081
Constant	10.945***	0.036	10.909***	0.045	10.862***	0.042
Sample size	3535		3541		3599	
R2 (adj.)	0.125		0.147		0.144	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are less than Year 12 for education and the 1960 birth cohort.

Table A1.2 Estimated coefficients of the income model (household head aged 25–55, household equivalised disposable income)

	2001		2002		2003		2004		2005		2006
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.
female	-0.037	0.054	-0.034	0.053	0.042	0.054	-0.048	0.058	-0.035	0.067	0.041
1945 cohort	0.097*	0.053	0.143***	0.051	0.081	0.062	0.046	0.062	0.145*	0.074	
1950 cohort	0.048	0.041	0.107**	0.049	-0.017	0.06	0.065	0.048	0.092*	0.053	0.160***
1955 cohort	-0.042	0.038	-0.003	0.039	0.035	0.045	-0.049	0.046	-0.003	0.043	0.103**
1965 cohort	-0.03	0.039	0.026	0.045	-0.016	0.047	-0.04	0.04	0.041	0.046	0.075
1970 cohort	0.062	0.041	0.055	0.048	0.005	0.045	-0.005	0.043	-0.078*	0.041	0.002
1975 cohort	0.033	0.085	0.043	0.074	0.131**	0.058	0.079	0.051	0.021	0.057	0.042
Indigenous	-0.159**	0.079	-0.228***	0.057	-0.245***	0.056	-0.151***	0.05	-0.148**	0.057	-0.263***
Migrant (Eng. sp.)	0.133***	0.031	-0.006	0.031	0.076**	0.033	0.032	0.034	-0.024	0.035	0.043
Migrant (non-Eng. sp.)	-0.100***	0.033	-0.128***	0.041	-0.153***	0.035	-0.095**	0.039	-0.119***	0.032	-0.115***
Year 12	0.190***	0.047	0.160***	0.047	0.115**	0.056	0.152***	0.052	0.175***	0.057	0.180***
Year 12 + VET	0.063**	0.031	0.098***	0.03	0.118***	0.035	0.129***	0.039	0.078**	0.039	0.081**
Dipl. or uni. degree	0.279***	0.036	0.311***	0.036	0.353***	0.041	0.314***	0.038	0.265***	0.04	0.275***
female & Year 12	-0.142**	0.069	0.034	0.064	-0.029	0.075	-0.065	0.068	-0.017	0.08	-0.084
female & Year 12 + VET	-0.049	0.054	-0.011	0.056	-0.065	0.057	-0.073	0.069	0.006	0.058	-0.114**
female & Year 12 + VET	-0.032	0.049	-0.024	0.055	-0.117**	0.051	-0.047	0.058	0.06	0.056	-0.059
female & 1945 cohort	0.044	0.084	0.079	0.083	0.135	0.097	0.196*	0.102	0.135	0.118	
female & 1950 cohort	0.078	0.07	0.01	0.068	0.121	0.079	0.076	0.077	-0.018	0.081	0.02
female & 1955 cohort	0.067	0.061	0.025	0.06	-0.004	0.063	0.142**	0.071	-0.028	0.072	-0.029
female & 1965 cohort	0.015	0.058	0.038	0.074	-0.066	0.066	0.082	0.066	-0.055	0.073	-0.056
female & 1970 cohort	-0.08	0.068	-0.052	0.065	-0.107	0.067	-0.024	0.056	-0.001	0.069	-0.041
female & 1975 cohort	-0.035	0.105	-0.091	0.095	-0.165*	0.086	-0.029	0.066	-0.152*	0.088	-0.051
1980 cohort											0.04
female & 1980 cohort											-0.007
1985 cohort											
female & 1985 cohort											
Constant	10.670***	0.036	10.644***	0.036	10.625***	0.041	10.685***	0.043	10.780***	0.041	10.682***
Sample size	2080		2021		1927		1850		1876		1835
R2 (adj.)	0.1117268		0.1289713		0.1425038		0.1179243		0.1208851		0.098171

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are less than Year 12 for education and the 1960 birth cohort.

Table A1.2 (continued)

	2007		2008		2009		2010		2011		2012
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.
female	0.112	0.072	0.08	0.068	0.122**	0.057	-0.08	0.056	-0.046	0.055	-0.016
1945 cohort											
1950 cohort	0.181**	0.092	0.176***	0.059	0.085	0.07	0.05	0.097			
1955 cohort	0.113*	0.059	0.105*	0.06	0.04	0.038	0.067	0.045	0.063	0.046	-0.01
1965 cohort	0.137**	0.06	0.056	0.052	0.028	0.043	0.062	0.043	-0.072	0.046	-0.035
1970 cohort	0.120**	0.056	-0.012	0.051	-0.026	0.042	-0.044	0.04	-0.143***	0.048	-0.104**
1975 cohort	0.216***	0.067	0.114*	0.059	0.063	0.057	0.008	0.06	-0.104**	0.048	-0.132***
Indigenous	-0.238***	0.087	-0.027	0.102	-0.096	0.077	-0.052	0.073	-0.127*	0.075	-0.182***
Migrant (Eng. sp.)	0.079*	0.046	-0.031	0.039	0.039	0.038	0.016	0.036	0.051	0.039	-0.014
Migrant (non-Eng. sp.)	-0.111***	0.039	-0.038	0.044	-0.051*	0.027	-0.086**	0.042	-0.078**	0.032	-0.105***
Year 12	0.086	0.077	0.172***	0.056	0.188***	0.052	0.114**	0.05	0.223***	0.047	0.166***
Year 12 + VET	0.156***	0.047	0.104**	0.045	0.132***	0.037	0.128***	0.037	0.185***	0.039	0.186***
Dipl. or uni. degree	0.328***	0.046	0.293***	0.044	0.293***	0.036	0.281***	0.038	0.378***	0.038	0.312***
female & Year 12	0.096	0.098	-0.035	0.086	-0.169**	0.076	-0.09	0.077	-0.041	0.067	-0.054
female & Year 12 + VET	-0.175**	0.071	-0.107	0.075	-0.109*	0.056	-0.025	0.063	-0.045	0.058	-0.122**
female & Year 12 + VET	-0.019	0.063	0.058	0.068	-0.052	0.054	0.055	0.056	0.005	0.053	0.016
female & 1945 cohort											
female & 1950 cohort	0.01	0.124	-0.224*	0.129	-0.134	0.118	0.16	0.136			
female & 1955 cohort	-0.036	0.091	-0.021	0.087	-0.076	0.063	0.078	0.077	-0.022	0.072	-0.051
female & 1965 cohort	-0.117	0.087	-0.102	0.078	-0.08	0.066	-0.075	0.063	-0.006	0.065	-0.024
female & 1970 cohort	-0.230***	0.082	-0.112	0.087	-0.078	0.061	0.045	0.068	0.07	0.067	-0.02
female & 1975 cohort	-0.253***	0.097	-0.231**	0.096	-0.134*	0.073	-0.012	0.081	0.003	0.068	0.035
1980 cohort	0.119	0.087	0.110*	0.058	0.047	0.05	0.006	0.053	-0.045	0.05	-0.136***
female & 1980 cohort	-0.073	0.109	-0.207**	0.083	-0.112	0.072	0.059	0.075	-0.042	0.07	0.034
1985 cohort									-0.02	0.074	-0.126*
female & 1985 cohort									-0.005	0.119	0.041
Constant	10.537***	0.052	10.711***	0.048	10.908***	0.036	10.958***	0.038	10.872***	0.042	10.945***
Sample size	1833		1809		1824		1886		1921		2440
R2 (adj.)	0.1062572		0.1128506		0.108131		0.1275863		0.1461926		0.1187488

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are less than Year 12 for education and the 1960 birth cohort.

Table A1.2 (continued)

		2013		2014		2015	
	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	0.052	-0.006	0.056	-0.02	0.053	0.01	0.058
1945 cohort							
1950 cohort							
1955 cohort	0.056	-0.028	0.075	-0.013	0.103	0.008	0.095
1965 cohort	0.041	0.006	0.045	0.004	0.046	0.036	0.05
1970 cohort	0.043	-0.068	0.047	-0.093**	0.044	-0.073	0.048
1975 cohort	0.044	-0.042	0.05	-0.035	0.048	-0.044	0.053
Indigenous	0.045	-0.165***	0.057	-0.172***	0.046	-0.127**	0.058
Migrant (Eng. sp.)	0.036	0.06	0.039	0.055	0.042	0.005	0.05
Migrant (non-Eng. sp.)	0.031	-0.140***	0.034	-0.157***	0.033	-0.129***	0.032
Year 12	0.051	0.200***	0.057	0.194***	0.047	0.250***	0.053
Year 12 + VET	0.034	0.096**	0.041	0.130***	0.037	0.156***	0.041
Dipl. or uni. degree	0.041	0.300***	0.044	0.291***	0.042	0.328***	0.046
female & Year 12	0.07	-0.157**	0.069	-0.032	0.064	-0.093	0.068
female & Year 12 + VET	0.051	-0.107*	0.055	-0.057	0.052	-0.068	0.055
female & Year 12 + VET	0.053	0.012	0.056	0.044	0.055	0.041	0.058
female & 1945 cohort							
female & 1950 cohort							
female & 1955 cohort	0.074	0.043	0.093	-0.003	0.121	-0.163	0.128
female & 1965 cohort	0.057	-0.104*	0.062	-0.024	0.062	-0.122*	0.067
female & 1970 cohort	0.06	0.007	0.068	0.031	0.065	-0.044	0.066
female & 1975 cohort	0.06	-0.074	0.066	-0.104*	0.062	-0.084	0.071
1980 cohort	0.047	-0.092*	0.051	0.01	0.058	0.005	0.058
female & 1980 cohort	0.067	0.033	0.072	-0.134*	0.074	-0.139*	0.08
1985 cohort	0.074	-0.057	0.085	-0.105**	0.042	-0.137***	0.052
female & 1985 cohort	0.089	0.03	0.106	0.051	0.058	0.021	0.067
Constant	0.034	10.952***	0.041	10.925***	0.04	10.916***	0.041
Sample size		2355		2394		2411	
R2 (adj.)		0.1334147		0.1312037		0.1496587	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are less than Year 12 for education and the 1960 birth cohort.

Table A2.1 Sample mean of the income model covariates (household head aged 25–75)

	2001		2002		2003		2004		2005		2006	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex												
[1] Male	0.54154	0.00618	0.54032	0.00648	0.53137	0.00661	0.52522	0.00669	0.522	0.00665	0.51801	0.00666
[2] Female	0.45846	0.00618	0.45968	0.00648	0.46863	0.00661	0.47478	0.00669	0.478	0.00665	0.48199	0.00666
Birth cohort												
1940	0.25569	0.00541	0.24142	0.00556	0.22801	0.00555	0.21109	0.00547	0.19535	0.00528	0.18201	0.00514
1945	0.10046	0.00373	0.09958	0.00389	0.09744	0.00393	0.09819	0.00399	0.09617	0.00393	0.09544	0.00391
1950	0.10492	0.0038	0.10566	0.004	0.102	0.00401	0.10088	0.00404	0.09918	0.00398	0.09757	0.00395
1955	0.13246	0.0042	0.13238	0.00441	0.13407	0.00451	0.13068	0.00452	0.13023	0.00448	0.12844	0.00446
1960	0.13923	0.00429	0.13745	0.00448	0.13617	0.00454	0.1375	0.00461	0.13609	0.00457	0.13358	0.00453
1965	0.11846	0.00401	0.11919	0.00421	0.11987	0.0043	0.12027	0.00436	0.11799	0.0043	0.11602	0.00427
1970	0.11154	0.0039	0.11107	0.00409	0.11111	0.00416	0.11219	0.00423	0.11427	0.00424	0.11318	0.00422
1975	0.03723	0.00235	0.05325	0.00292	0.07133	0.00341	0.08921	0.00382	0.11072	0.00418	0.13376	0.00453
Indigeneous												
non indigeneous	0.98138	0.00168	0.98107	0.00177	0.98055	0.00183	0.98008	0.00187	0.98013	0.00186	0.97889	0.00191
indigeneous	0.01862	0.00168	0.01893	0.00177	0.01945	0.00183	0.01992	0.00187	0.01987	0.00186	0.02111	0.00191
Migrant: English speaking country												
Other	0.87785	0.00406	0.88402	0.00416	0.88731	0.00419	0.88673	0.00425	0.88875	0.00419	0.89232	0.00413
Migrant:English	0.12215	0.00406	0.11598	0.00416	0.11269	0.00419	0.11327	0.00425	0.11125	0.00419	0.10768	0.00413
Migrant: non-English speaking country												
Other	0.85215	0.0044	0.86712	0.00441	0.87119	0.00443	0.87471	0.00444	0.87686	0.00438	0.87848	0.00435
Migrant:Non English	0.14785	0.0044	0.13288	0.00441	0.12881	0.00443	0.12529	0.00444	0.12314	0.00438	0.12152	0.00435
Education												
Less than Year 12	0.38015	0.00602	0.36264	0.00625	0.34998	0.00631	0.33674	0.00633	0.32186	0.00622	0.3124	0.00617
Year 12	0.11846	0.00401	0.11293	0.00412	0.11199	0.00417	0.10896	0.00417	0.10877	0.00415	0.11194	0.0042
Year 12 + VET	0.20108	0.00497	0.20997	0.0053	0.21486	0.00544	0.22168	0.00557	0.22658	0.00558	0.23151	0.00562
Diploma or university degree	0.30031	0.00569	0.31445	0.00604	0.32317	0.00619	0.33262	0.00631	0.3428	0.00632	0.34415	0.00633

Table A2.1 (continued)

	2007		2008		2009		2010		2011		2012	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex												
[1] Male	0.51195	0.0067	0.50926	0.0067	0.50669	0.00663	0.50382	0.00659	0.49546	0.00573	0.49584	0.00575
[2] Female	0.48805	0.0067	0.49074	0.0067	0.49331	0.00663	0.49618	0.00659	0.50454	0.00573	0.50416	0.00575
Birth cohort												
1940	0.16628	0.00499	0.15369	0.00484	0.13863	0.00458	0.12339	0.00434	0.11108	0.0036	0.09938	0.00344
1945	0.09491	0.00393	0.09455	0.00392	0.09236	0.00384	0.09055	0.00378	0.09123	0.0033	0.09	0.00329
1950	0.09509	0.00393	0.09329	0.0039	0.09184	0.00383	0.09072	0.00379	0.09136	0.0033	0.08934	0.00328
1955	0.12925	0.0045	0.12637	0.00445	0.12544	0.00439	0.12287	0.00433	0.11634	0.00368	0.11233	0.00363
1960	0.13158	0.00453	0.12907	0.0045	0.12755	0.00442	0.12739	0.0044	0.1216	0.00375	0.11947	0.00373
1965	0.11576	0.00429	0.11594	0.00429	0.11453	0.00422	0.11296	0.00417	0.10885	0.00357	0.10652	0.00355
1970	0.11271	0.00424	0.11271	0.00424	0.11031	0.00416	0.10827	0.0041	0.1099	0.00359	0.11035	0.0036
1975	0.15441	0.00484	0.17437	0.00509	0.19933	0.0053	0.22384	0.00549	0.24964	0.00496	0.27263	0.00512
Indigeneous												
non indigeneous	0.97861	0.00194	0.97861	0.00194	0.9773	0.00198	0.97654	0.002	0.97594	0.00176	0.97568	0.00177
indigeneous	0.02139	0.00194	0.02139	0.00194	0.0227	0.00198	0.02346	0.002	0.02406	0.00176	0.02432	0.00177
Migrant: English speaking country												
Other	0.89286	0.00415	0.89502	0.00411	0.89778	0.00402	0.8999	0.00396	0.8922	0.00356	0.89441	0.00353
Migrant:English	0.10714	0.00415	0.10498	0.00411	0.10222	0.00402	0.1001	0.00396	0.1078	0.00356	0.10559	0.00353
Migrant: non-English speaking country												
Other	0.88352	0.0043	0.88621	0.00426	0.88529	0.00423	0.88425	0.00422	0.86512	0.00392	0.8689	0.00388
Migrant:Non English	0.11648	0.0043	0.11379	0.00426	0.11471	0.00423	0.11575	0.00422	0.13488	0.00392	0.1311	0.00388
Education												
Less than Year 12	0.30074	0.00615	0.29175	0.00609	0.28483	0.00599	0.27407	0.00588	0.26029	0.00503	0.25003	0.00498
Year 12	0.11451	0.00427	0.1163	0.0043	0.11911	0.0043	0.12026	0.00429	0.12304	0.00377	0.12277	0.00377
Year 12 + VET	0.22865	0.00563	0.23261	0.00566	0.23593	0.00563	0.23757	0.00561	0.23741	0.00488	0.24184	0.00492
Diploma or university degree	0.3561	0.00642	0.35934	0.00643	0.36013	0.00637	0.36809	0.00636	0.37926	0.00556	0.38536	0.00559

Table A2.1 (continued)

	2013		2014		2015	
	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex						
[1] Male	0.49592	0.00573	0.4939	0.00573	0.49572	0.00569
[2] Female	0.50408	0.00573	0.5061	0.00573	0.50428	0.00569
Birth cohort						
1940	0.0855	0.00321	0.07166	0.00295	0.06012	0.00271
1945	0.08748	0.00324	0.08636	0.00322	0.08513	0.00318
1950	0.08748	0.00324	0.08728	0.00323	0.08603	0.00319
1955	0.10984	0.00359	0.10763	0.00355	0.10547	0.0035
1960	0.11918	0.00372	0.11681	0.00368	0.11583	0.00364
1965	0.10471	0.00351	0.10185	0.00347	0.10003	0.00342
1970	0.10681	0.00354	0.10513	0.00351	0.10314	0.00346
1975	0.299	0.00525	0.32327	0.00536	0.34426	0.00541
Indigeneous						
non indigeneous	0.97553	0.00177	0.97401	0.00182	0.97253	0.00186
indigeneous	0.02447	0.00177	0.02599	0.00182	0.02747	0.00186
Migrant: English speaking country						
Other	0.89674	0.00349	0.89999	0.00344	0.90438	0.00335
Migrant:English	0.10326	0.00349	0.10001	0.00344	0.09562	0.00335
Migrant: non-English speaking country						
Other	0.87135	0.00384	0.87479	0.00379	0.876	0.00375
Migrant:Non English	0.12865	0.00384	0.12521	0.00379	0.124	0.00375
Education						
Less than Year 12	0.24257	0.00492	0.23612	0.00487	0.22765	0.00477
Year 12	0.12181	0.00375	0.12219	0.00375	0.12166	0.00372
Year 12 + VET	0.24428	0.00493	0.24701	0.00494	0.25201	0.00494
Diploma or university degree	0.39134	0.0056	0.39467	0.0056	0.39868	0.00557

Table A2.2 Sample mean of the income model covariates (household head aged 25–55)

	2001		2002		2003		2004		2005		2006	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex												
[1] Male	0.52863	0.00727	0.52593	0.00763	0.51953	0.00781	0.51577	0.00794	0.5124	0.00791	0.50882	0.00793
[2] Female	0.47137	0.00727	0.47407	0.00763	0.48047	0.00781	0.48423	0.00794	0.4876	0.00791	0.49118	0.00793
Birth cohort												
1945	0.1126	0.0046	0.08925	0.00436	0.0603	0.00372	0.02902	0.00267	0	0	0	0
1950	0.14461	0.00512	0.14603	0.0054	0.14209	0.00546	0.14181	0.00554	0.13999	0.00549	0.11259	0.00502
1955	0.18257	0.00563	0.18294	0.00591	0.18677	0.00609	0.1837	0.00615	0.18382	0.00613	0.18237	0.00613
1960	0.1919	0.00573	0.18995	0.006	0.1897	0.00613	0.19329	0.00627	0.19209	0.00623	0.18967	0.00622
1965	0.16327	0.00538	0.16472	0.00567	0.16699	0.00583	0.16906	0.00595	0.16654	0.0059	0.16474	0.00589
1970	0.15373	0.00525	0.1535	0.00551	0.15479	0.00565	0.15771	0.00579	0.16128	0.00582	0.16071	0.00583
1975	0.05131	0.00321	0.0736	0.00399	0.09937	0.00467	0.12541	0.00526	0.15627	0.00575	0.18992	0.00623
Indigeneous												
non indigeneous	0.97901	0.00209	0.97874	0.00221	0.97803	0.00229	0.97754	0.00235	0.97746	0.00235	0.97582	0.00244
indigeneous	0.02099	0.00209	0.02126	0.00221	0.02197	0.00229	0.02246	0.00235	0.02254	0.00235	0.02418	0.00244
Migrant: English speaking country												
Other	0.88698	0.00461	0.89393	0.00471	0.90186	0.00465	0.90437	0.00467	0.90584	0.00462	0.91108	0.00452
Migrant:English	0.11302	0.00461	0.10607	0.00471	0.09814	0.00465	0.09563	0.00467	0.09416	0.00462	0.08892	0.00452
Migrant: non-English speaking country												
Other	0.85772	0.00509	0.87407	0.00507	0.87793	0.00512	0.88393	0.00509	0.88605	0.00503	0.88942	0.00498
Migrant:Non English	0.14228	0.00509	0.12593	0.00507	0.12207	0.00512	0.11607	0.00509	0.11395	0.00503	0.11058	0.00498
Education												
Less than Year 12	0.32231	0.00681	0.30537	0.00704	0.29175	0.0071	0.27933	0.00713	0.26221	0.00696	0.25013	0.00687
Year 12	0.1391	0.00504	0.13294	0.00519	0.13232	0.00529	0.12617	0.00527	0.12447	0.00522	0.12771	0.0053
Year 12 + VET	0.20399	0.00587	0.21332	0.00626	0.21973	0.00647	0.23063	0.00669	0.23767	0.00674	0.2471	0.00685
Diploma or university degree	0.33461	0.00687	0.34836	0.00728	0.3562	0.00748	0.36387	0.00764	0.37566	0.00766	0.37506	0.00768

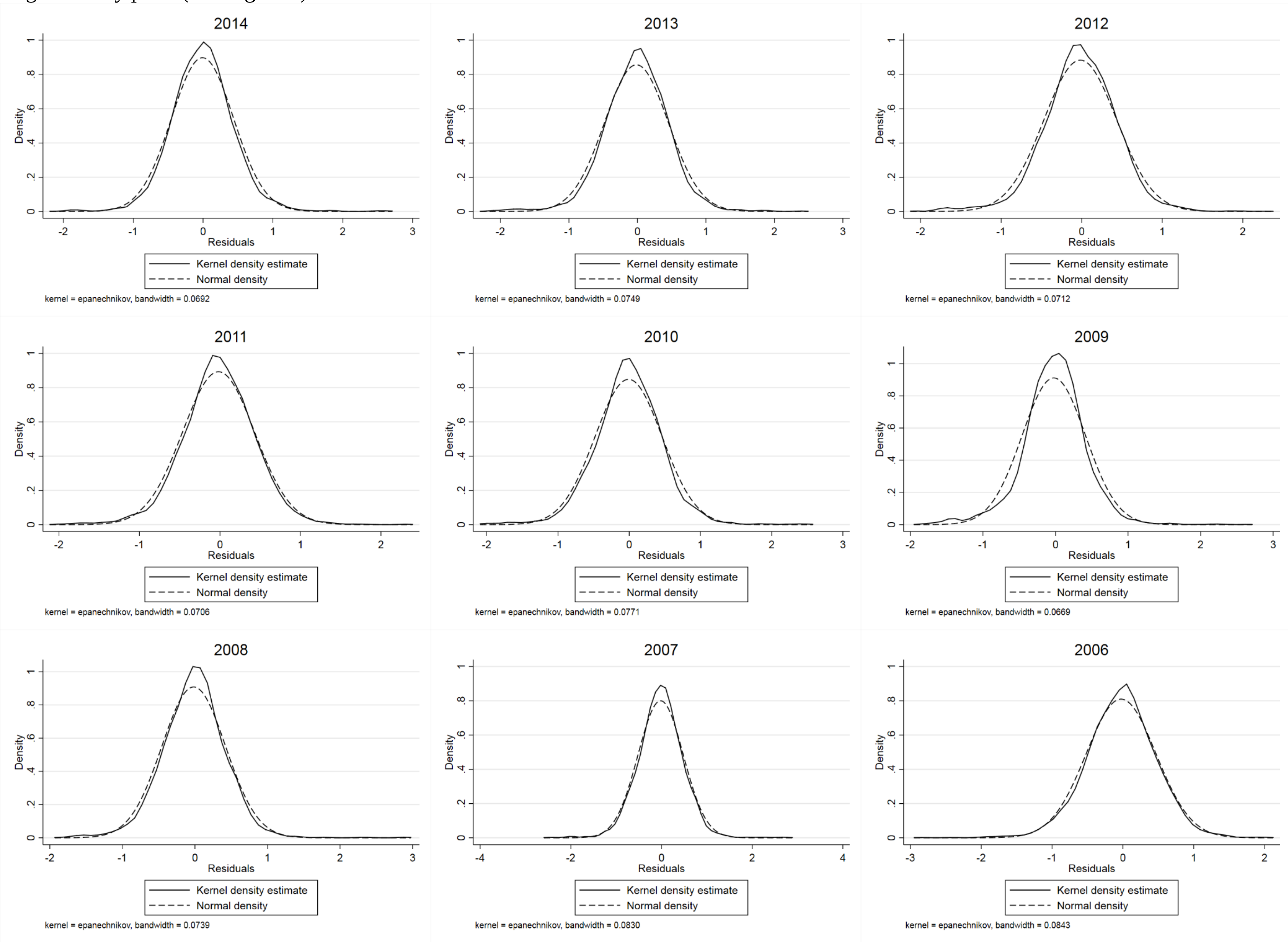
Table A2.2 (continued)

	2007		2008		2009		2010		2011		2012	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex												
[1] Male	0.50242	0.00798	0.50115	0.00801	0.49547	0.00793	0.49213	0.0079	0.48454	0.00693	0.48756	0.00697
[2] Female	0.49758	0.00798	0.49885	0.00801	0.50453	0.00793	0.50787	0.0079	0.51546	0.00693	0.51244	0.00697
Birth cohort												
1945	0	0	0	0	0	0	0	0	0	0	0	0
1950	0.08671	0.00449	0.06005	0.00381	0.03145	0.00277	0	0	0	0	0	0
1955	0.18337	0.00618	0.1804	0.00616	0.17942	0.00609	0.17671	0.00603	0.13808	0.00478	0.1042	0.00426
1960	0.18669	0.00622	0.18424	0.00621	0.18244	0.00613	0.1832	0.00612	0.17765	0.0053	0.17574	0.00531
1965	0.16424	0.00592	0.16551	0.00595	0.16381	0.00587	0.16246	0.00583	0.15902	0.00507	0.15669	0.00507
1970	0.15991	0.00585	0.16089	0.00589	0.15778	0.00578	0.15571	0.00573	0.16055	0.00509	0.16233	0.00514
1975	0.21908	0.00661	0.24891	0.00693	0.2851	0.00716	0.32192	0.00739	0.3647	0.00667	0.40105	0.00683
Indigeneous												
non indigeneous	0.97526	0.00248	0.97537	0.00248	0.97383	0.00253	0.97226	0.0026	0.97119	0.00232	0.97045	0.00236
indigeneous	0.02474	0.00248	0.02463	0.00248	0.02617	0.00253	0.02774	0.0026	0.02881	0.00232	0.02955	0.00236
Migrant: English speaking country												
Other	0.91329	0.00449	0.91583	0.00445	0.91797	0.00435	0.91977	0.00429	0.90974	0.00397	0.91213	0.00395
Migrant:English	0.08671	0.00449	0.08417	0.00445	0.08203	0.00435	0.08023	0.00429	0.09026	0.00397	0.08787	0.00395
Migrant: non-English speaking country												
Other	0.89441	0.00491	0.89838	0.00484	0.89834	0.00479	0.89728	0.0048	0.8744	0.00459	0.87869	0.00455
Migrant:Non English	0.10559	0.00491	0.10162	0.00484	0.10166	0.00479	0.10272	0.0048	0.1256	0.00459	0.12131	0.00455
Education												
Less than Year 12	0.23897	0.00681	0.22992	0.00674	0.22446	0.00662	0.2137	0.00648	0.19666	0.00551	0.18546	0.00542
Year 12	0.13211	0.00541	0.13498	0.00547	0.1384	0.00548	0.14021	0.00549	0.14634	0.0049	0.14502	0.00491
Year 12 + VET	0.24152	0.00684	0.24686	0.00691	0.25088	0.00688	0.25269	0.00687	0.25024	0.006	0.25486	0.00608
Diploma or university degree	0.3874	0.00778	0.38825	0.00781	0.38626	0.00772	0.3934	0.00772	0.40676	0.00681	0.41466	0.00687

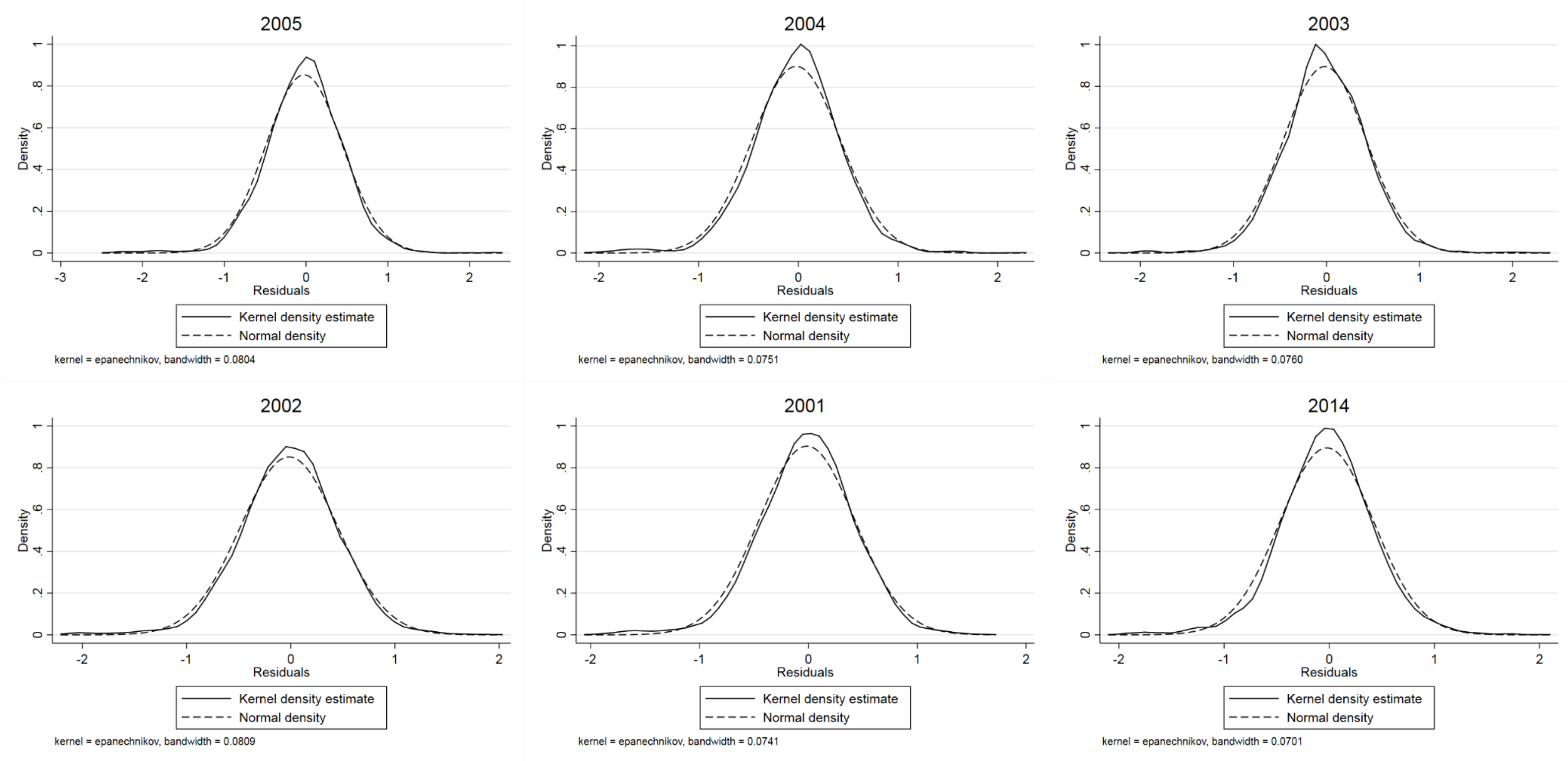
Table A2.2 (continued)

	2013		2014		2015	
	Prop.	SE	Prop.	SE	Prop.	SE
HF5 Sex						
[1] Male	0.48939	0.00698	0.48716	0.007	0.48818	0.00699
[2] Female	0.51061	0.00698	0.51284	0.007	0.51182	0.00699
Birth cohort						
1945	0	0	0	0	0	0
1950	0	0	0	0	0	0
1955	0.06777	0.00351	0.0339	0.00253	0	0
1960	0.17644	0.00532	0.17441	0.00531	0.17464	0.00531
1965	0.15501	0.00505	0.15207	0.00503	0.15081	0.005
1970	0.15813	0.00509	0.15697	0.00509	0.1555	0.00506
1975	0.44265	0.00693	0.48266	0.007	0.51905	0.00698
Indigeneous						
non indigeneous	0.97079	0.00235	0.96825	0.00245	0.9662	0.00253
indigeneous	0.02921	0.00235	0.03175	0.00245	0.0338	0.00253
Migrant: English speaking country						
Other	0.91568	0.00388	0.91926	0.00381	0.92499	0.00368
Migrant:English	0.08432	0.00388	0.08074	0.00381	0.07501	0.00368
Migrant: non-English speaking country						
Other	0.8816	0.00451	0.88771	0.00442	0.88845	0.0044
Migrant:Non English	0.1184	0.00451	0.11229	0.00442	0.11155	0.0044
Education						
Less than Year 12	0.17994	0.00536	0.17519	0.00532	0.16898	0.00524
Year 12	0.14333	0.00489	0.14384	0.00491	0.14163	0.00487
Year 12 + VET	0.25589	0.00609	0.25789	0.00612	0.26275	0.00615
Diploma or university degree	0.42084	0.00689	0.42308	0.00692	0.42665	0.00691

Lognormality plots (leading case)



Appendix A3 (HILDA Lognormality plots – leading case): 1



Appendix A3 (HILDA Lognormality plots – leading case): 2

Synthetic panel estimates of joint and conditional probabilities, by analytical choice

The ‘leading case’ estimates are case #1.

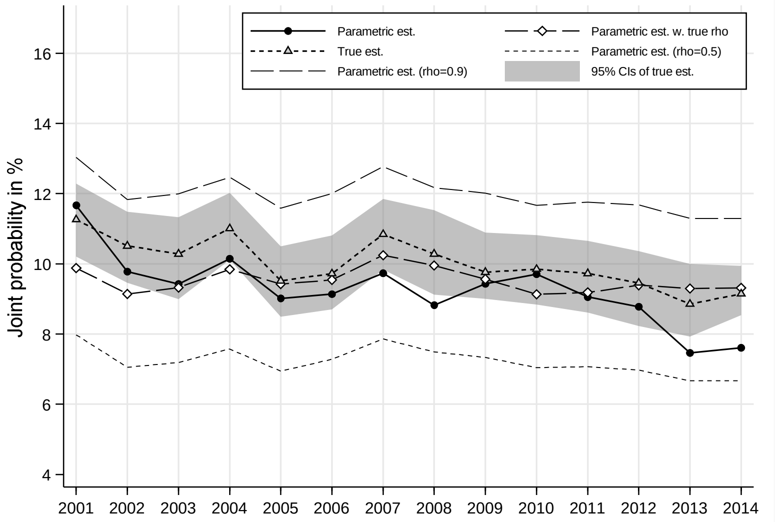
#	Head’s age	Poverty line (% median)	Cohort definition	Group
1	25–75	60%	COB*YOB(5)	All
2	25–75	60%	COB*YOB(5)	0–17
3	25–75	60%	COB*YOB(5)	18–59
4	25–75	60%	COB*YOB(5)	60+
5	25–75	60%	YOB(5)	All
6	25–75	60%	YOB(5)	0–17
7	25–75	60%	YOB(5)	18–59
8	25–75	60%	YOB(5)	60+
9	25–55	60%	COB*YOB(5)	All
10	25–55	60%	COB*YOB(5)	0–17
11	25–55	60%	COB*YOB(5)	18–59
12	25–55	60%	YOB(5)	All
13	25–55	60%	YOB(5)	0–17
14	25–55	60%	YOB(5)	18–59
15	25–75	50%	COB*YOB(5)	All
16	25–75	50%	COB*YOB(5)	0–17
17	25–75	50%	COB*YOB(5)	18–59
18	25–75	50%	COB*YOB(5)	60+
19	25–75	50%	YOB(5)	All
20	25–75	50%	YOB(5)	0–17
21	25–75	50%	YOB(5)	18–59
22	25–75	50%	YOB(5)	60+
23	25–55	50%	COB*YOB(5)	All
24	25–55	50%	COB*YOB(5)	0–17
25	25–55	50%	COB*YOB(5)	18–59
26	25–55	50%	YOB(5)	All
27	25–55	50%	YOB(5)	0–17
28	25–55	50%	YOB(5)	18–59

For each combination, we show:

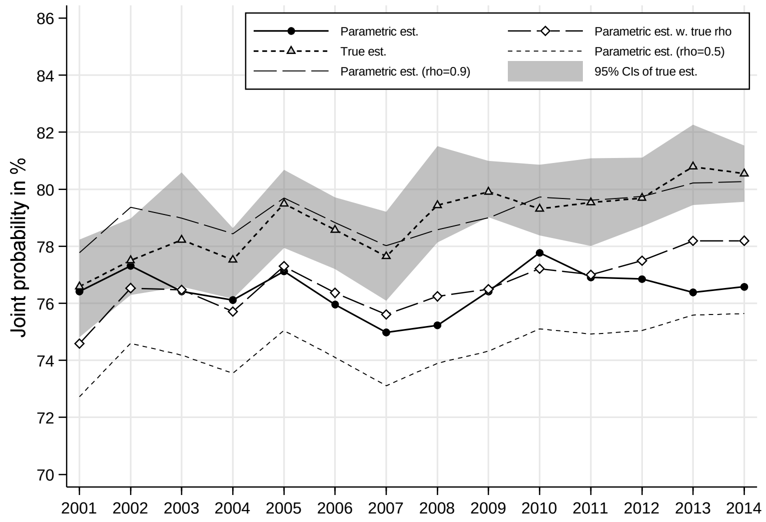
Prob(poor in year 1, poor in year 2)	Prob(non-poor in year 1, non-poor in year 2)
Prob(poor in year 1, non-poor in year 2)	Prob(non-poor in year 1, poor in year 2)
Exit rate = Prob(non-poor in year 2 | poor in year 1)	Entry rate = Prob(poor in year 2 | non-poor in year 1)
Exit rate with ‘std. panel est.’	Entry rate with ‘std. panel est.’

1. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), all individuals

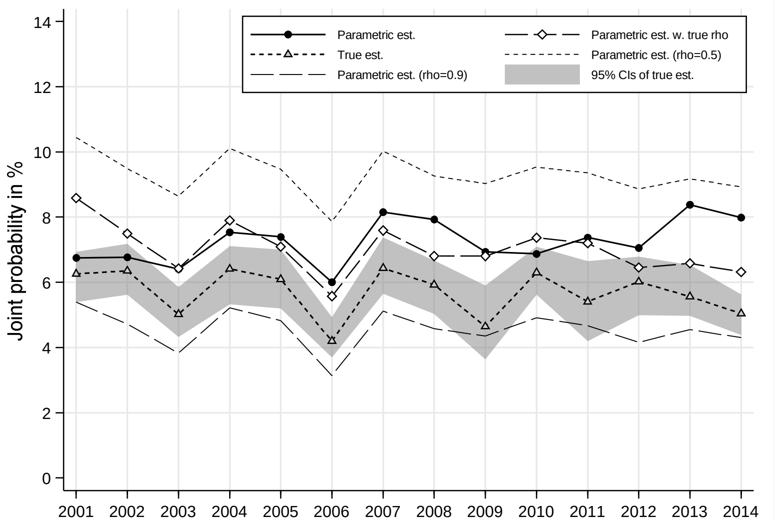
Prob(poor in year 1, poor in year 2)



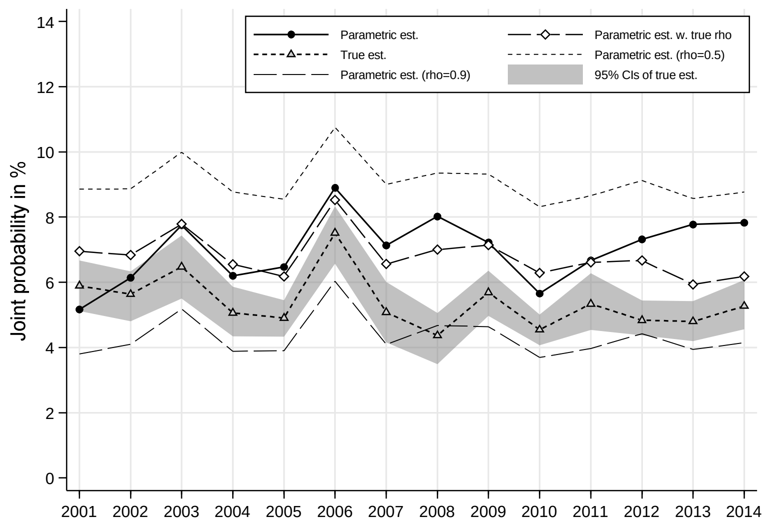
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

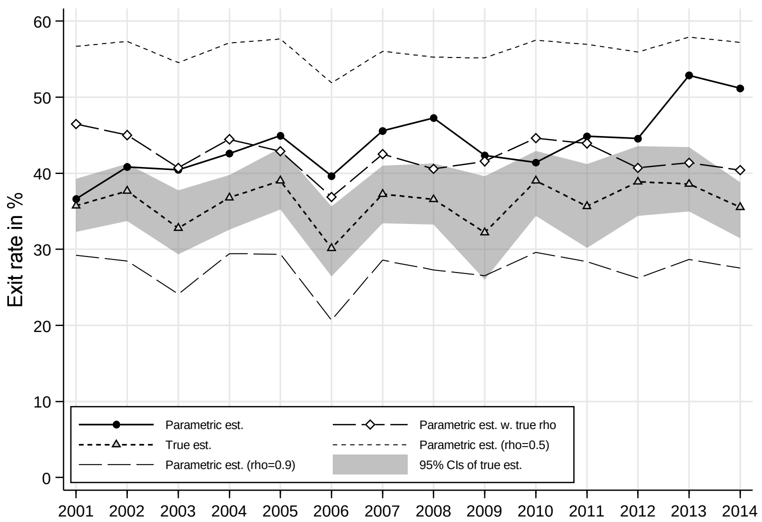


Prob(non-poor in year 1, poor in year 2)

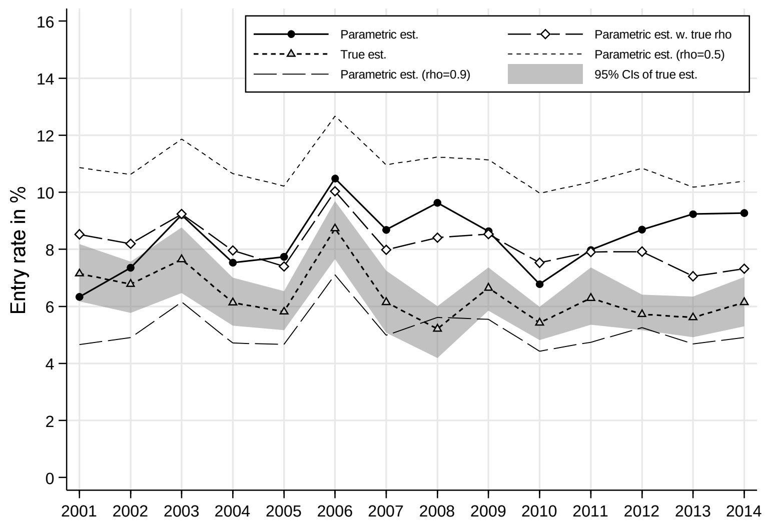


1. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), all individuals

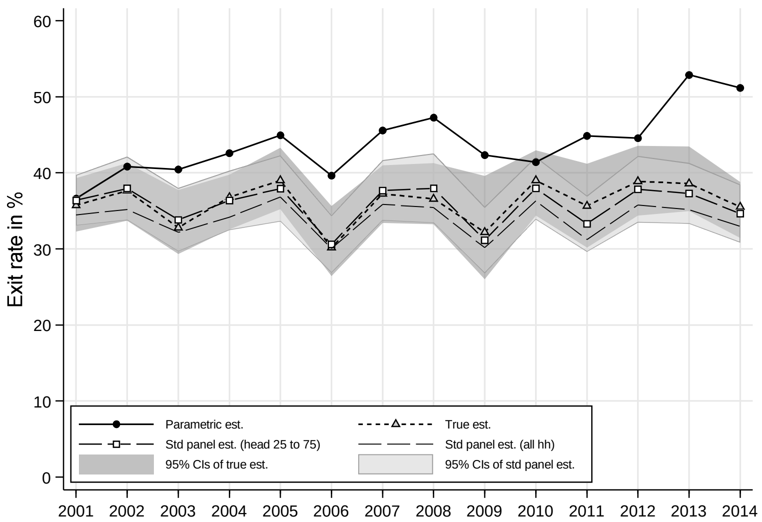
Exit rate = Prob(non-poor in year 2 | poor in year 1)



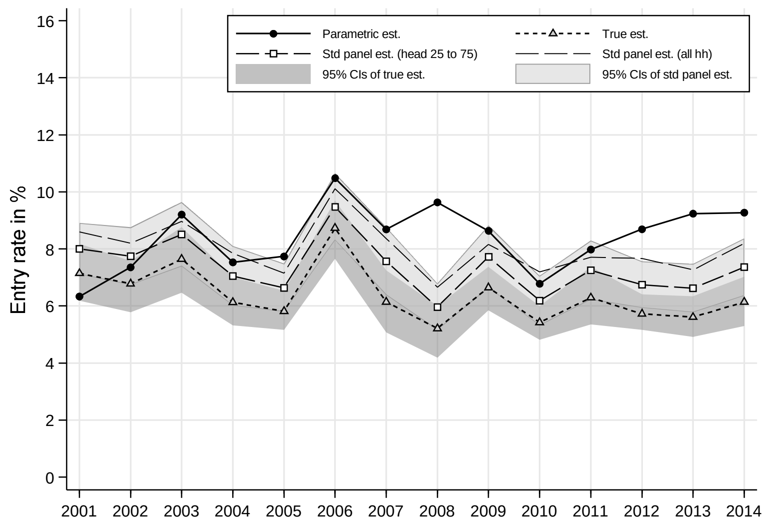
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

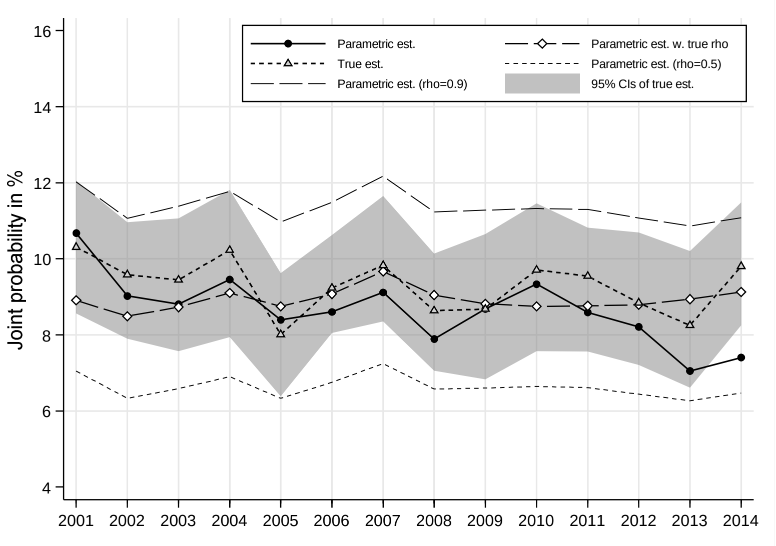


Entry rate = Prob(poor in year 2 | non-poor in year 1)

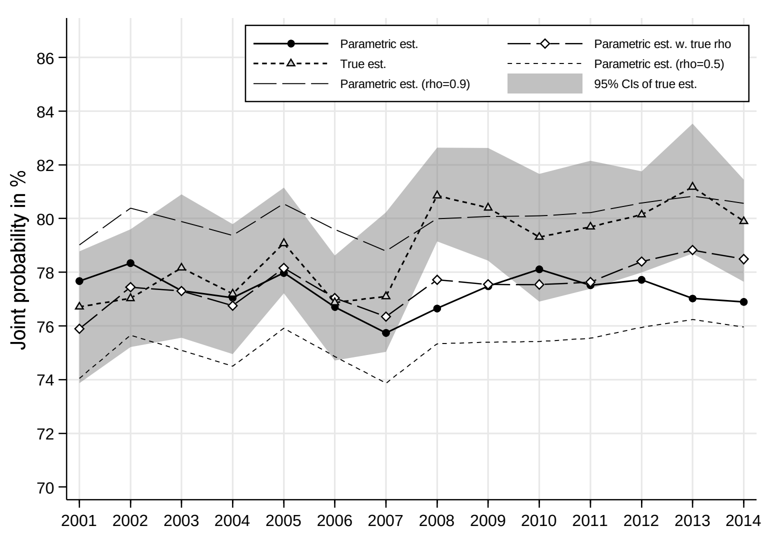


2. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 0–17

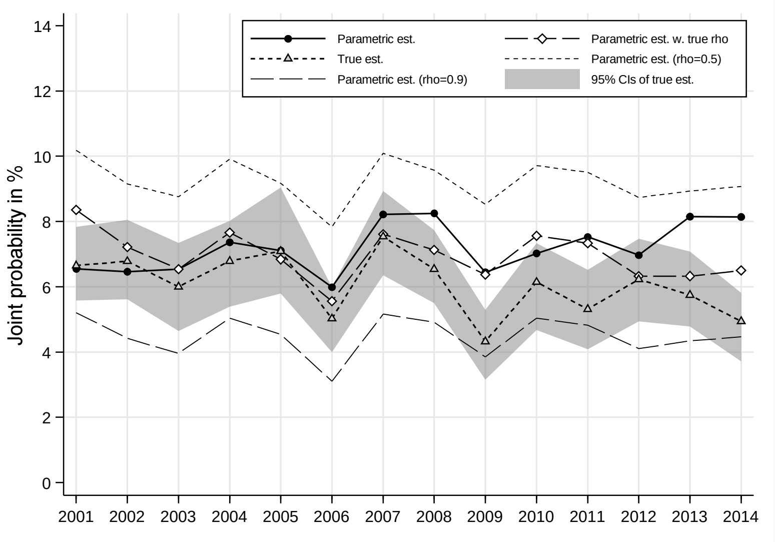
Prob(poor in year 1, poor in year 2)



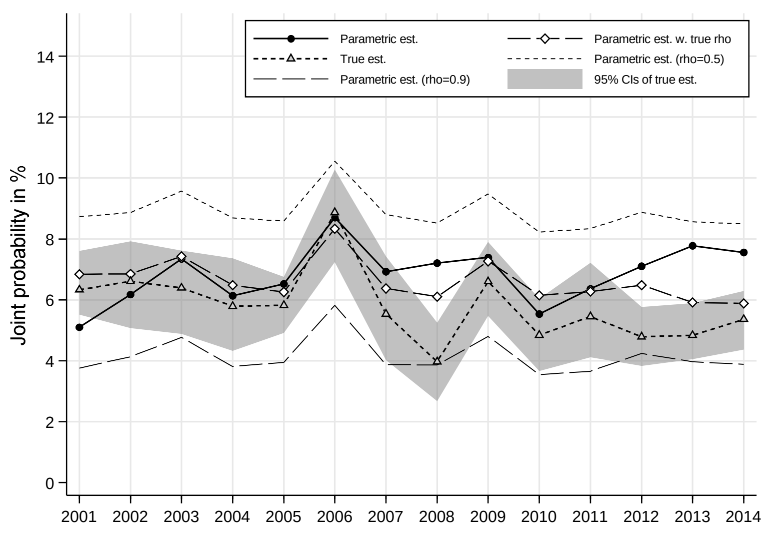
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

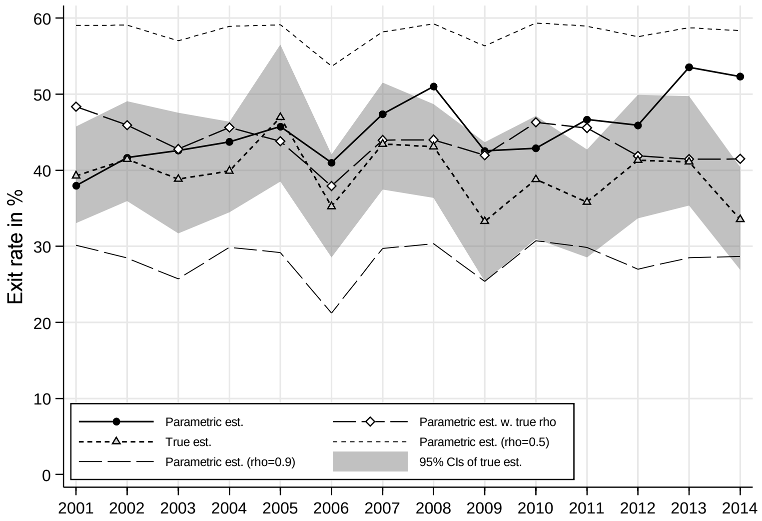


Prob(non-poor in year 1, poor in year 2)

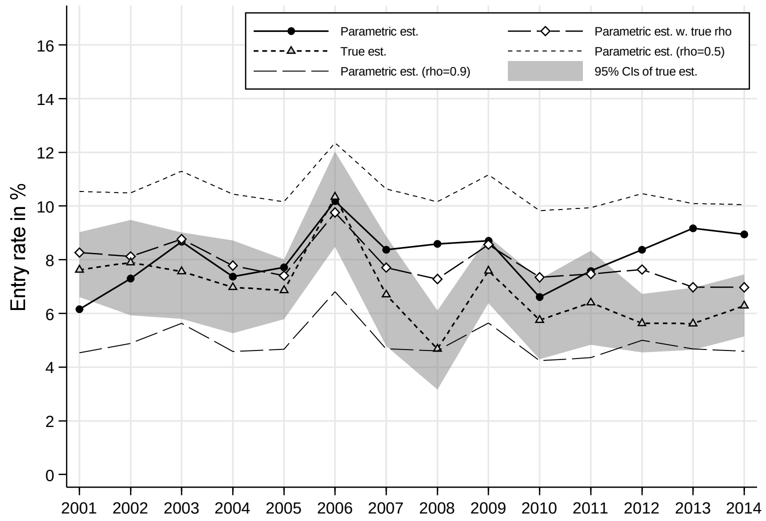


2. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 0–17

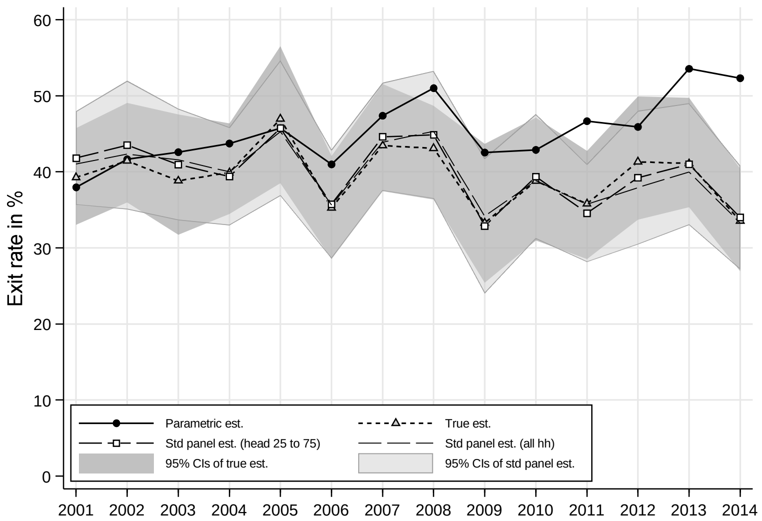
Exit rate = Prob(non-poor in year 2 | poor in year 1)



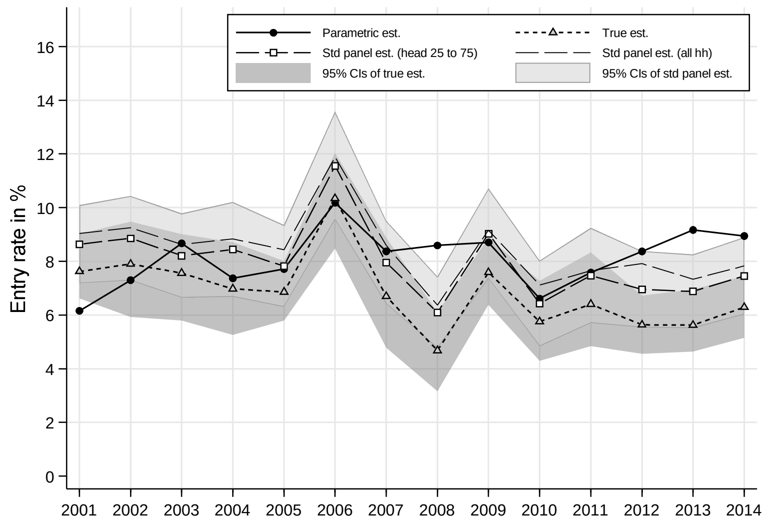
Entry rate = Prob(poor in year 2 | non-poor in year 1)



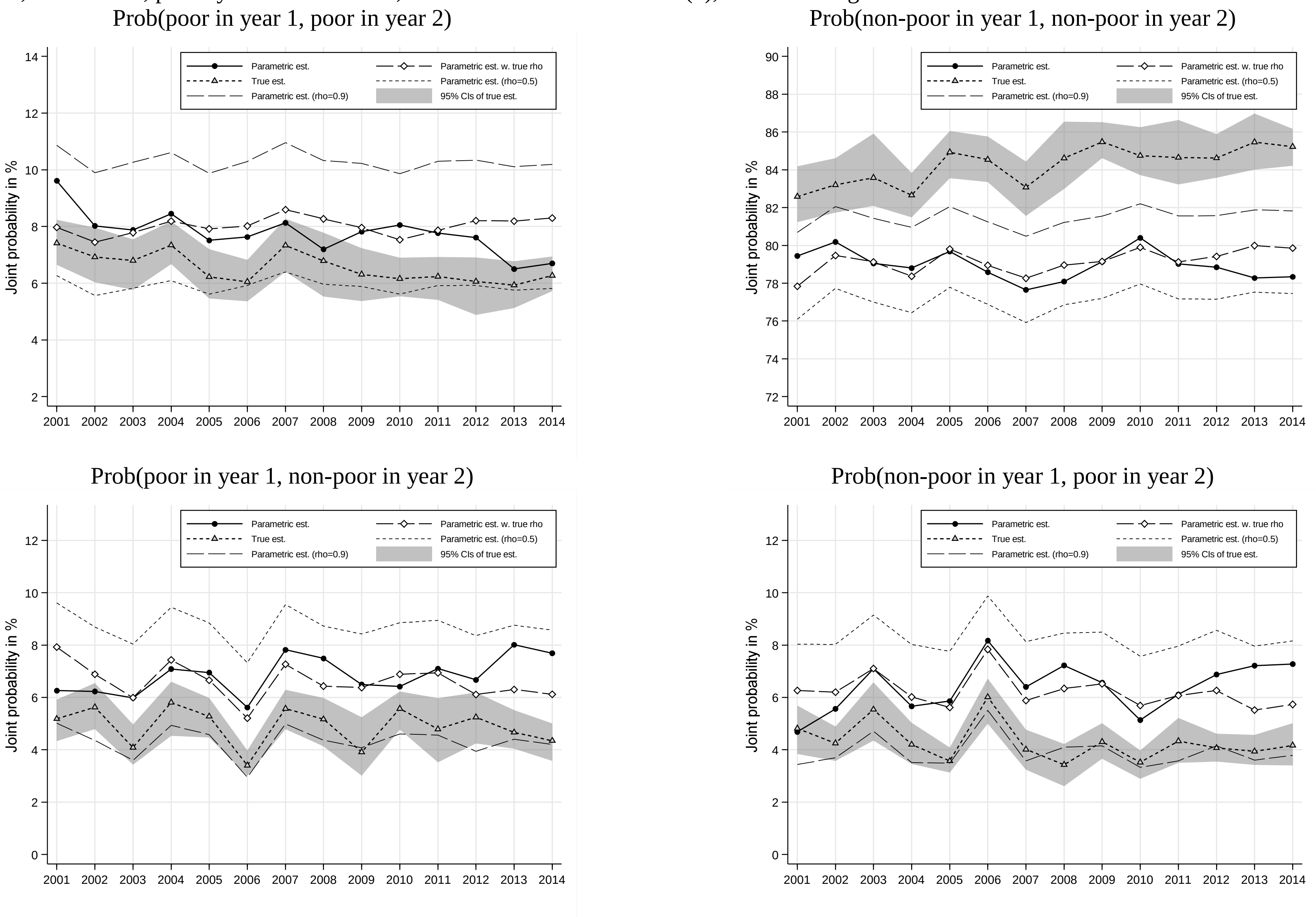
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

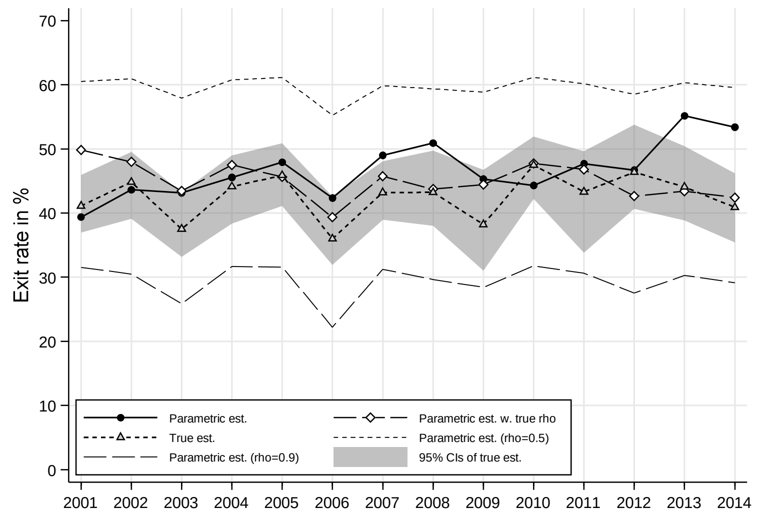


3. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 18–59

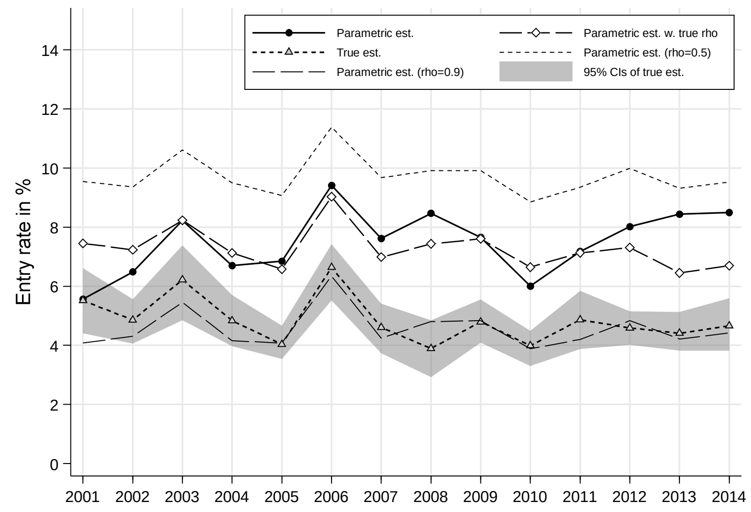


3. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 18–59

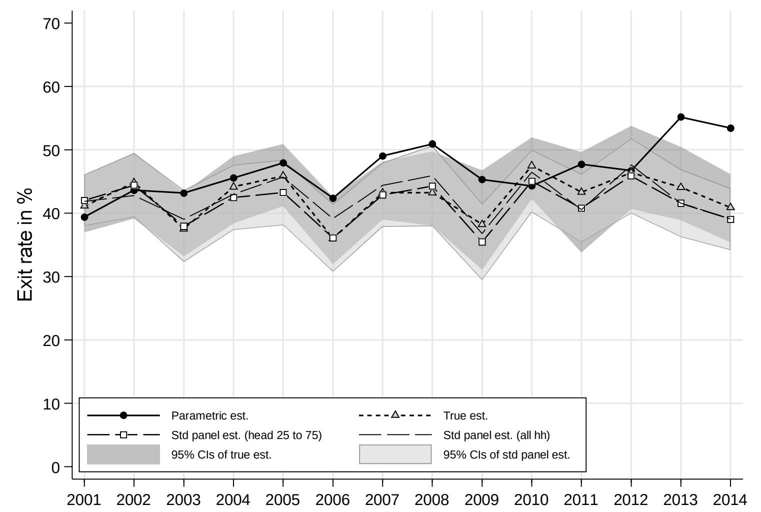
Exit rate = Prob(non-poor in year 2 | poor in year 1)



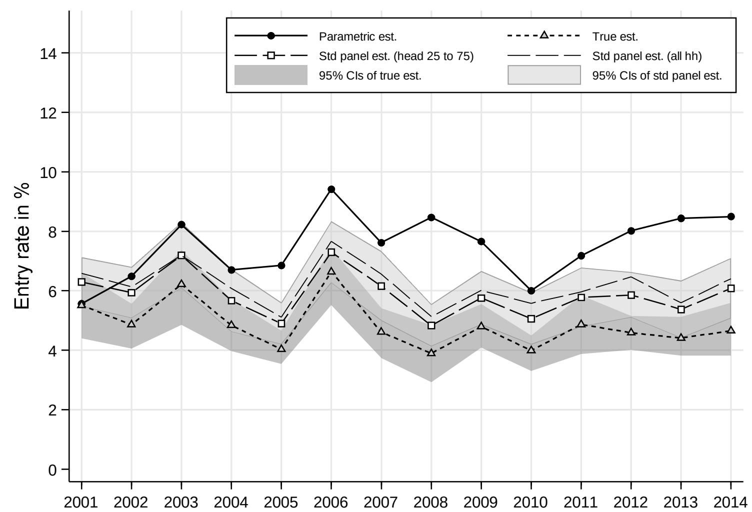
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

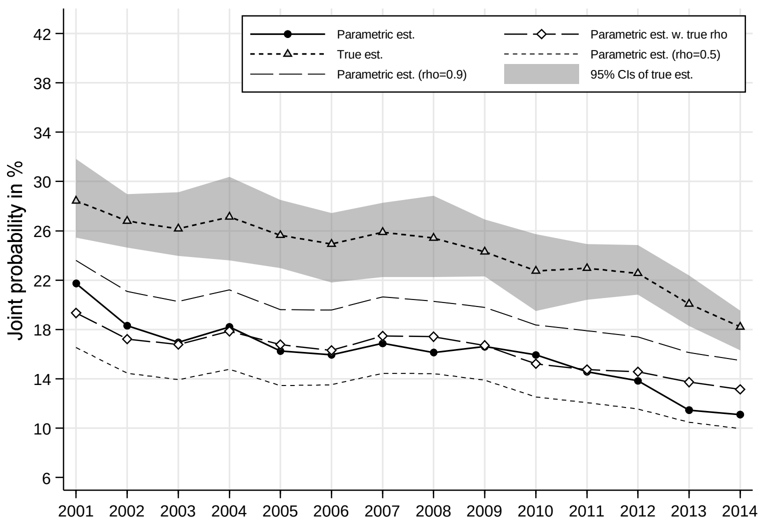


Entry rate = Prob(poor in year 2 | non-poor in year 1)

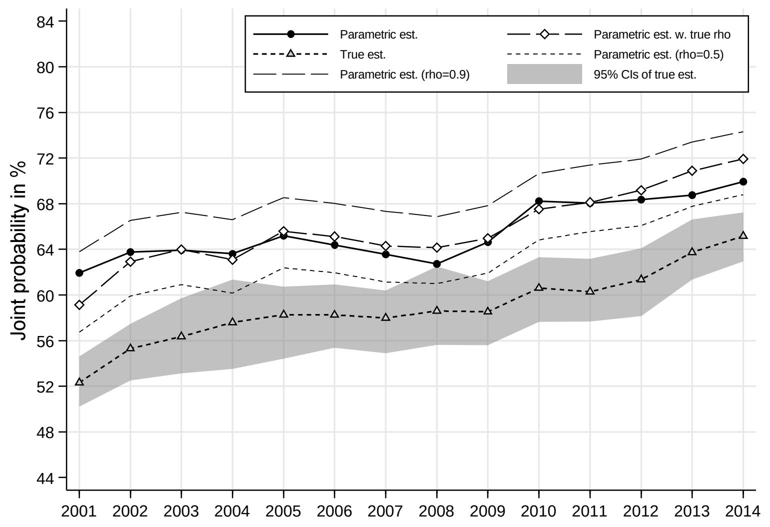


4. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 60+

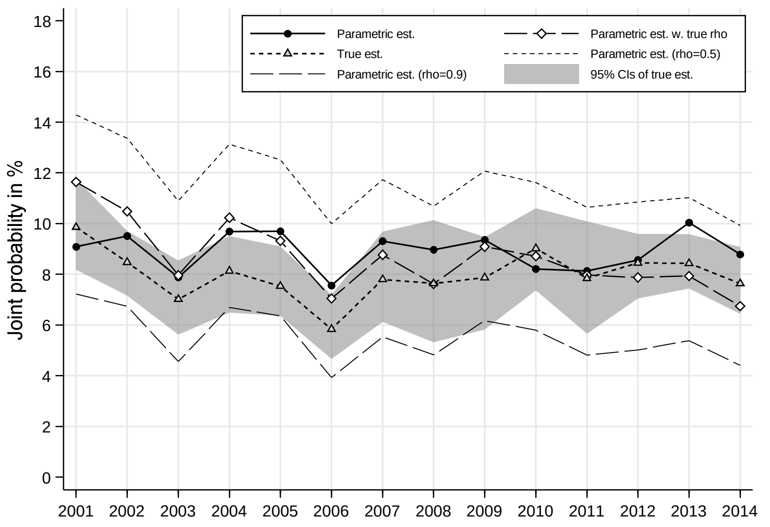
Prob(poor in year 1, poor in year 2)



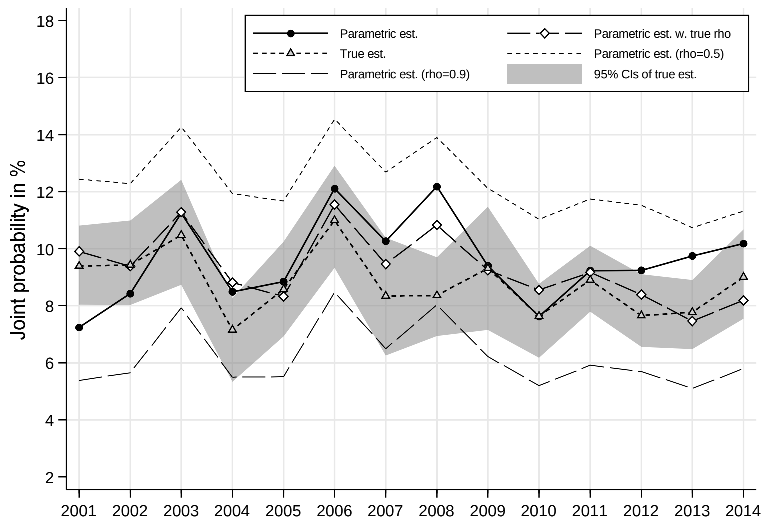
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

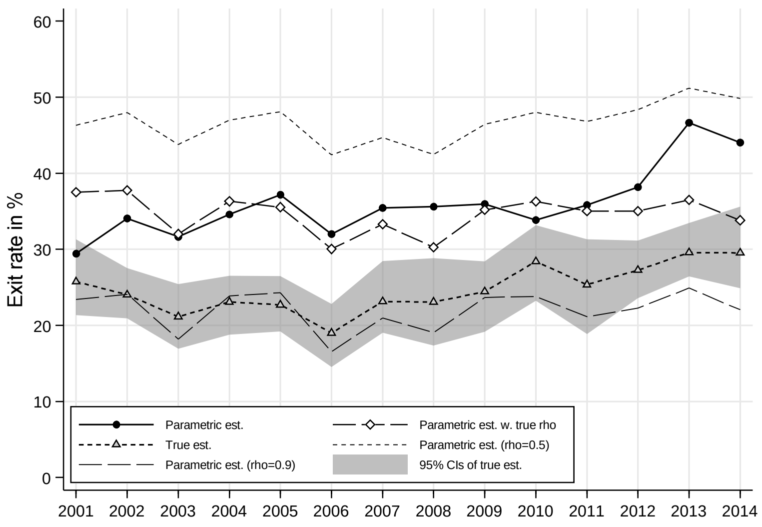


Prob(non-poor in year 1, poor in year 2)

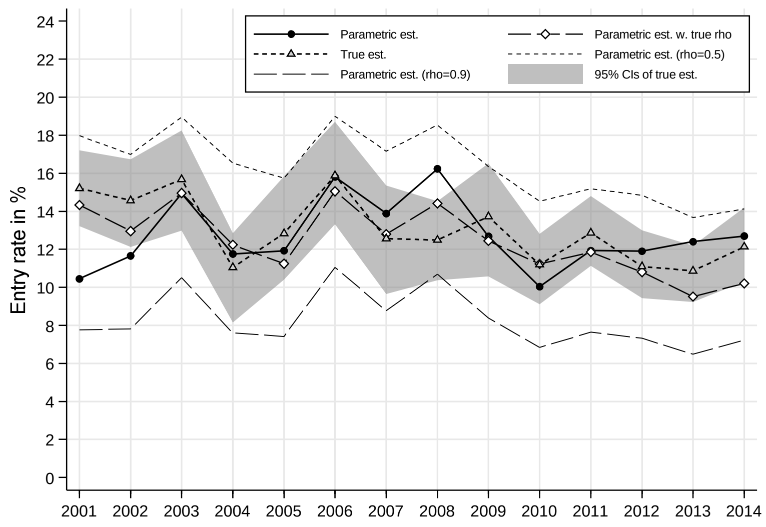


4. HILDA, head 25–75, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 60+

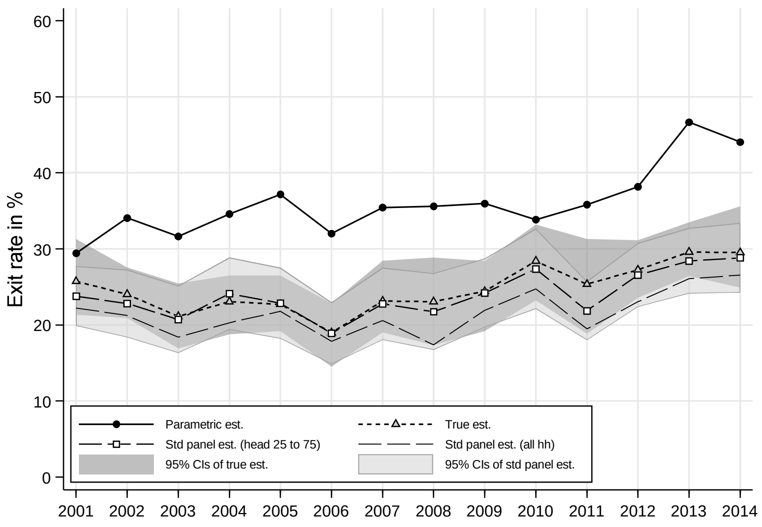
Exit rate = Prob(non-poor in year 2 | poor in year 1)



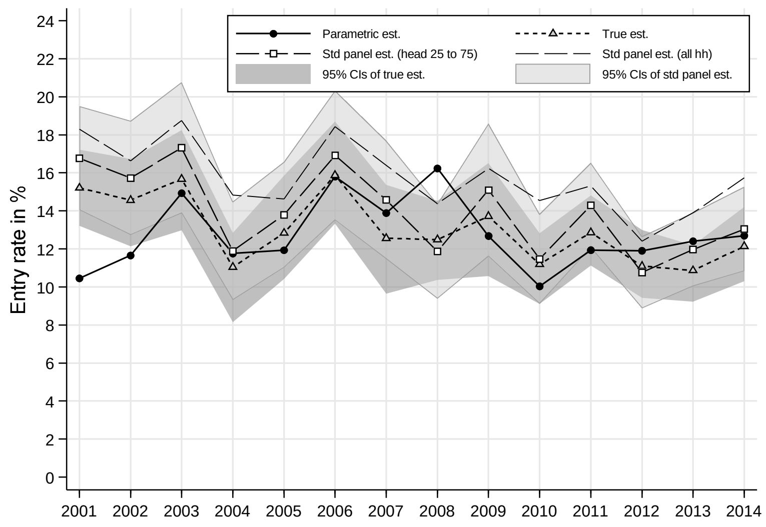
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

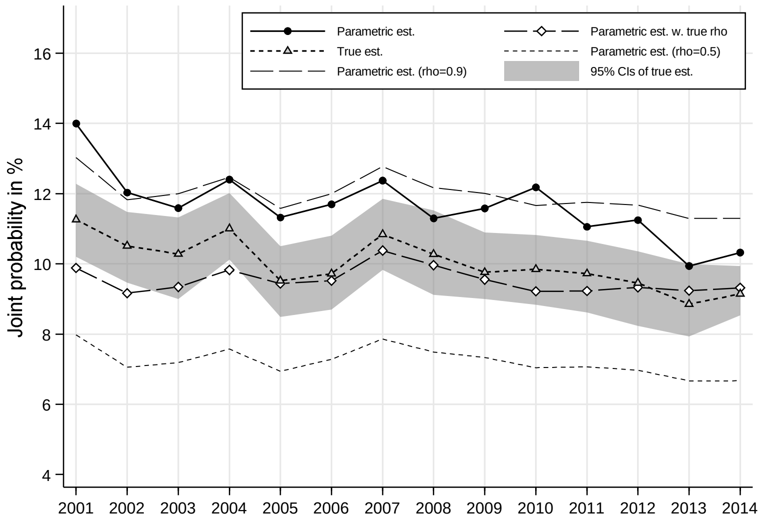


Entry rate = Prob(poor in year 2 | non-poor in year 1)

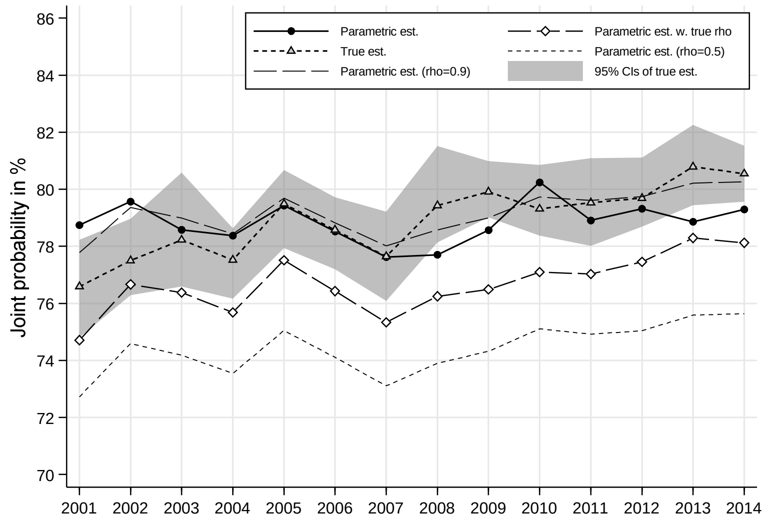


5. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), all individuals

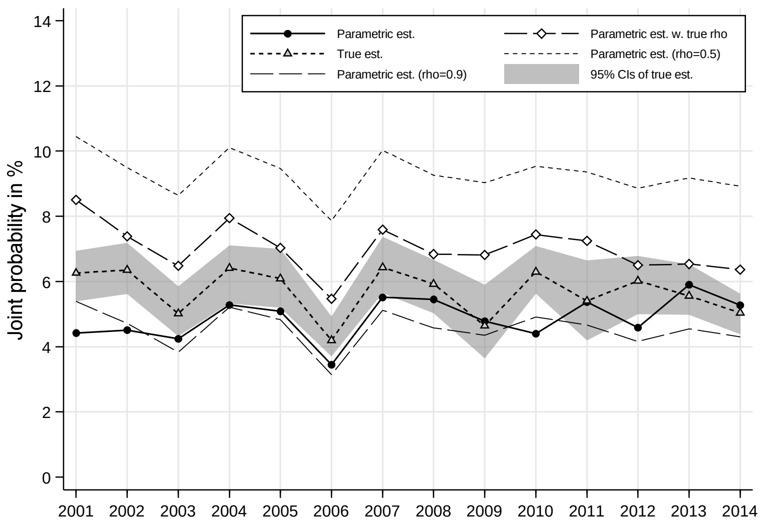
Prob(poor in year 1, poor in year 2)



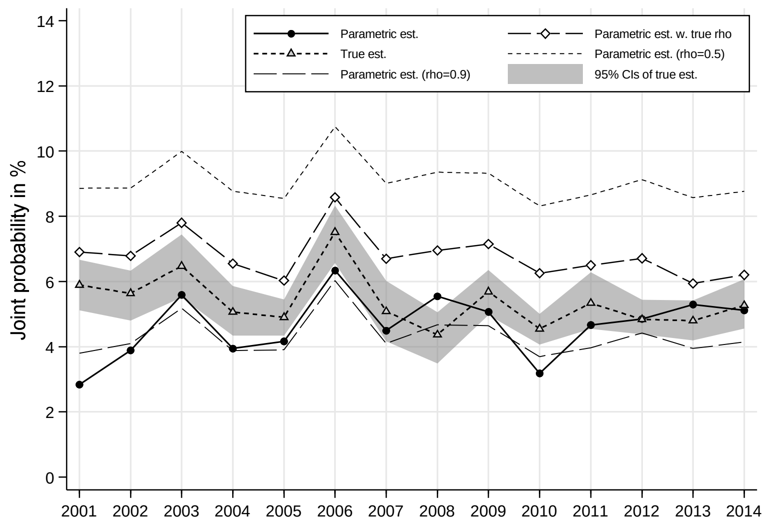
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

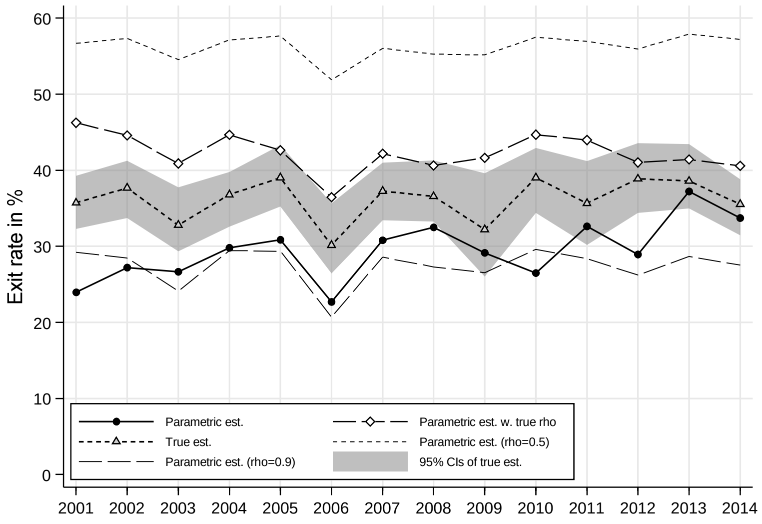


Prob(non-poor in year 1, poor in year 2)

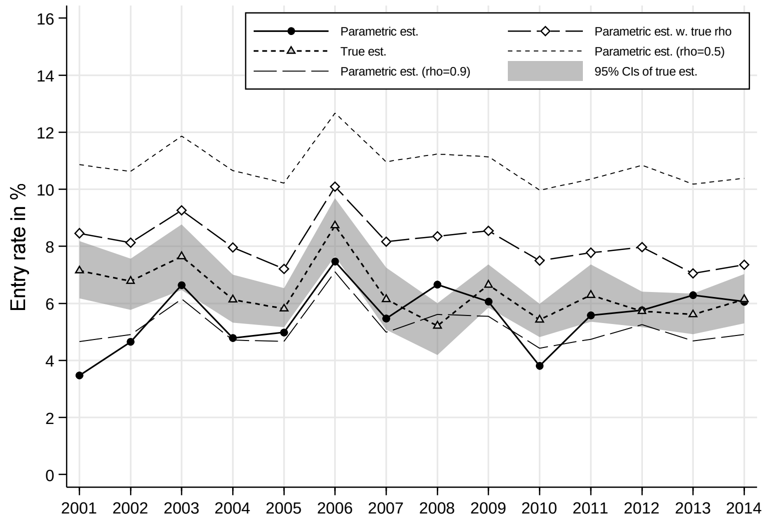


5. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), all individuals

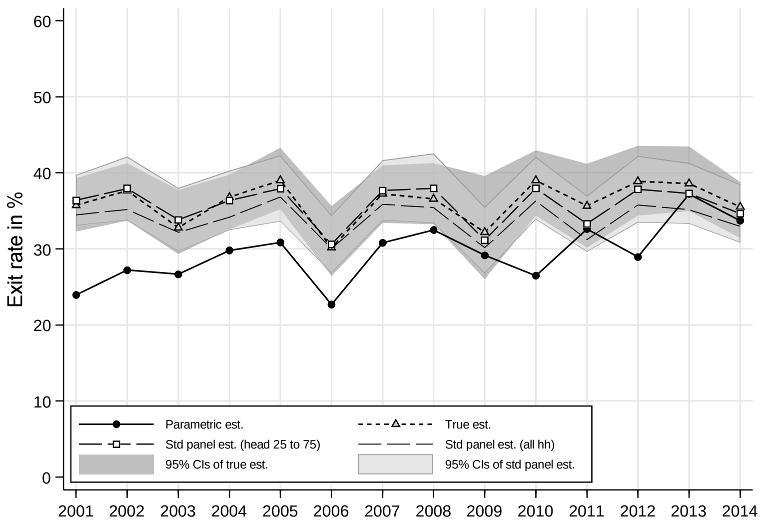
Exit rate = Prob(non-poor in year 2 | poor in year 1)



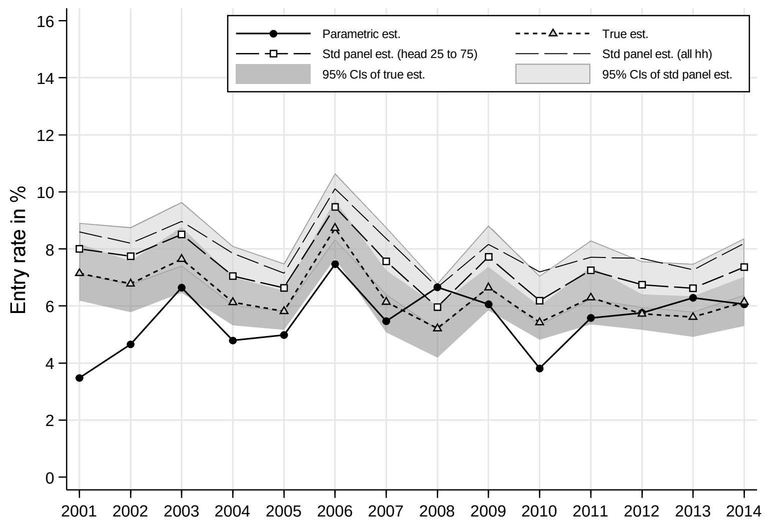
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

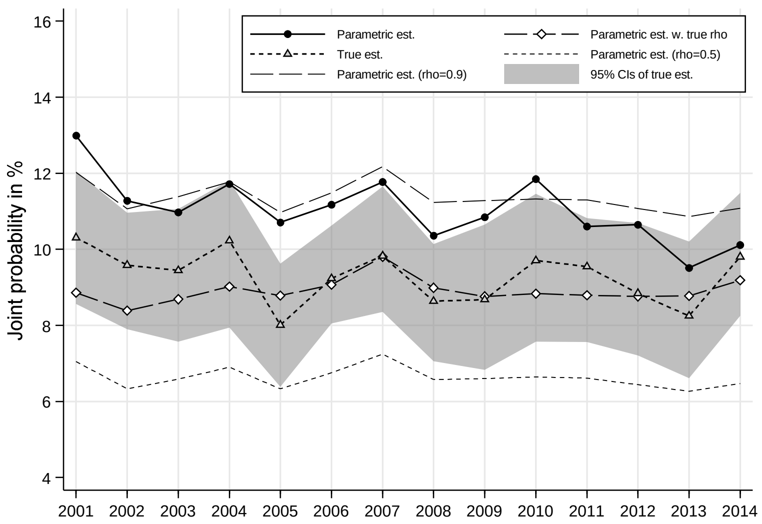


Entry rate = Prob(poor in year 2 | non-poor in year 1)

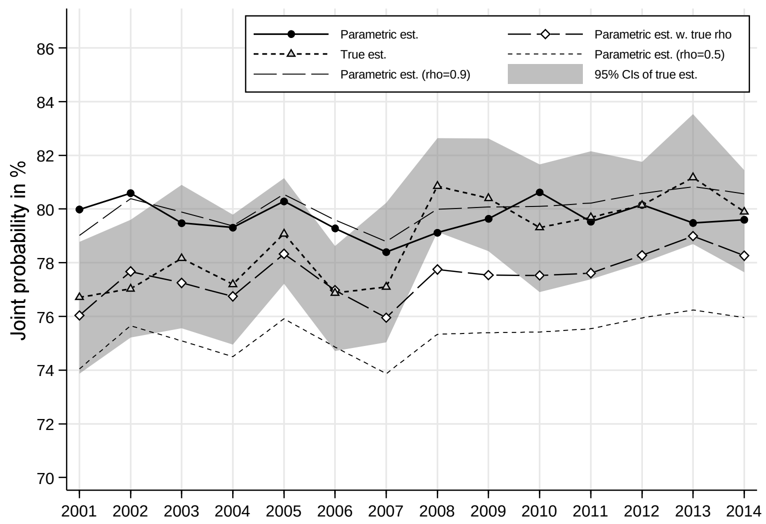


6. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

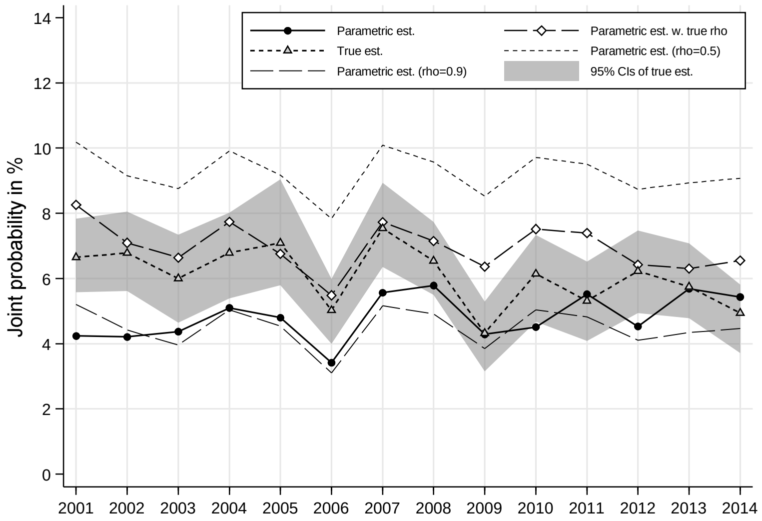
Prob(poor in year 1, poor in year 2)



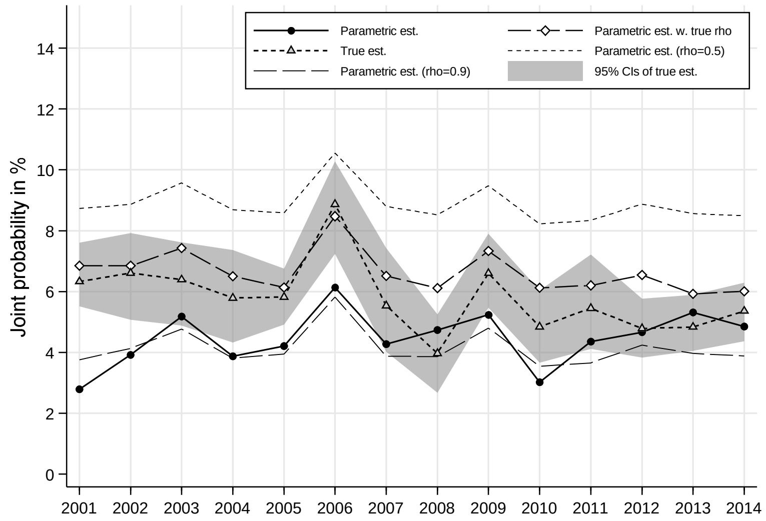
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

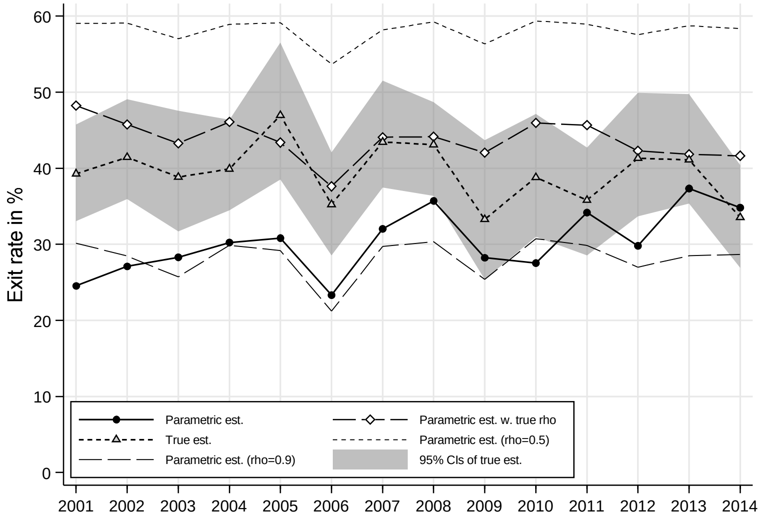


Prob(non-poor in year 1, poor in year 2)

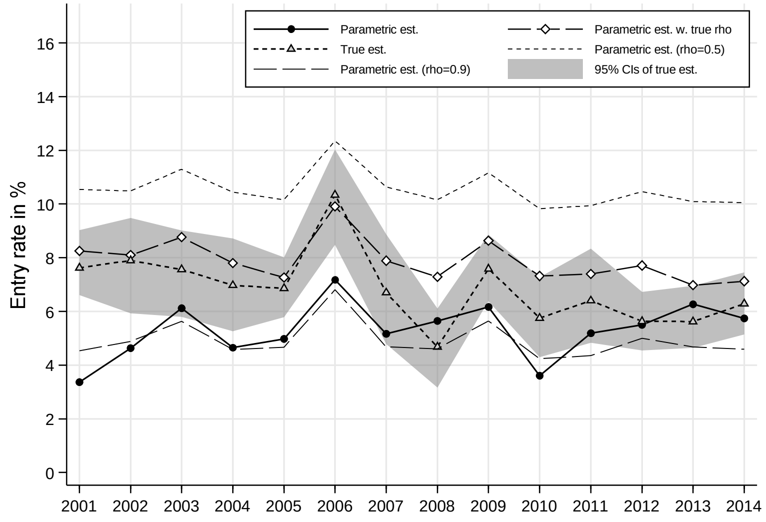


6. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

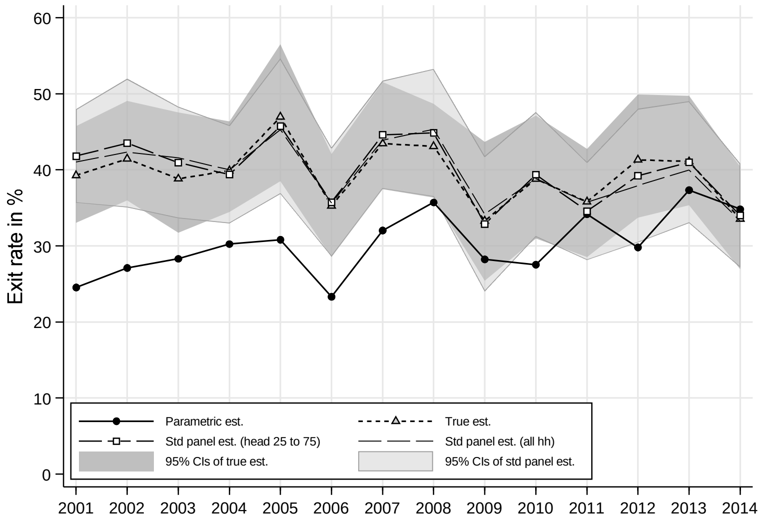
Exit rate = Prob(non-poor in year 2 | poor in year 1)



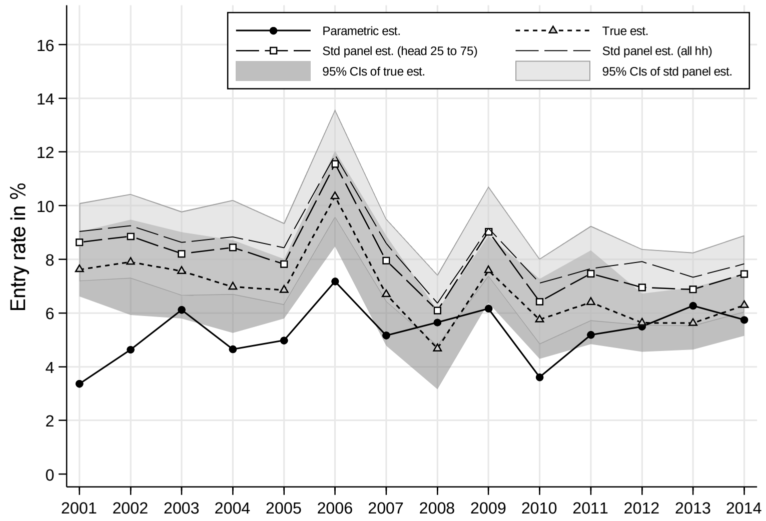
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

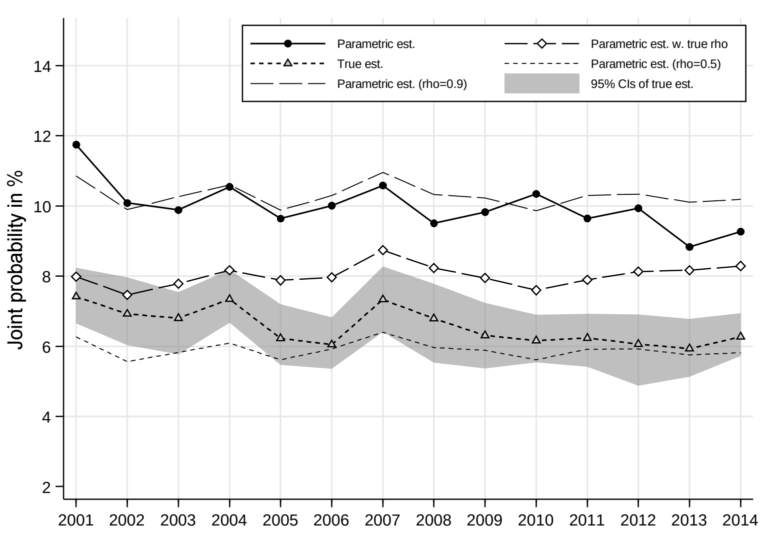


Entry rate = Prob(poor in year 2 | non-poor in year 1)

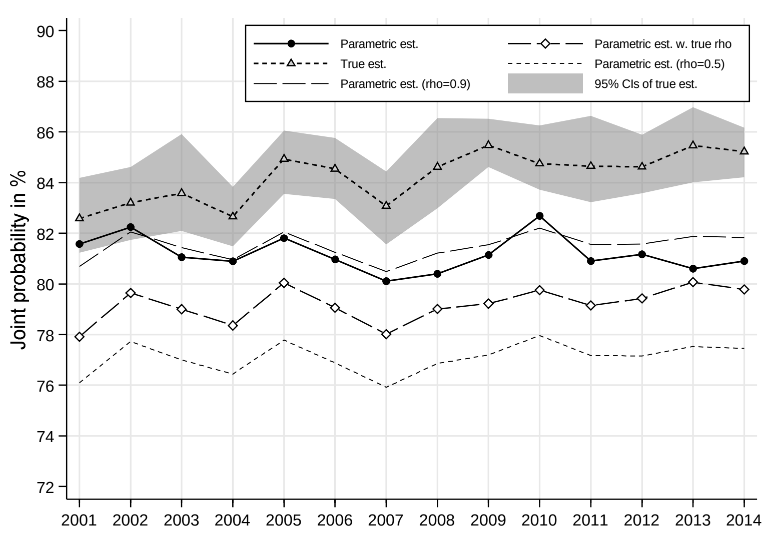


7. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

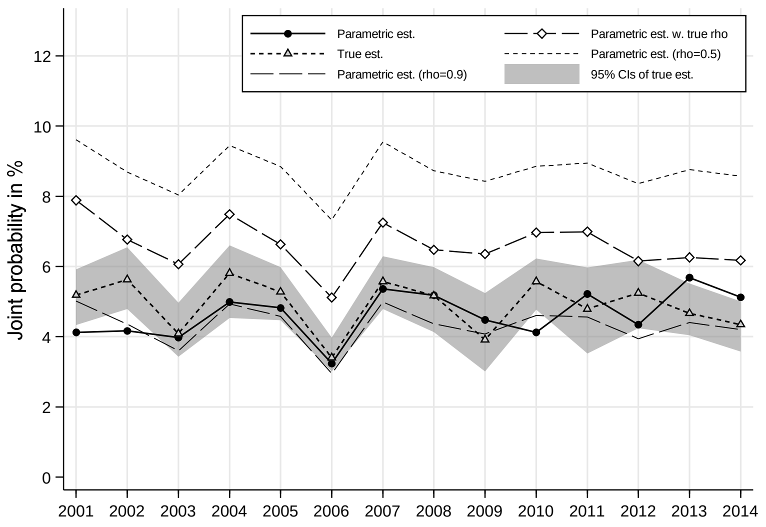
Prob(poor in year 1, poor in year 2)



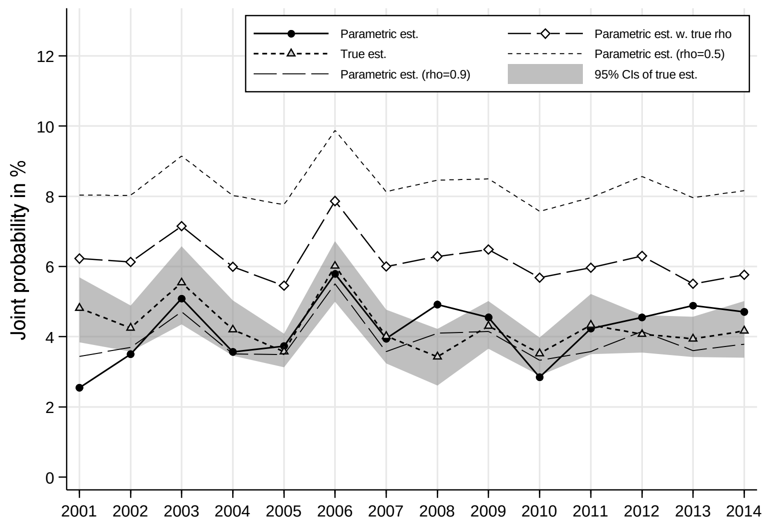
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

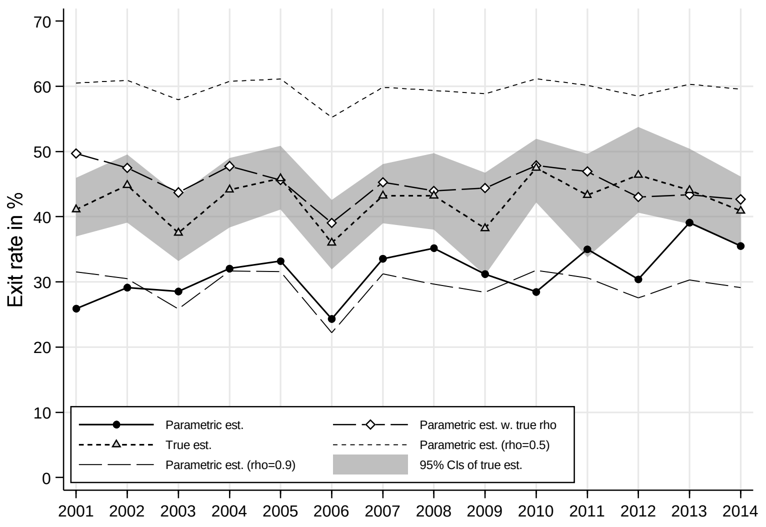


Prob(non-poor in year 1, poor in year 2)

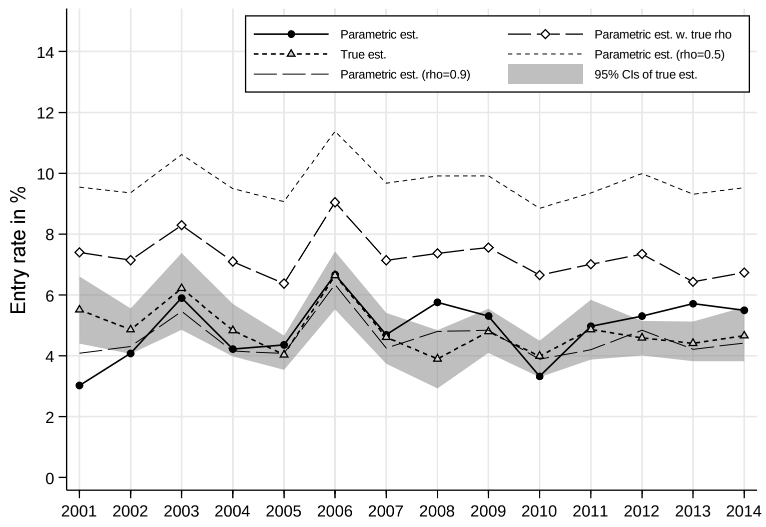


7. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

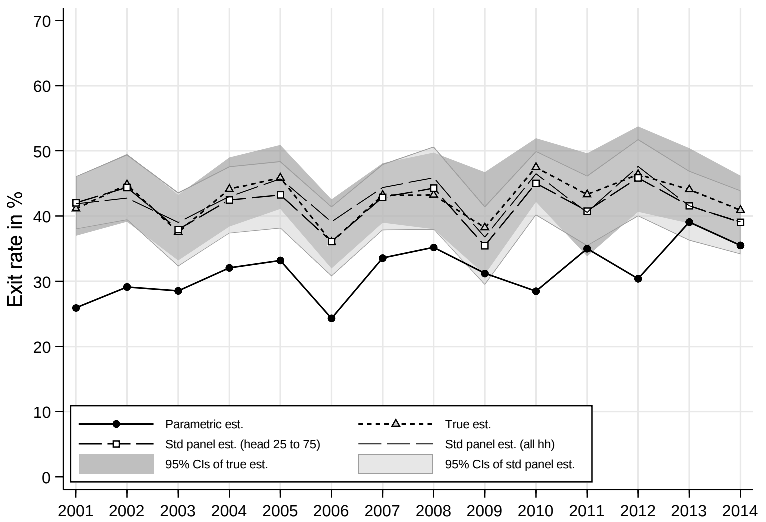
Exit rate = Prob(non-poor in year 2 | poor in year 1)



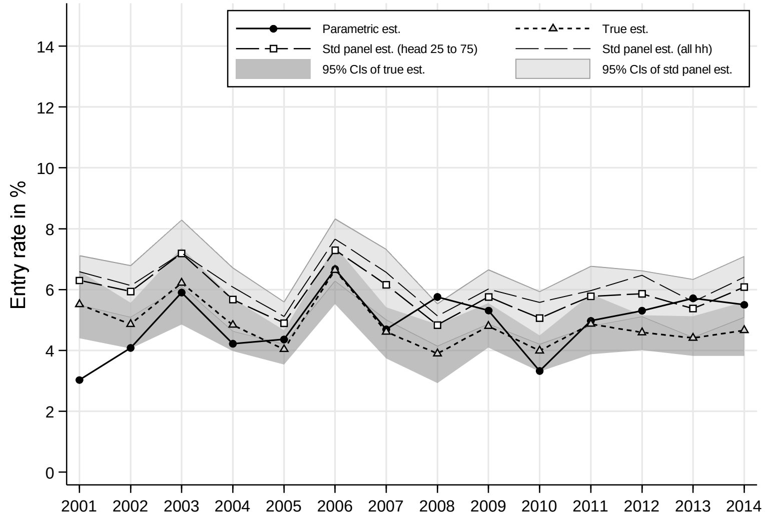
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

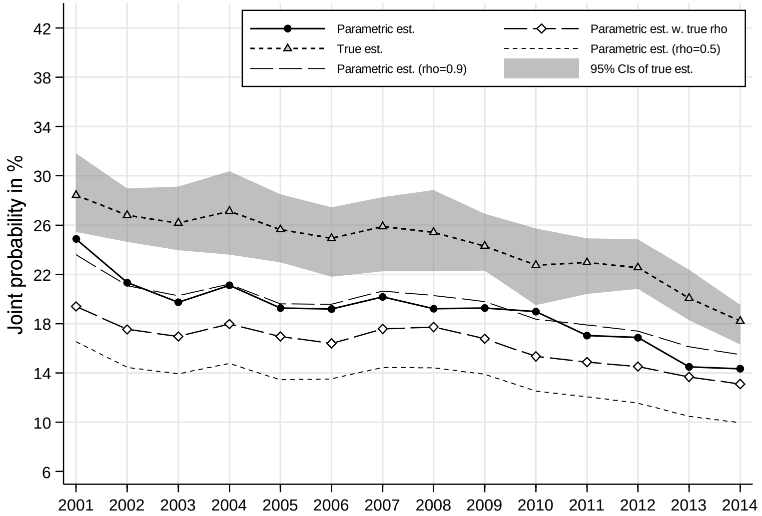


Entry rate = Prob(poor in year 2 | non-poor in year 1)

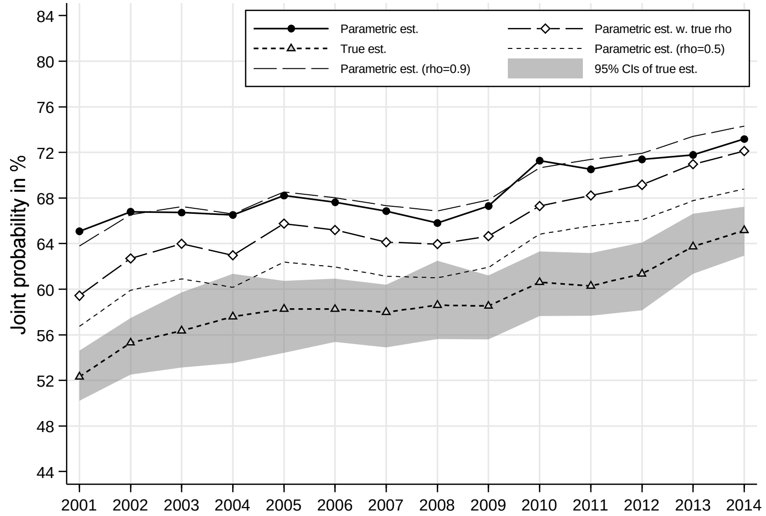


8. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 60+

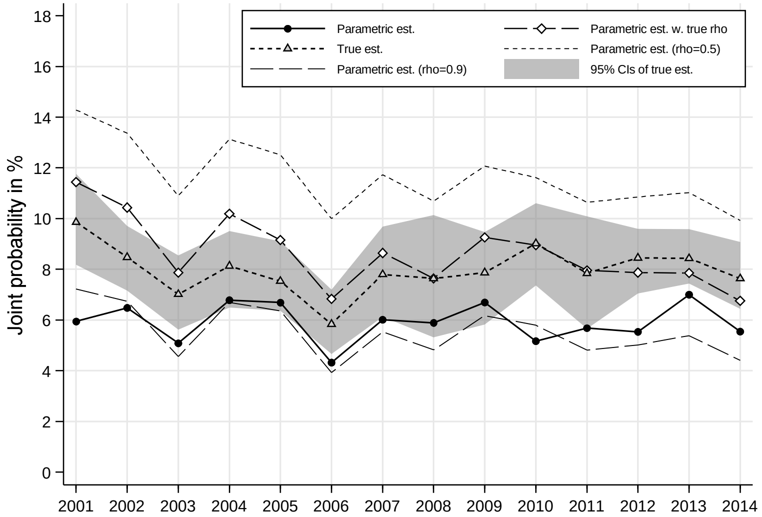
Prob(poor in year 1, poor in year 2)



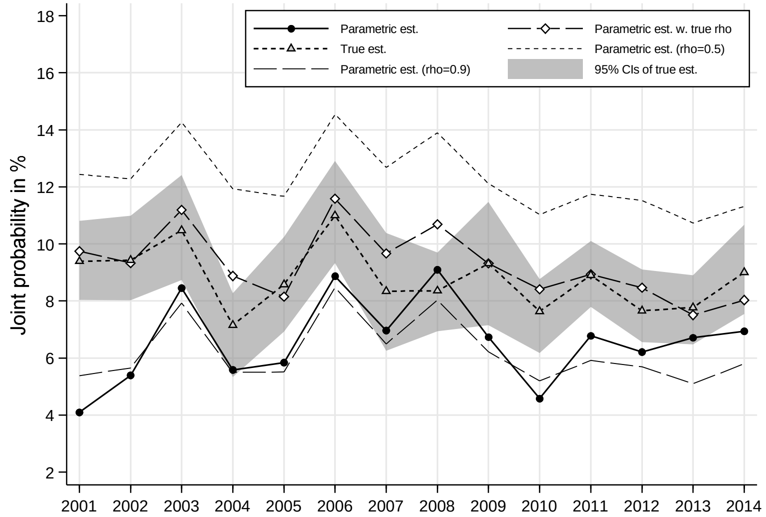
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

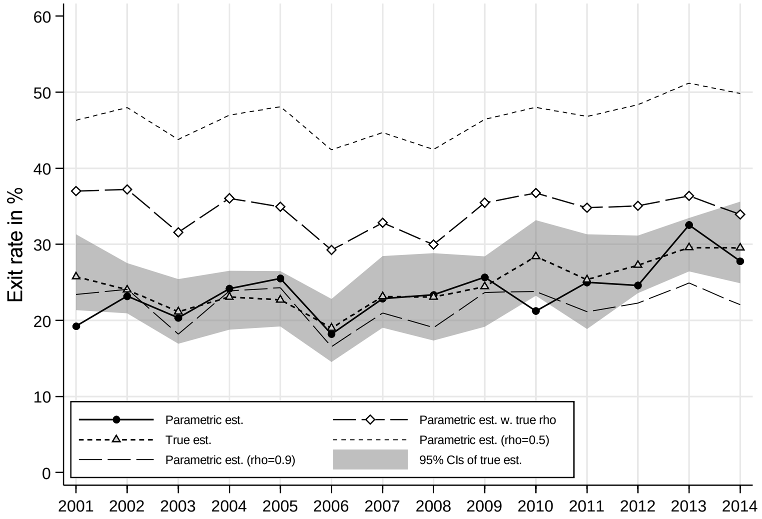


Prob(non-poor in year 1, poor in year 2)

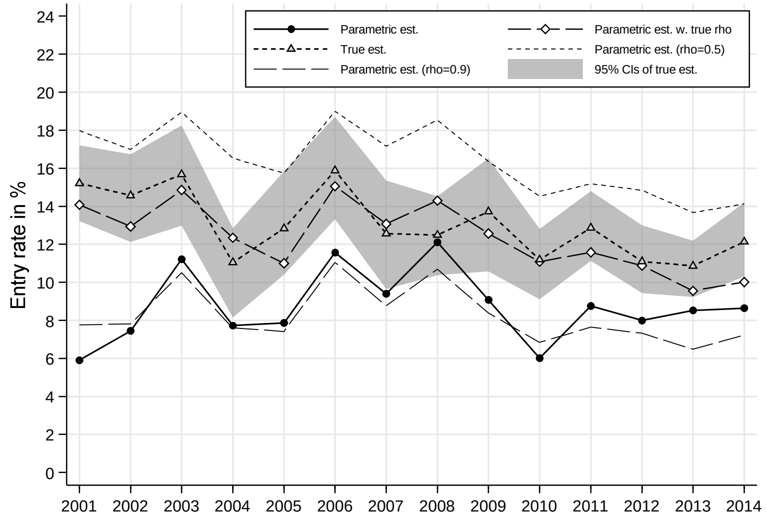


8. HILDA, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 60+

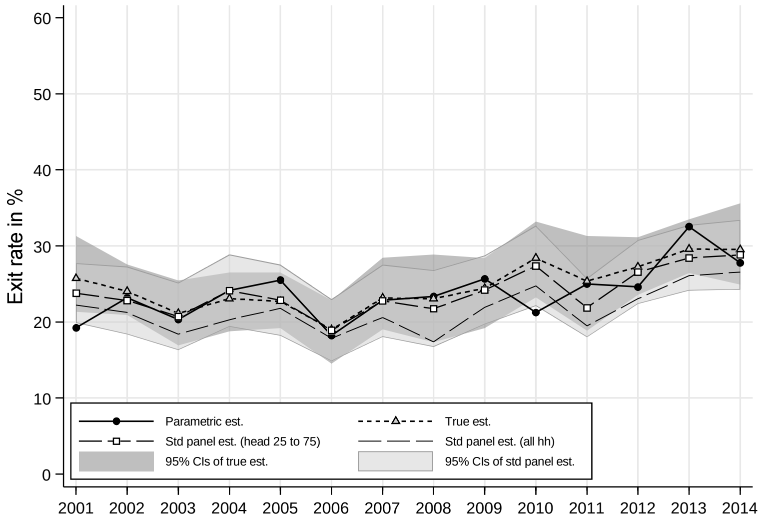
Exit rate = Prob(non-poor in year 2 | poor in year 1)



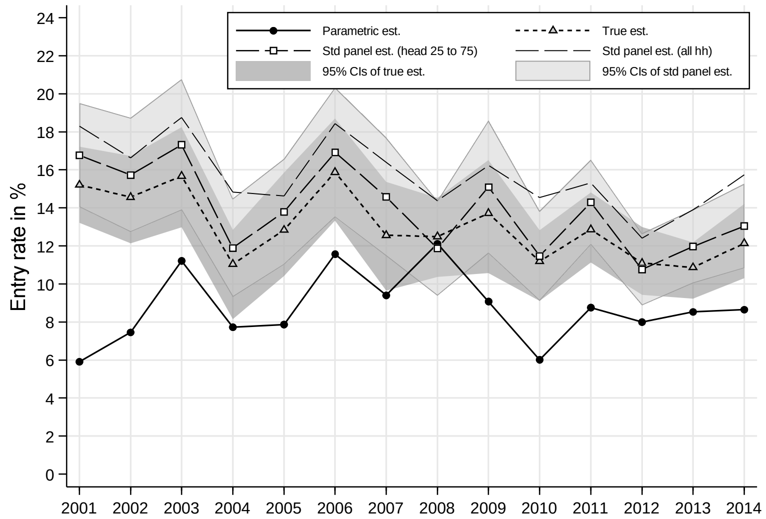
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

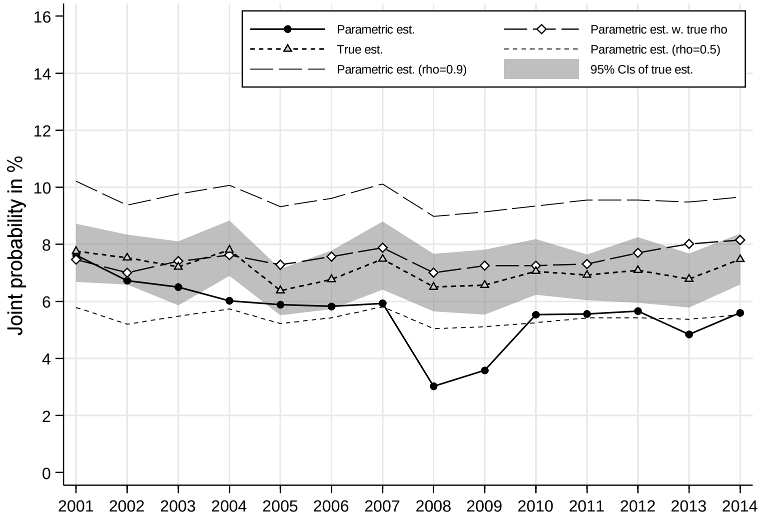


Entry rate = Prob(poor in year 2 | non-poor in year 1)

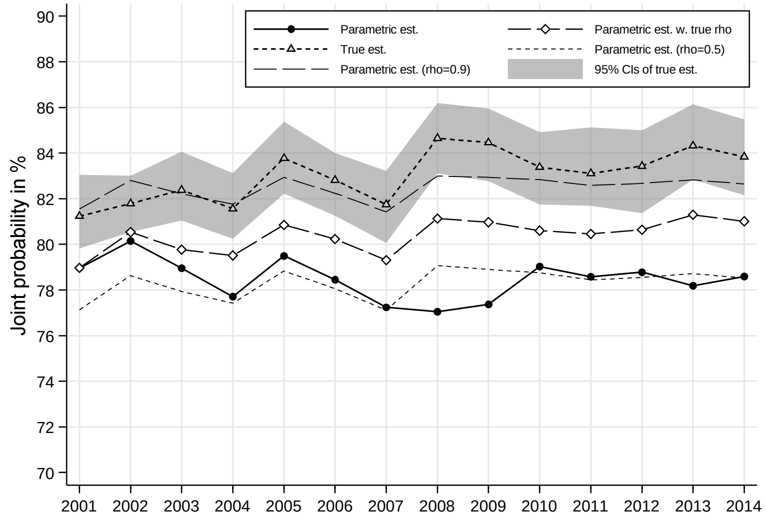


9. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), all individuals

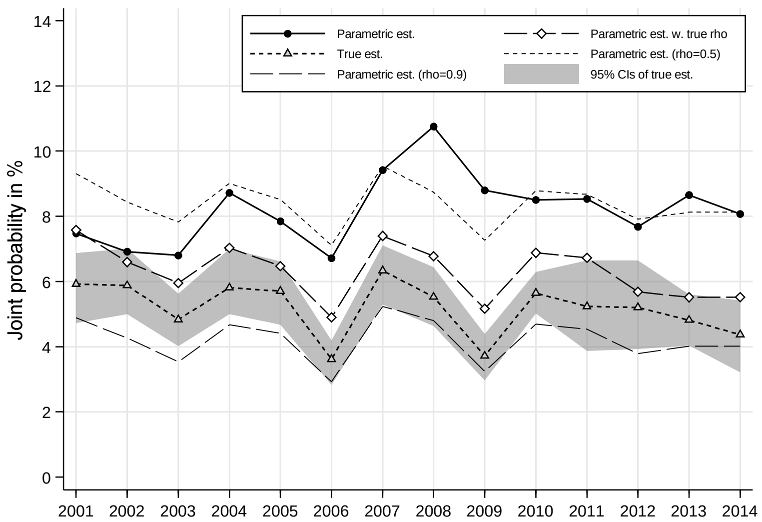
Prob(poor in year 1, poor in year 2)



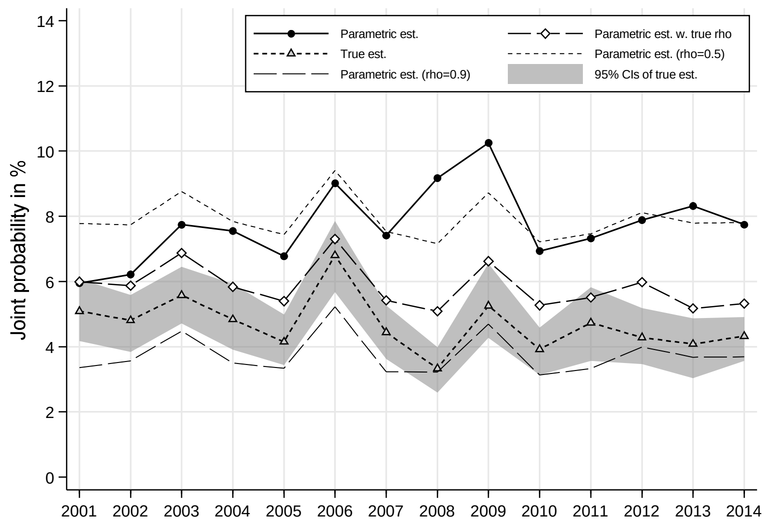
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

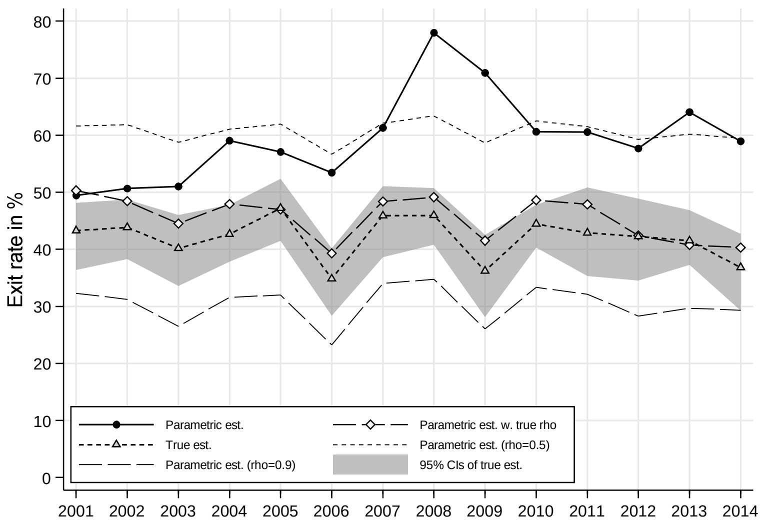


Prob(non-poor in year 1, poor in year 2)

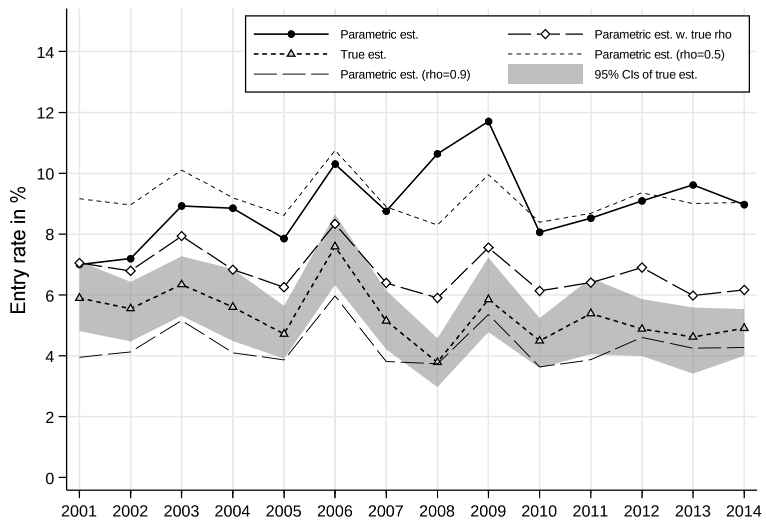


9. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), all individuals

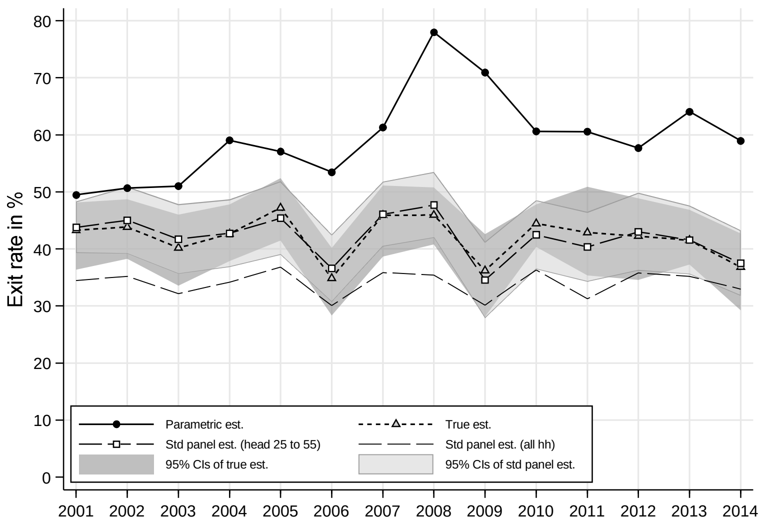
Exit rate = Prob(non-poor in year 2 | poor in year 1)



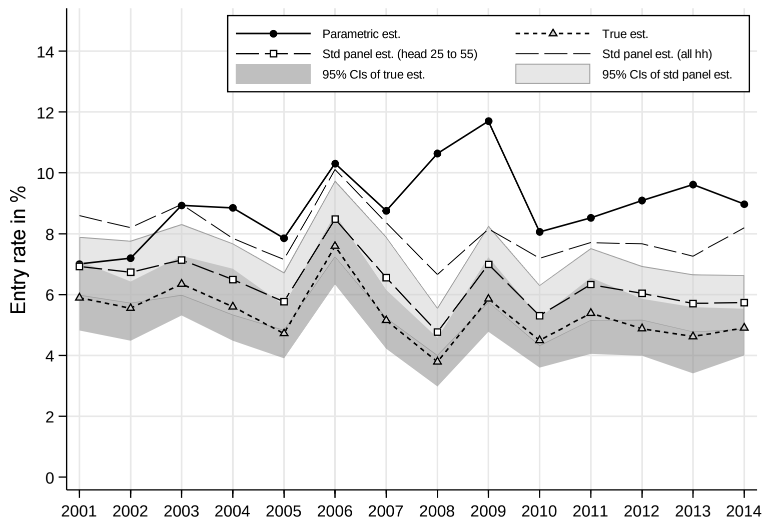
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

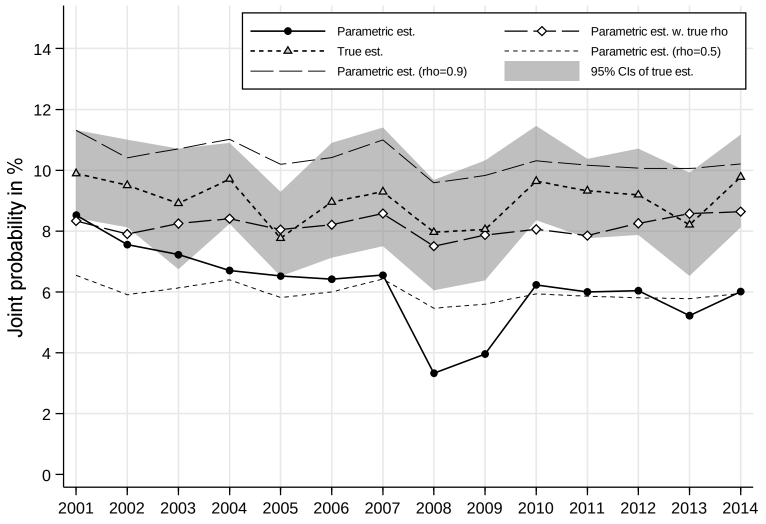


Entry rate = Prob(poor in year 2 | non-poor in year 1)

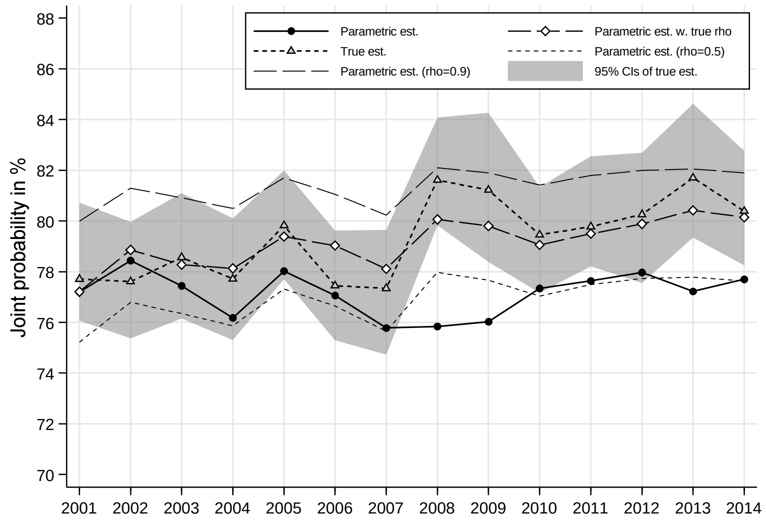


10. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 0–17

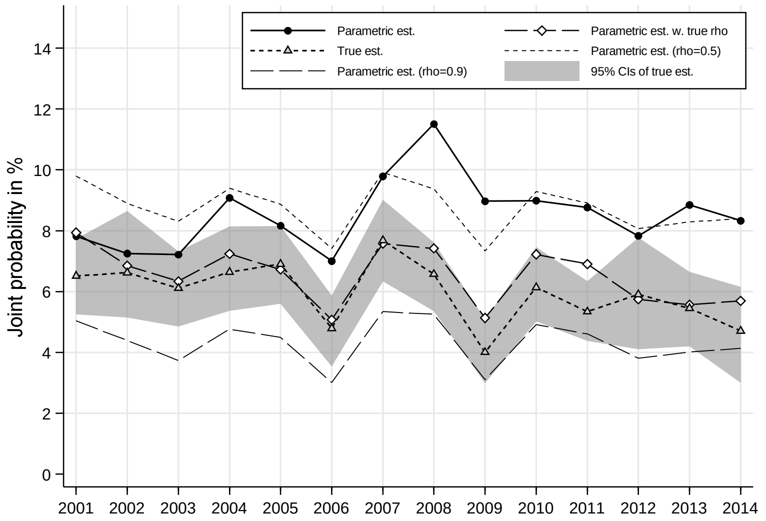
Prob(poor in year 1, poor in year 2)



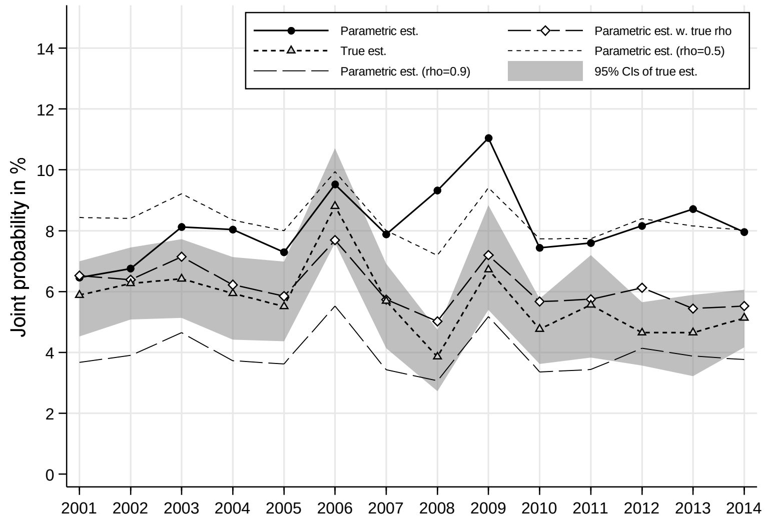
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

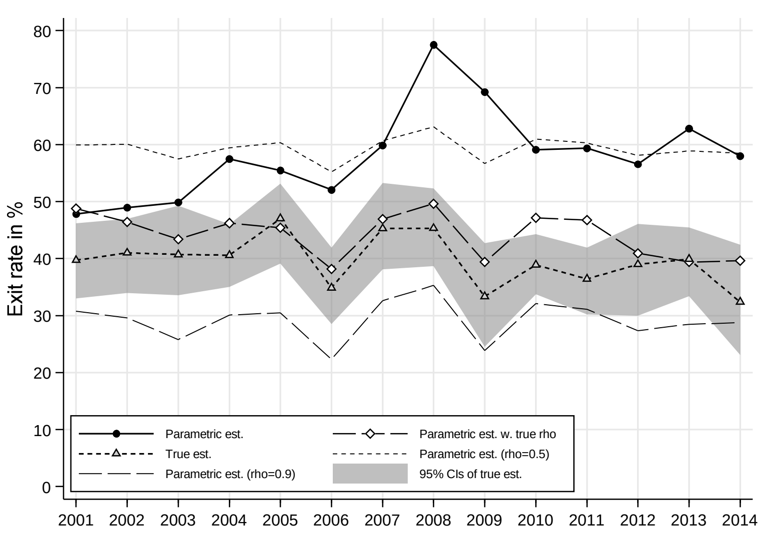


Prob(non-poor in year 1, poor in year 2)

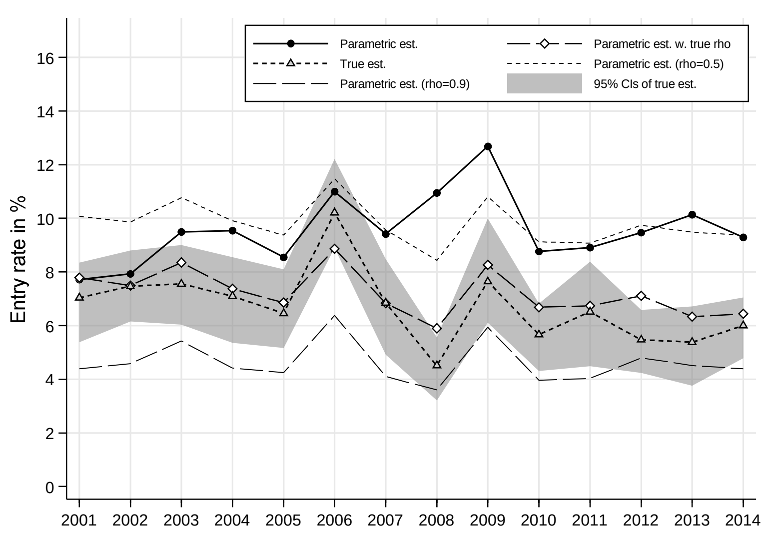


10. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 0–17

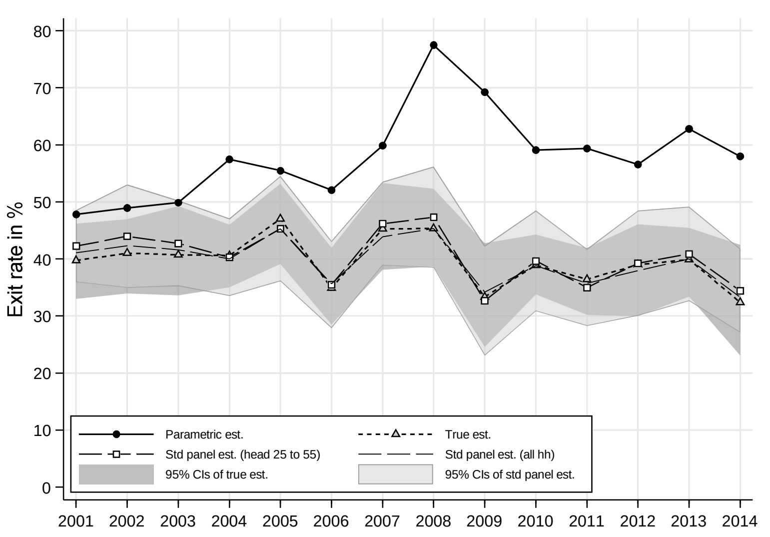
Exit rate = Prob(non-poor in year 2 | poor in year 1)



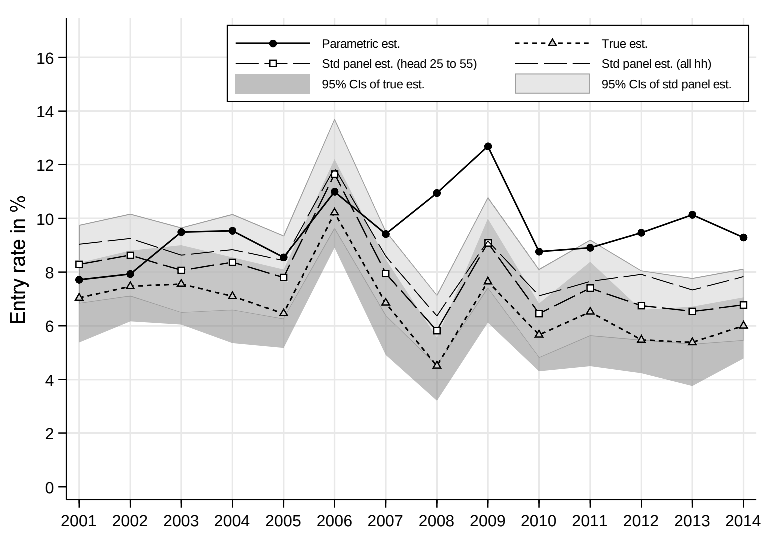
Entry rate = Prob(poor in year 2 | non-poor in year 1)



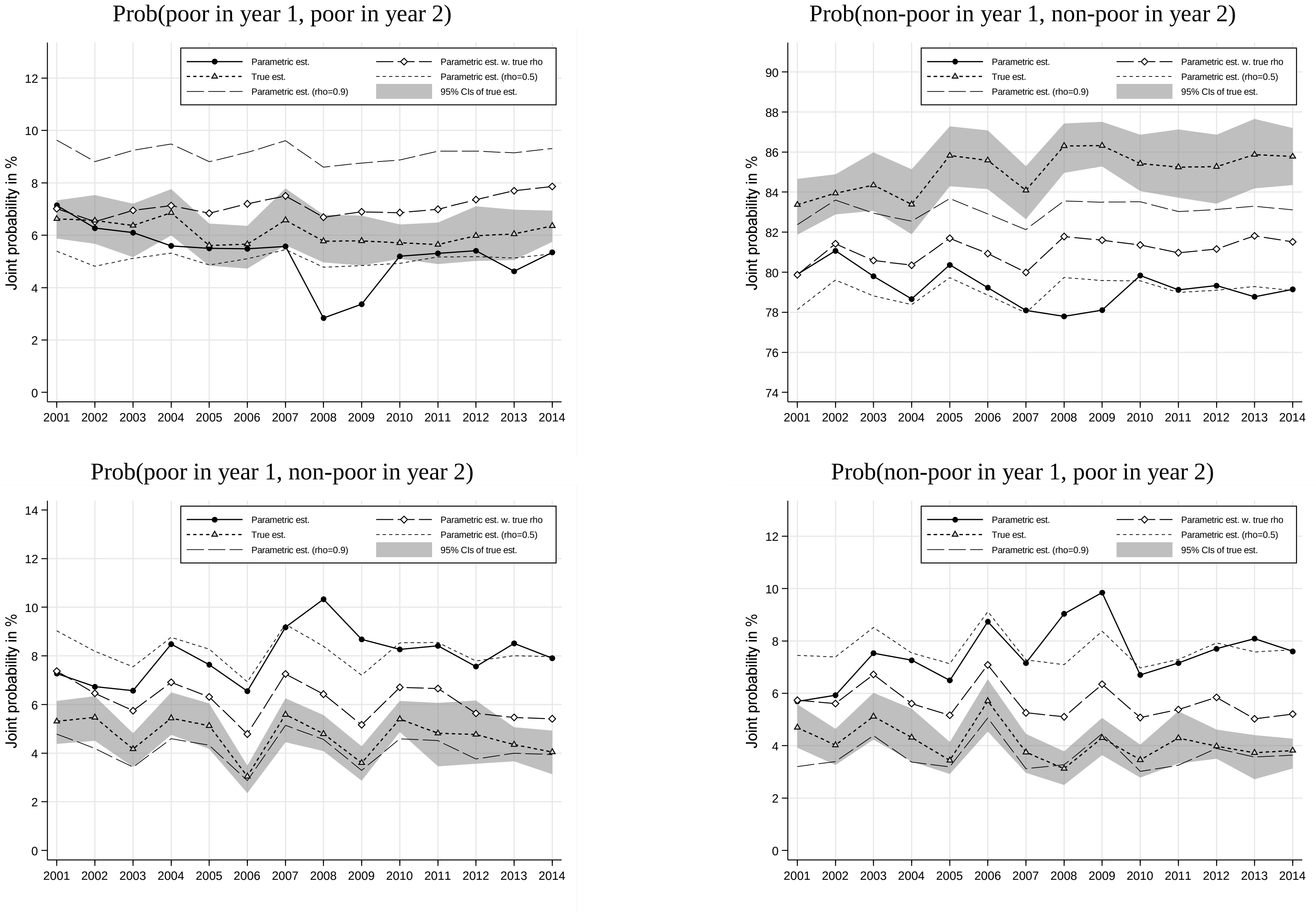
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

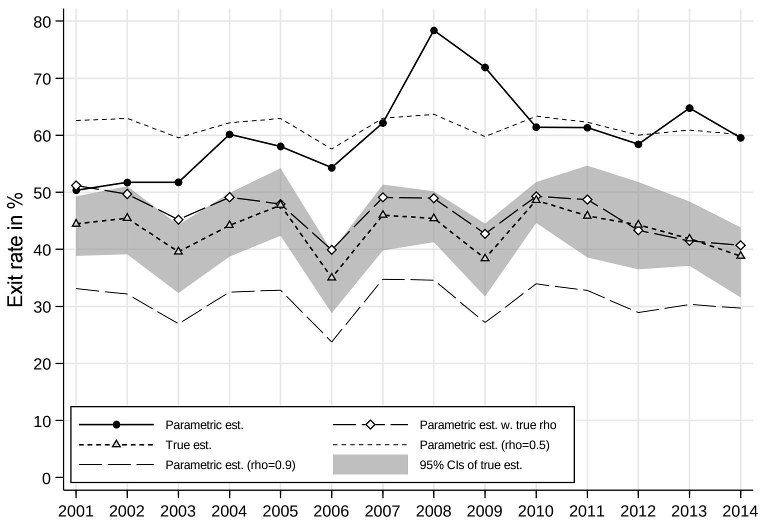


11. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 18–59

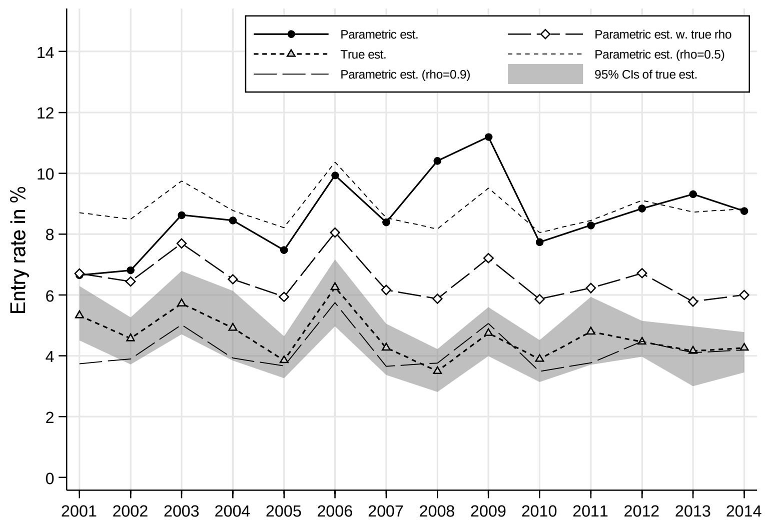


11. HILDA, head 25–55, poverty line 60% median, cohort definition COB*YOB(5), individuals aged 18–59

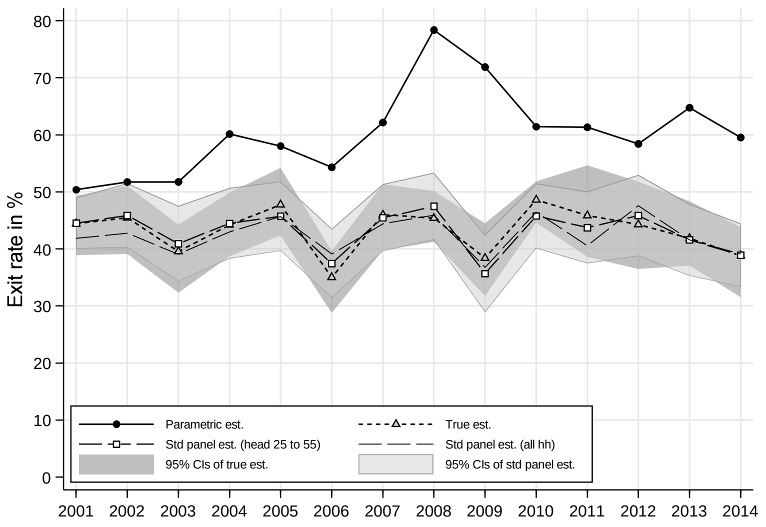
Exit rate = Prob(non-poor in year 2 | poor in year 1)



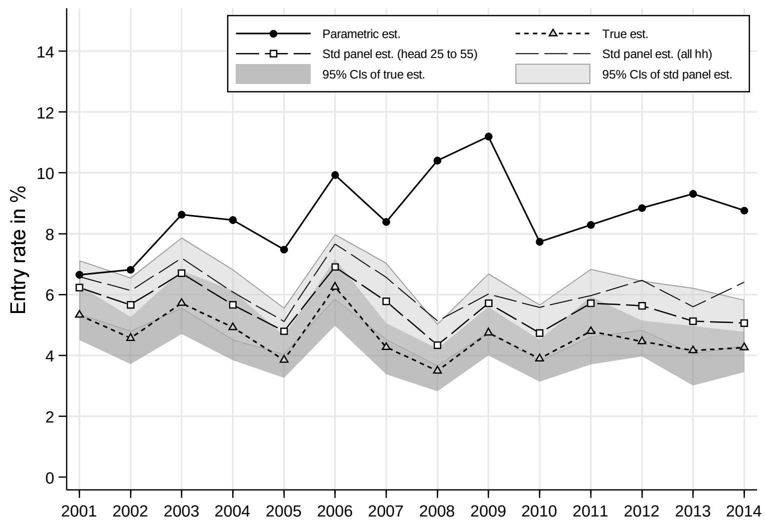
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

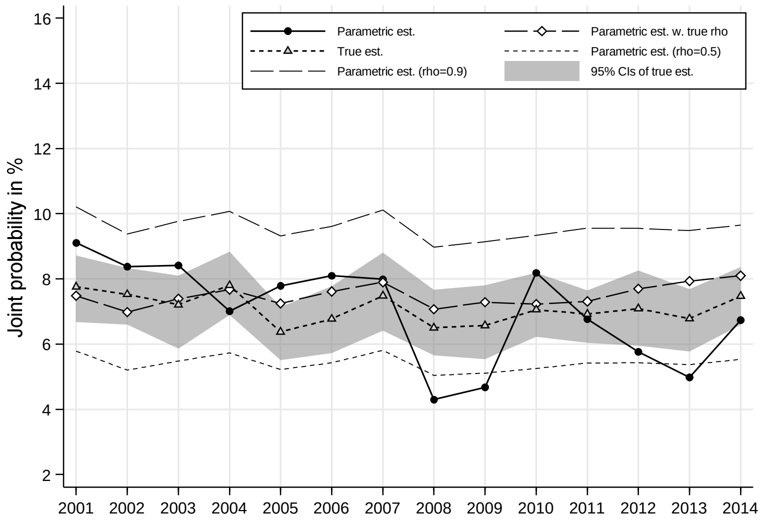


Entry rate = Prob(poor in year 2 | non-poor in year 1)

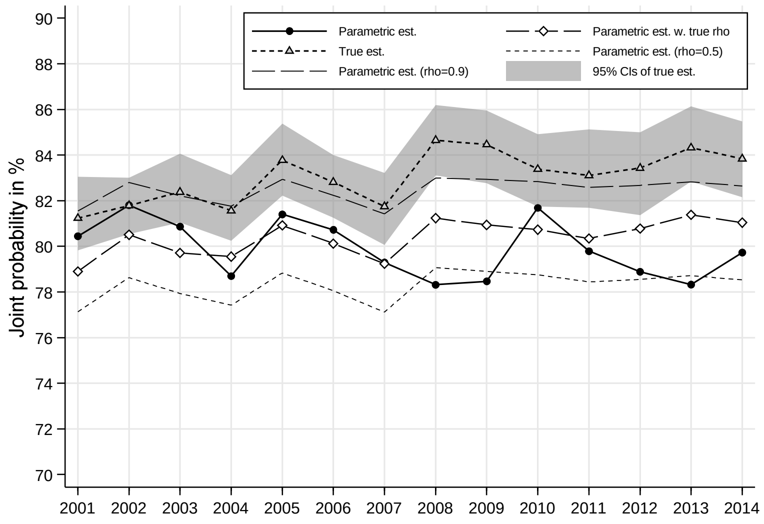


12. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), all individuals

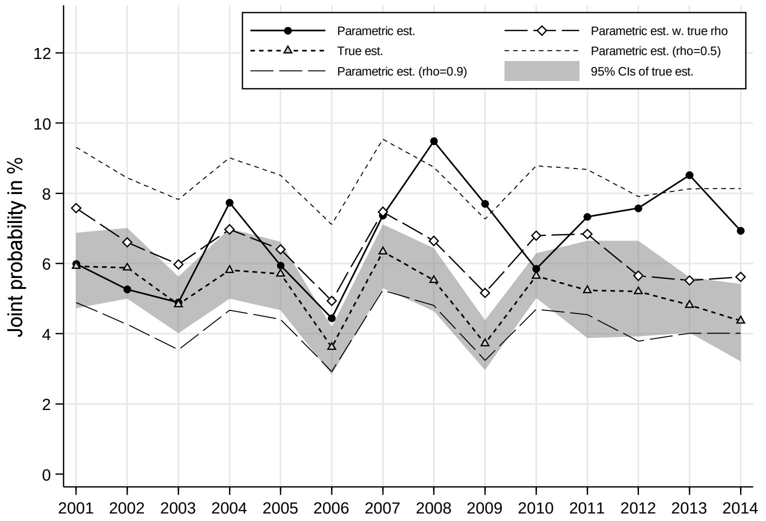
Prob(poor in year 1, poor in year 2)



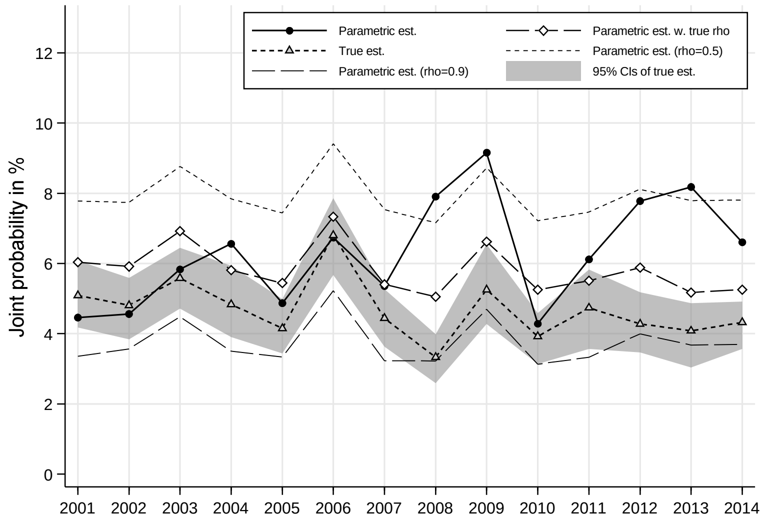
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

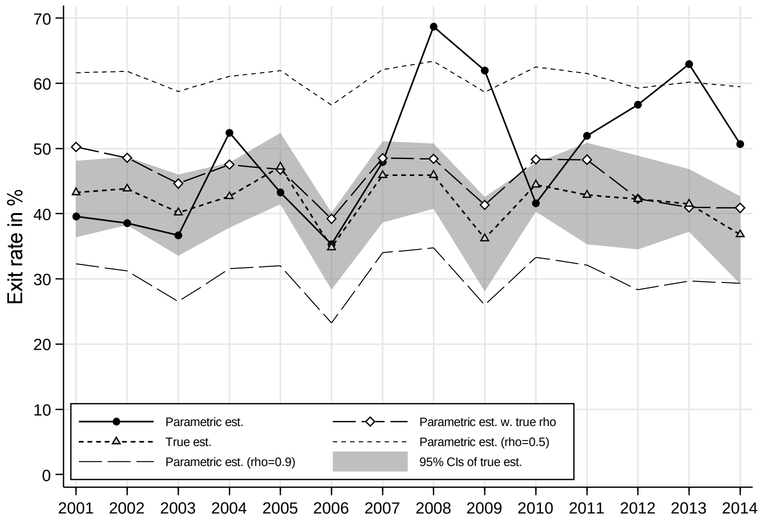


Prob(non-poor in year 1, poor in year 2)

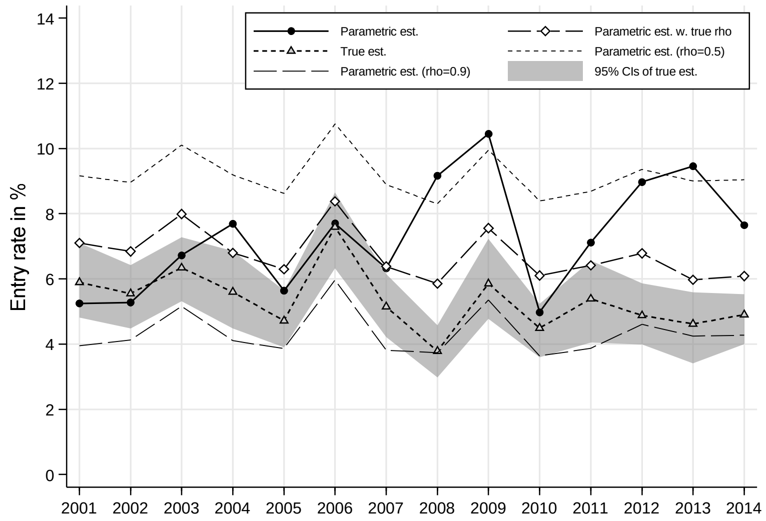


12. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), all individuals

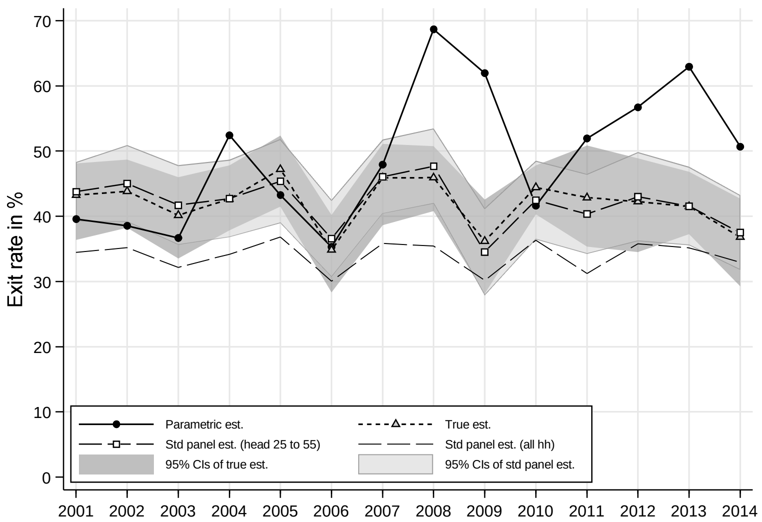
Exit rate = Prob(non-poor in year 2 | poor in year 1)



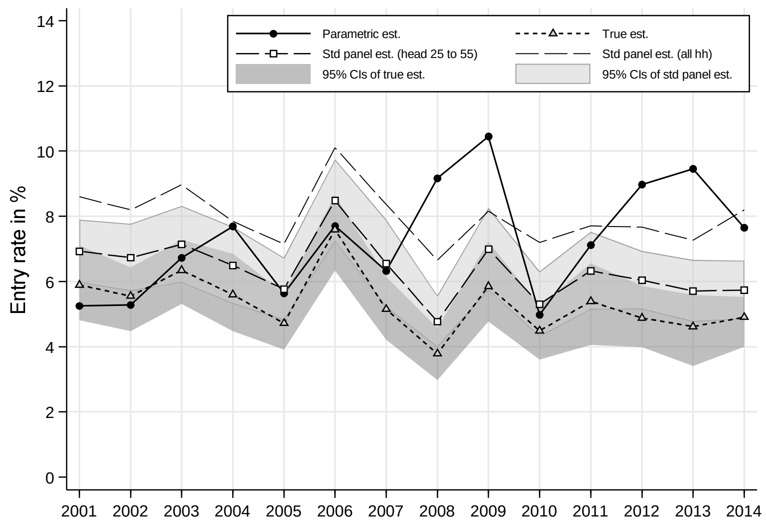
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

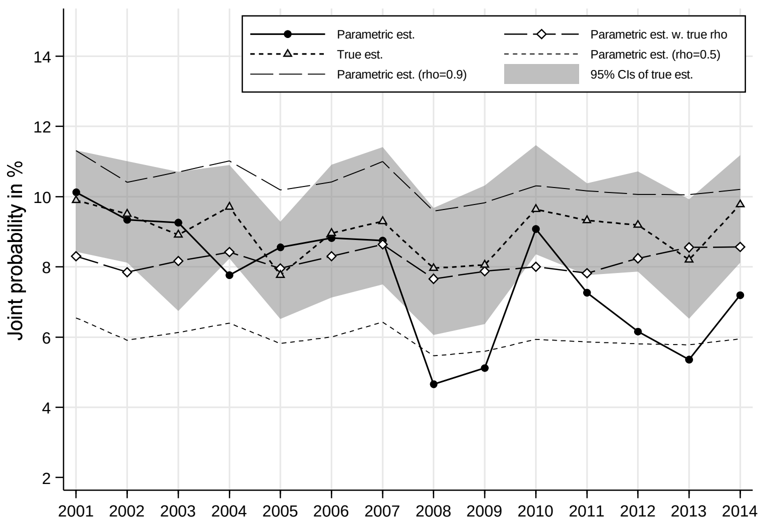


Entry rate = Prob(poor in year 2 | non-poor in year 1)

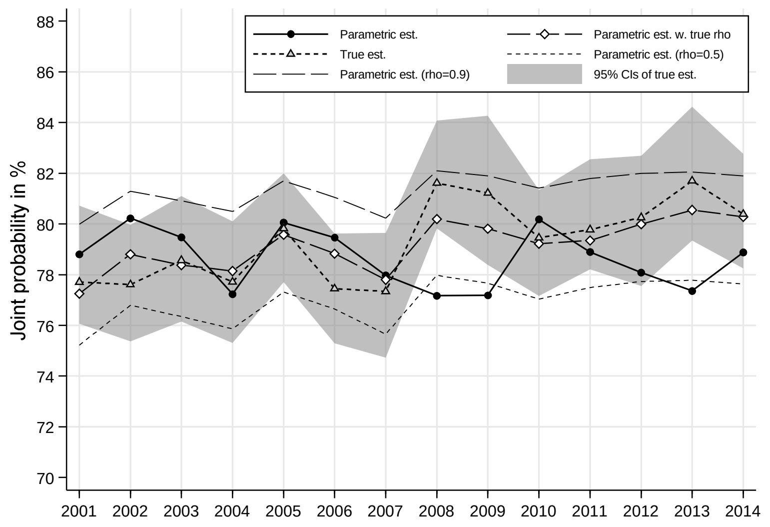


13. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

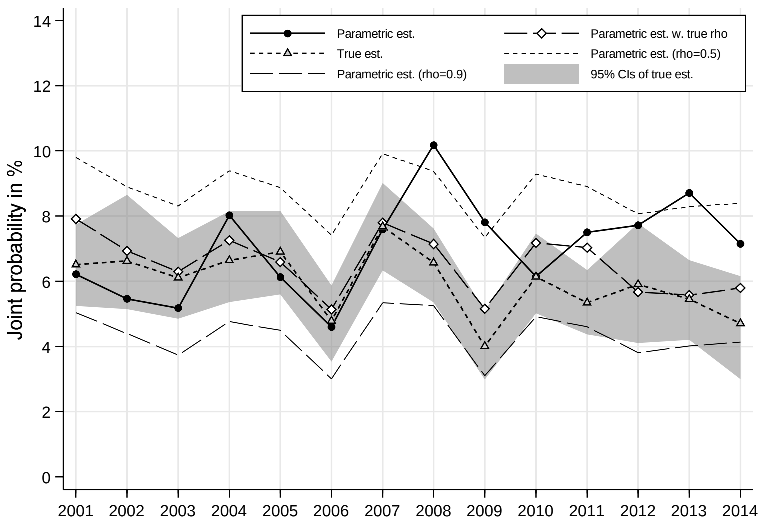
Prob(poor in year 1, poor in year 2)



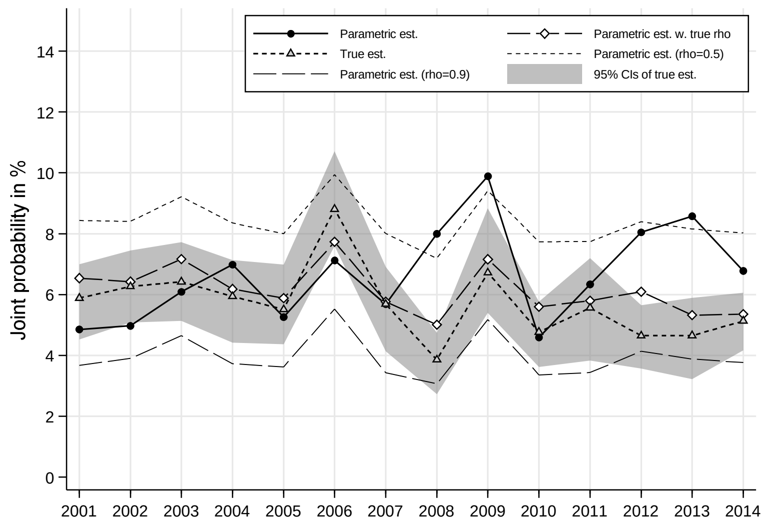
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

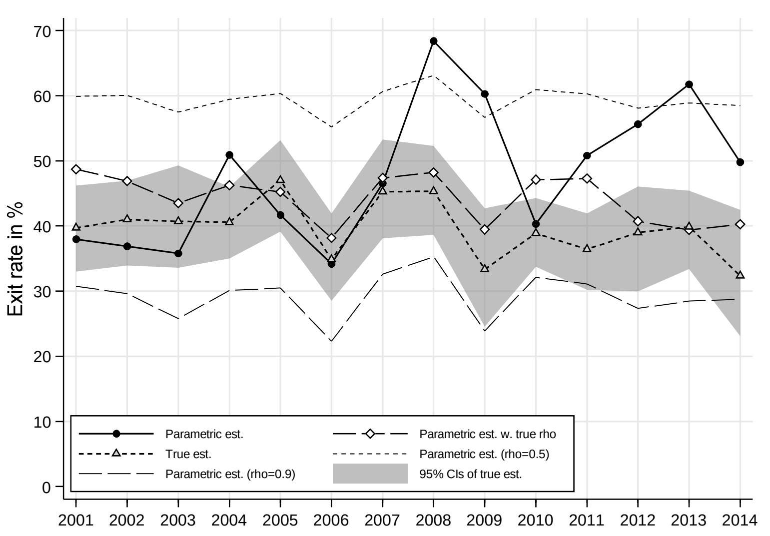


Prob(non-poor in year 1, poor in year 2)

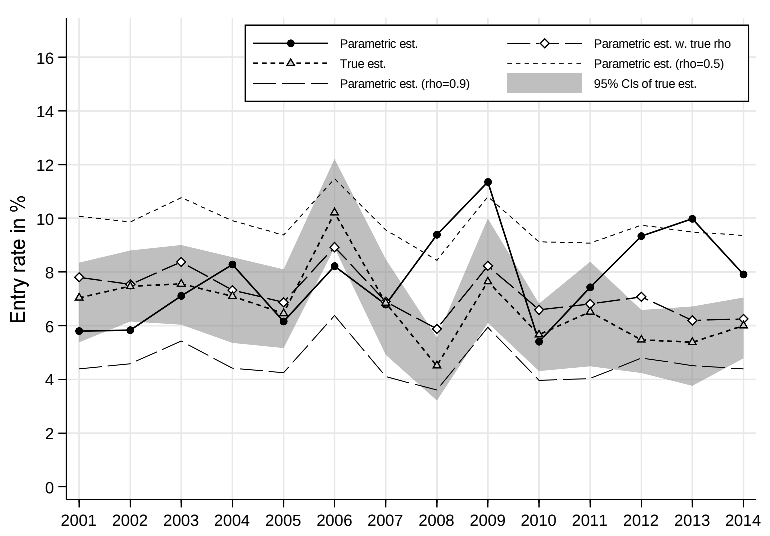


13. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

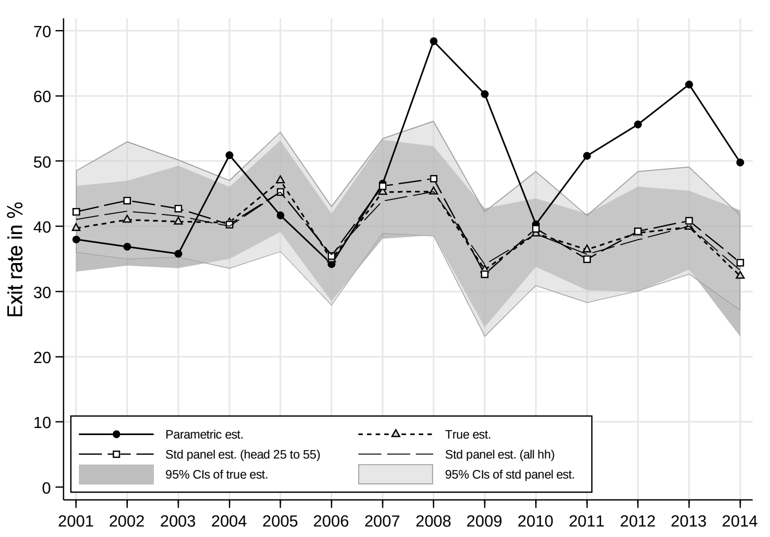
Exit rate = Prob(non-poor in year 2 | poor in year 1)



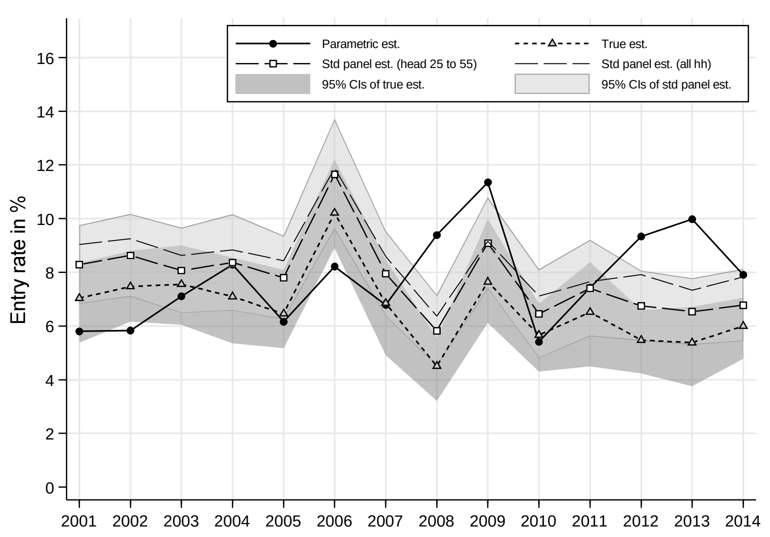
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

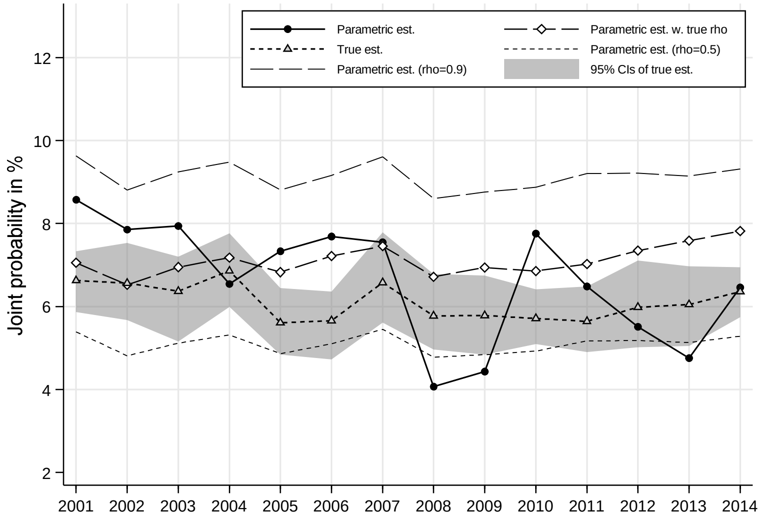


Entry rate = Prob(poor in year 2 | non-poor in year 1)

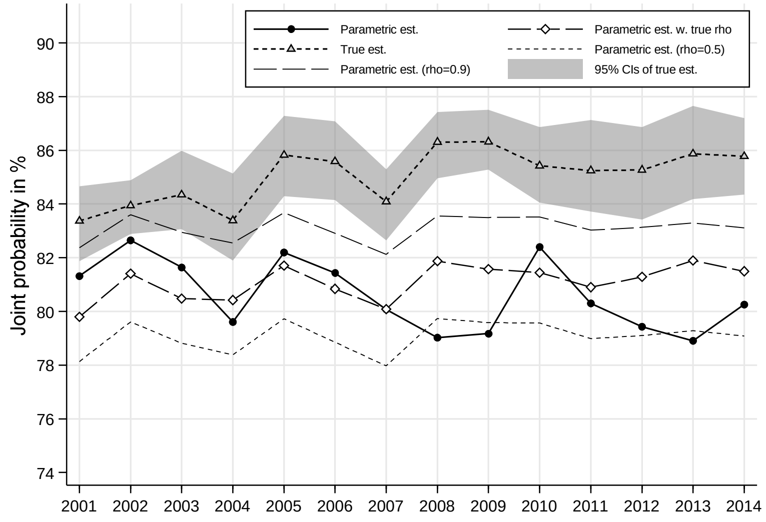


14. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

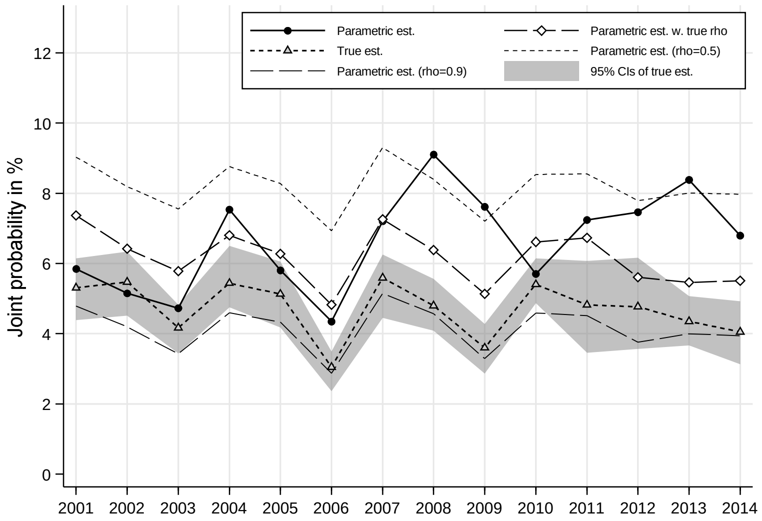
Prob(poor in year 1, poor in year 2)



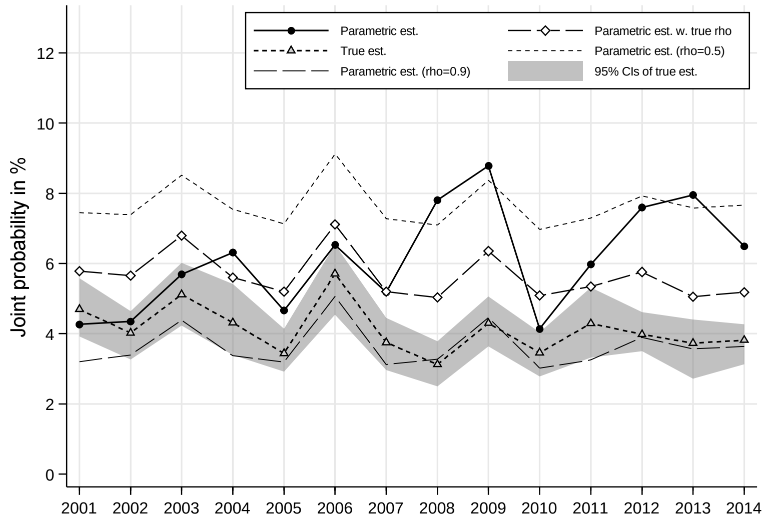
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

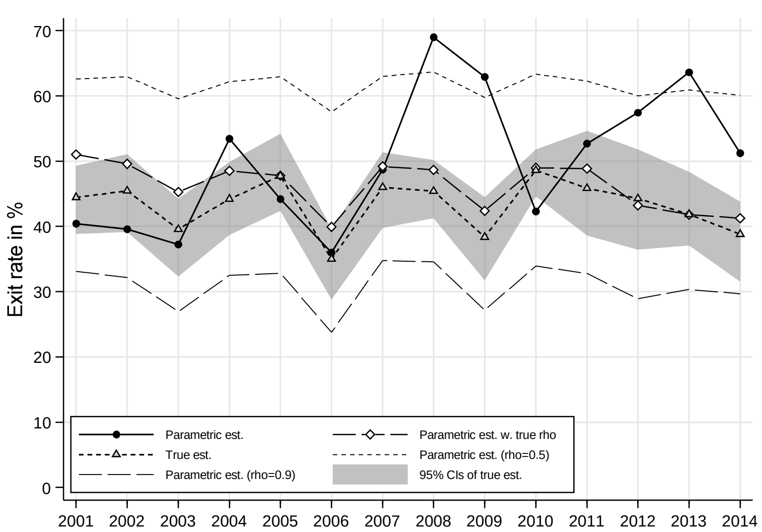


Prob(non-poor in year 1, poor in year 2)

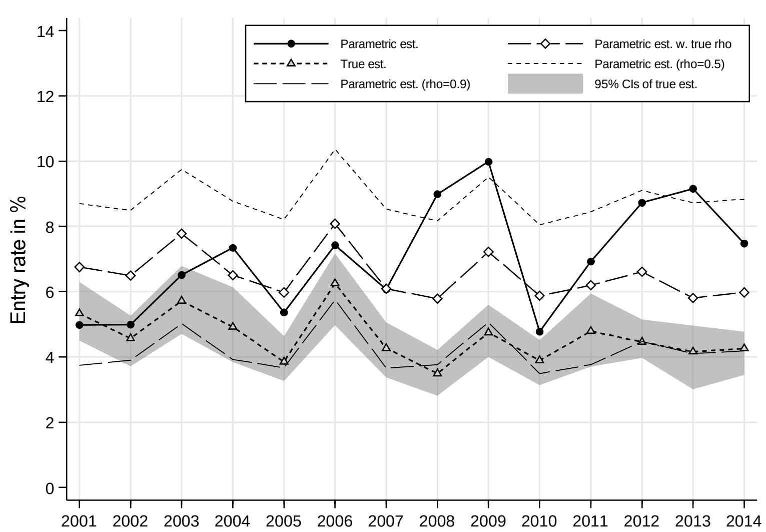


14. HILDA, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

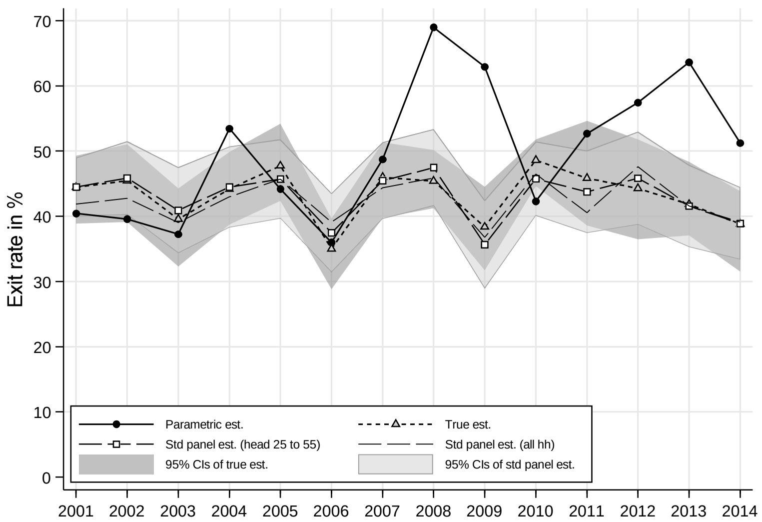
Exit rate = Prob(non-poor in year 2 | poor in year 1)



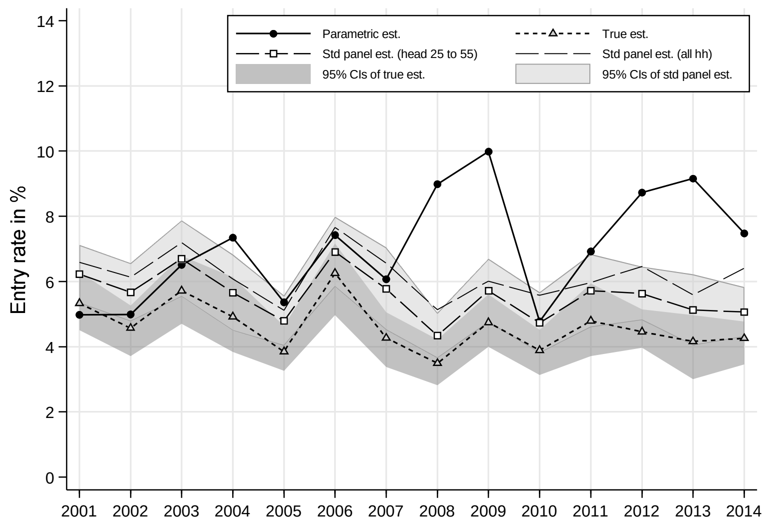
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

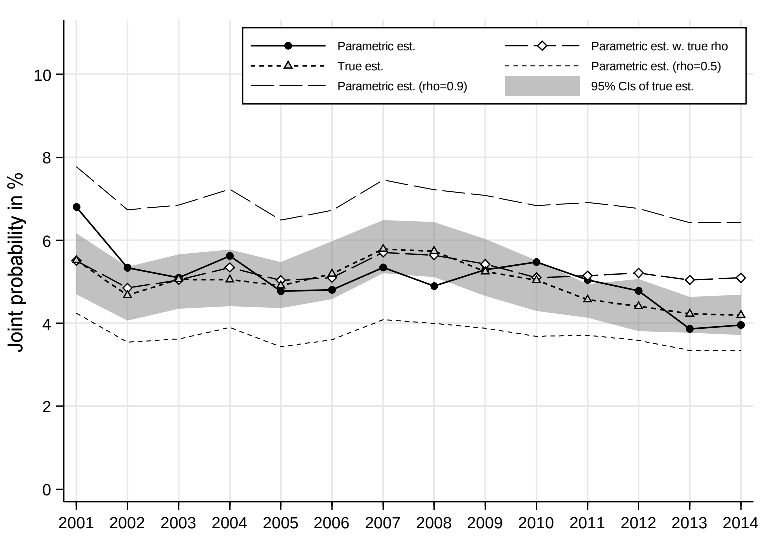


Entry rate = Prob(poor in year 2 | non-poor in year 1)

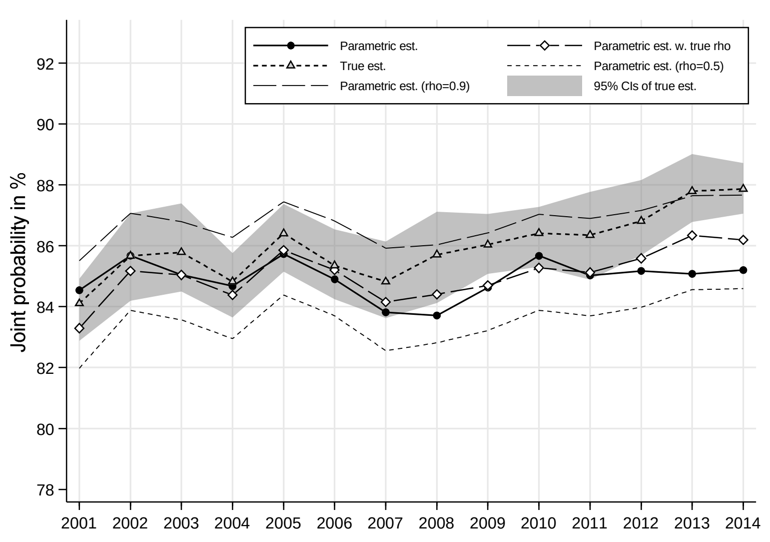


15. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), all individuals

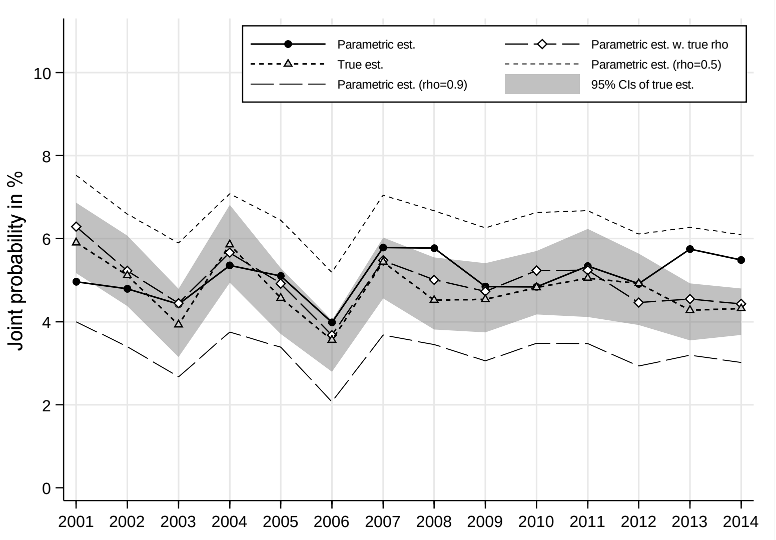
Prob(poor in year 1, poor in year 2)



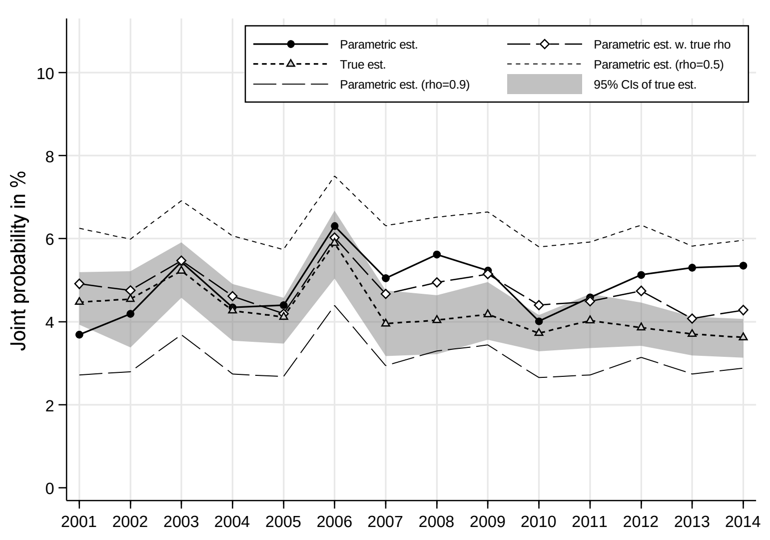
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

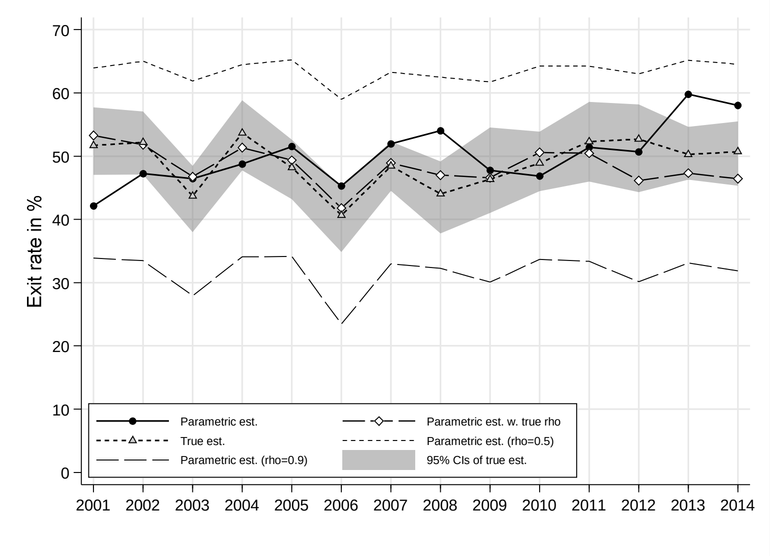


Prob(non-poor in year 1, poor in year 2)

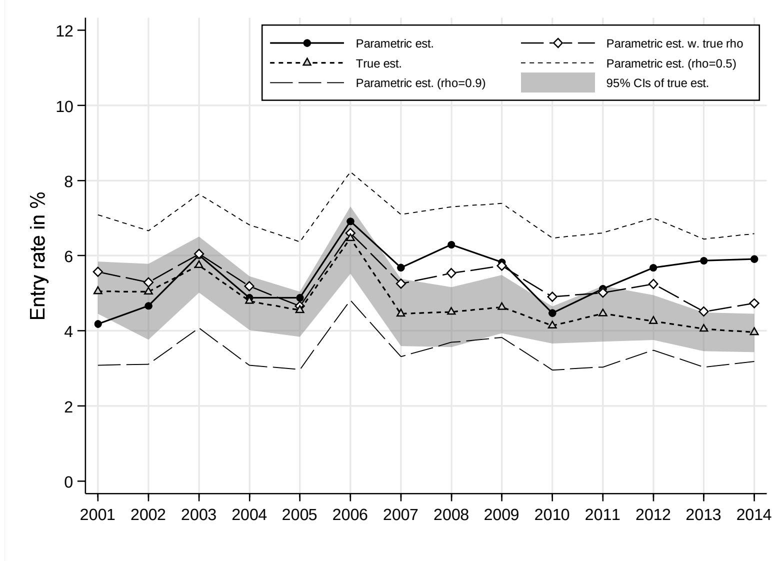


15. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), all individuals

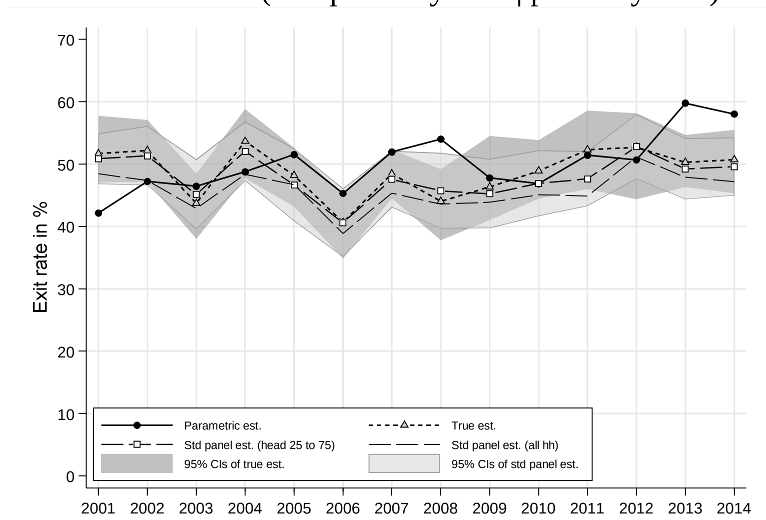
Exit rate = Prob(non-poor in year 2 | poor in year 1)



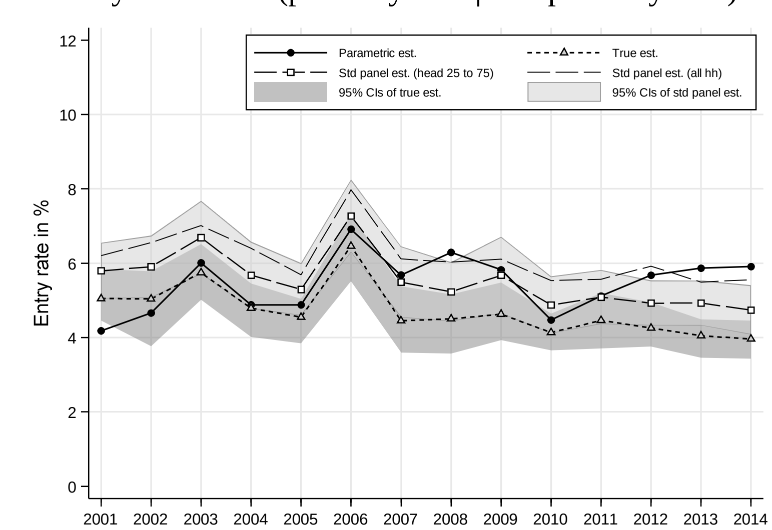
Entry rate = Prob(poor in year 2 | non-poor in year 1)



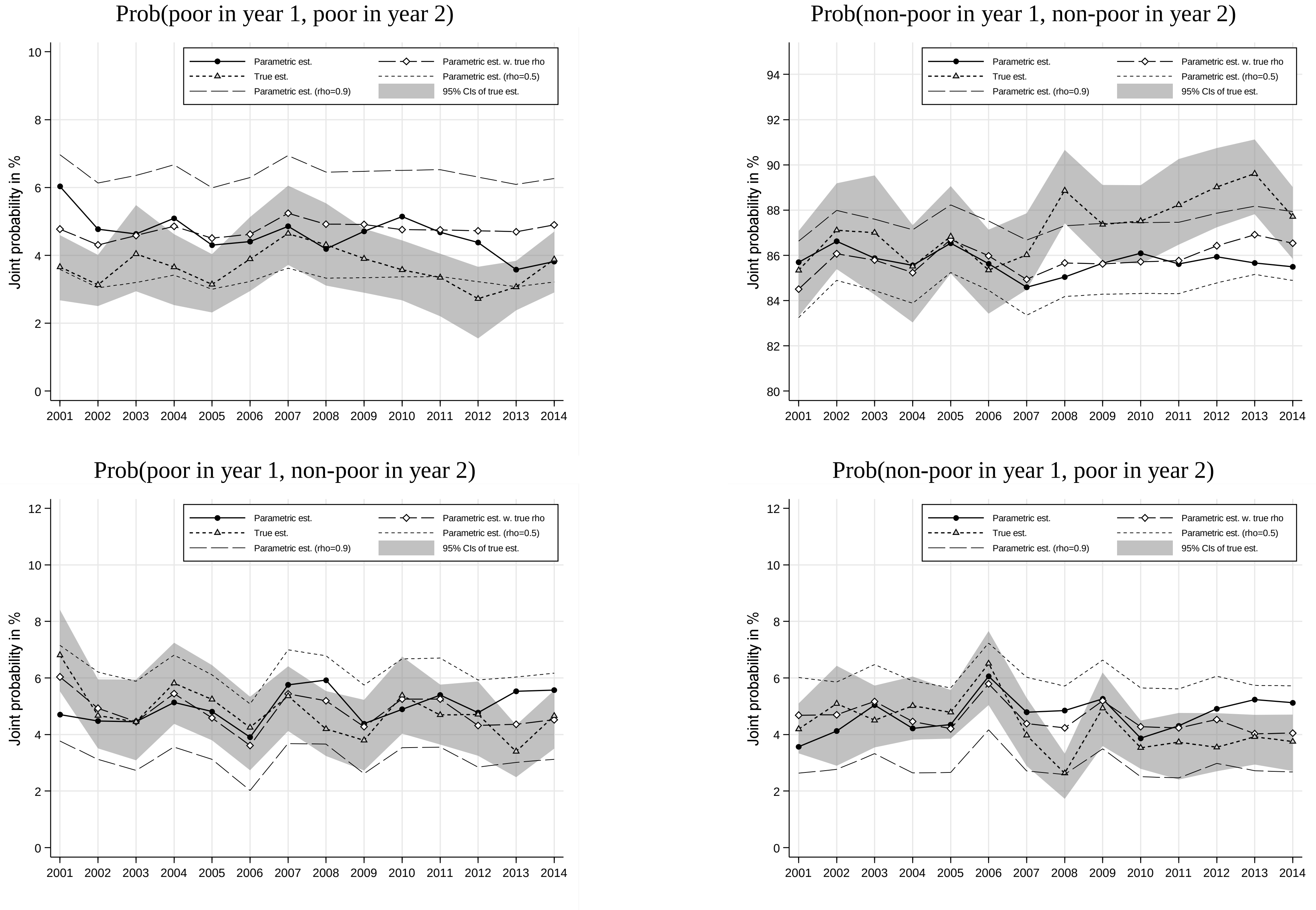
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

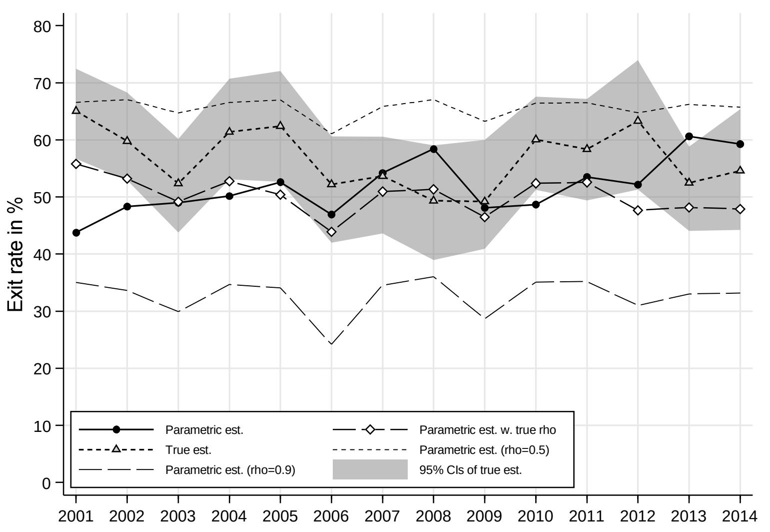


16. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 0–17

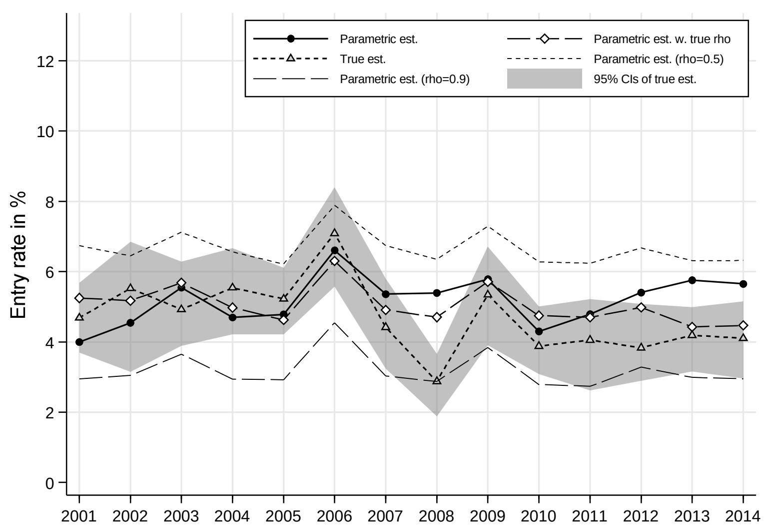


16. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 0–17

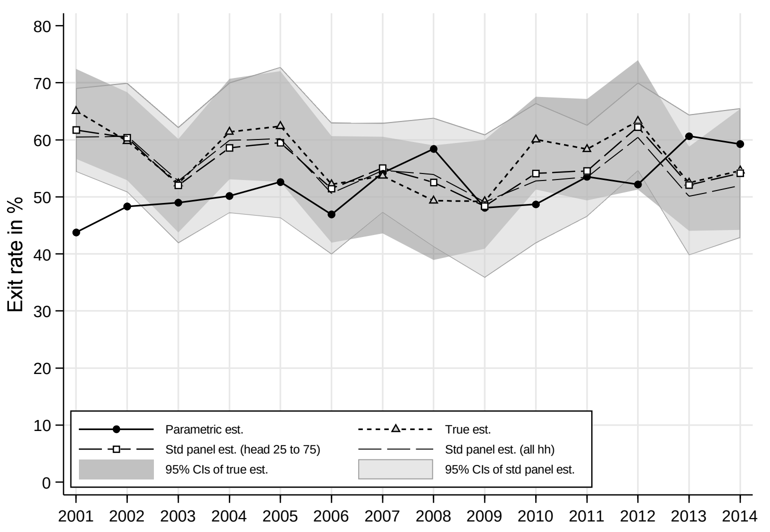
Exit rate = Prob(non-poor in year 2 | poor in year 1)



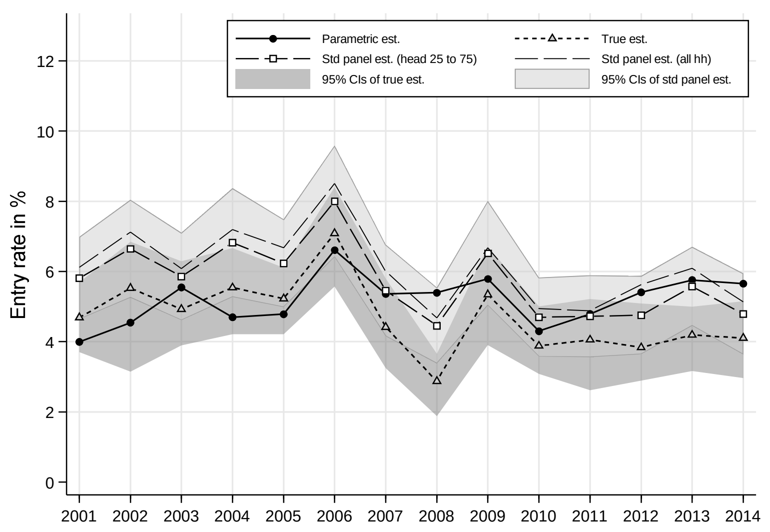
Entry rate = Prob(poor in year 2 | non-poor in year 1)



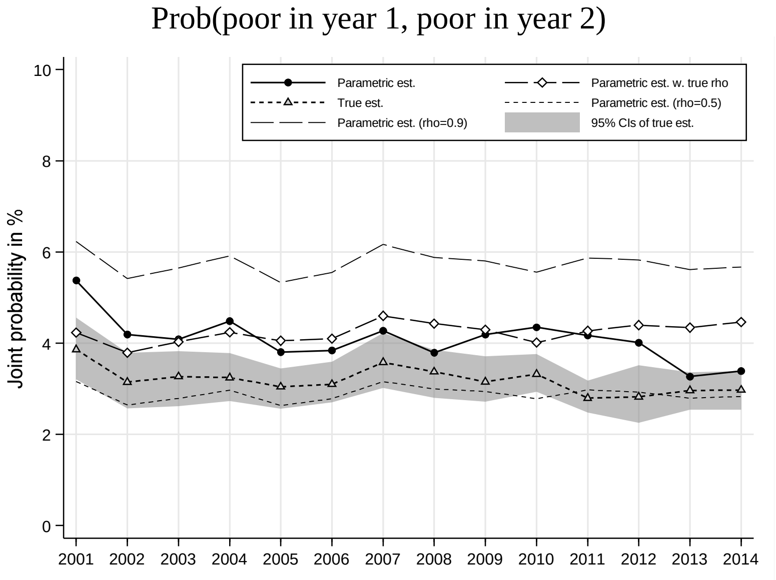
Exit rate = Prob(non-poor in year 2 | poor in year 1)

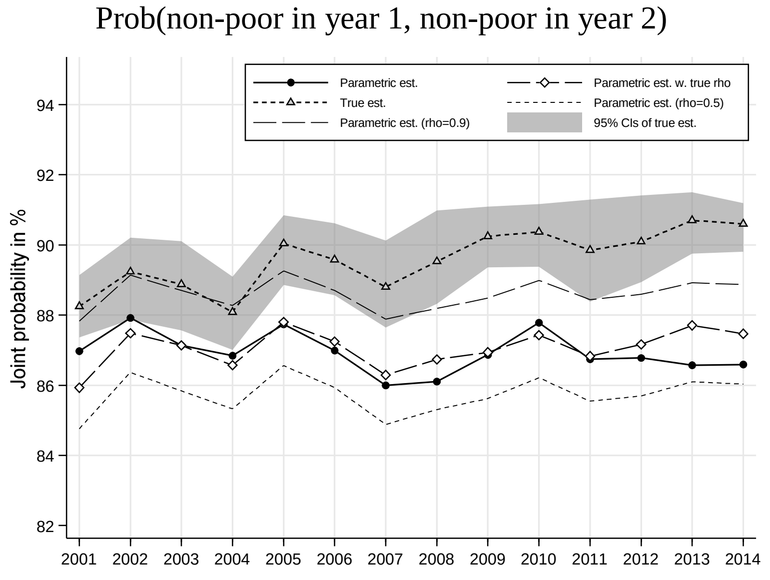


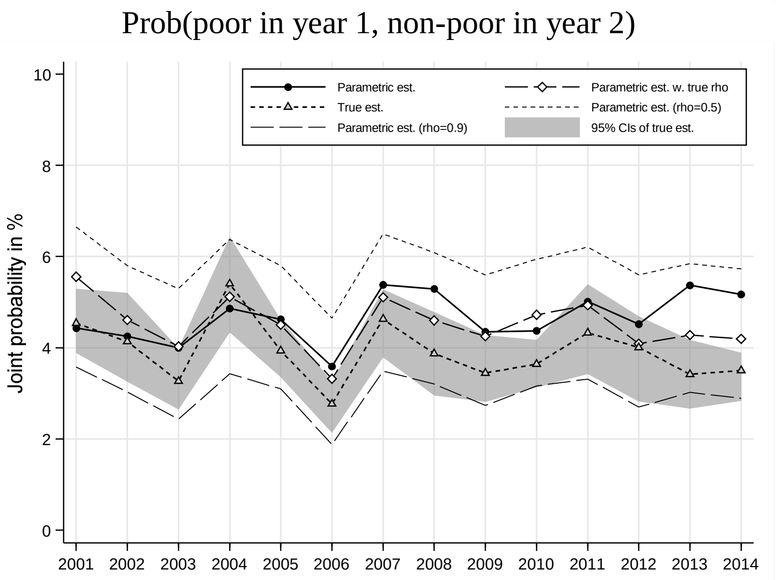
Entry rate = Prob(poor in year 2 | non-poor in year 1)

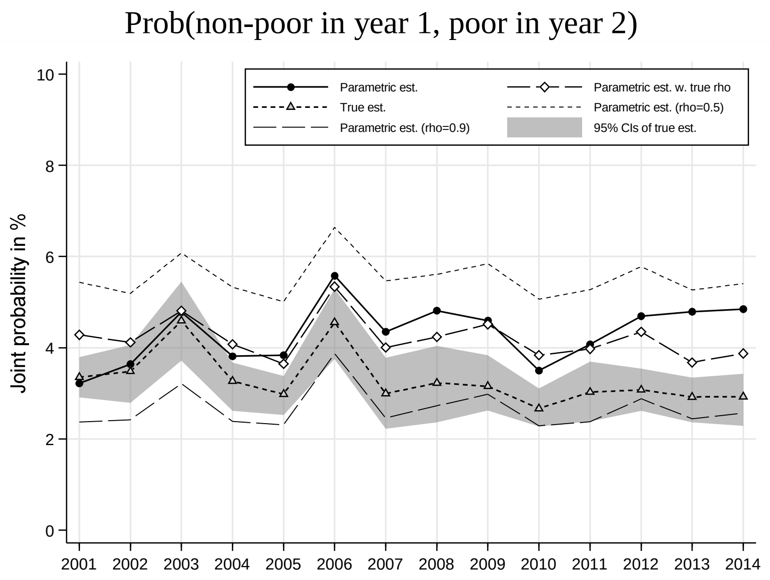


17. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 18–59



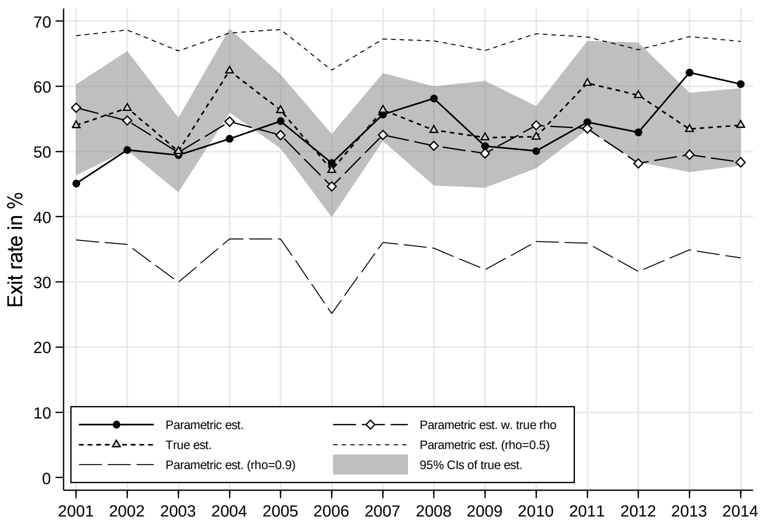




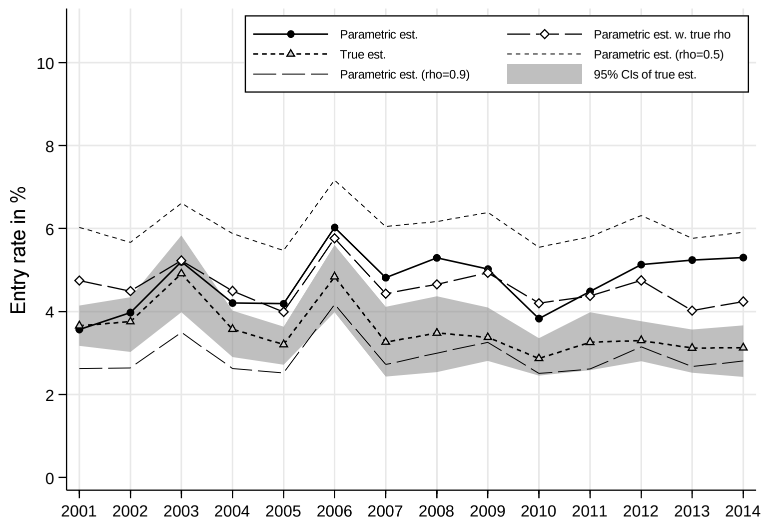


17. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 18–59

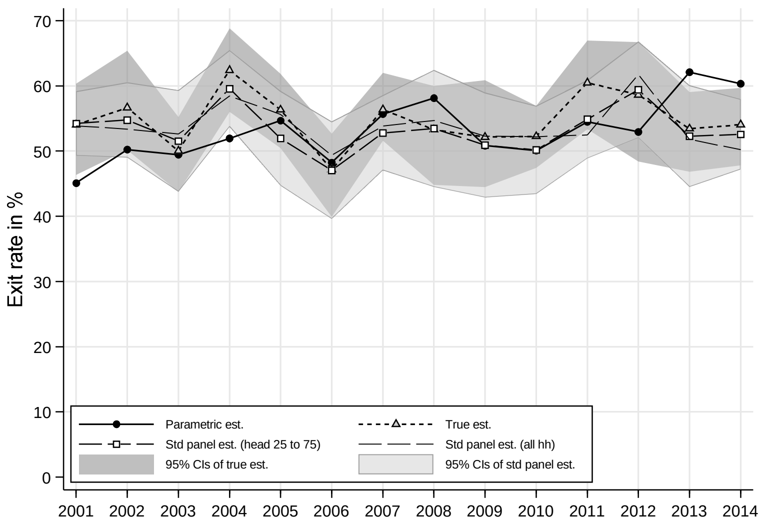
Exit rate = Prob(non-poor in year 2 | poor in year 1)



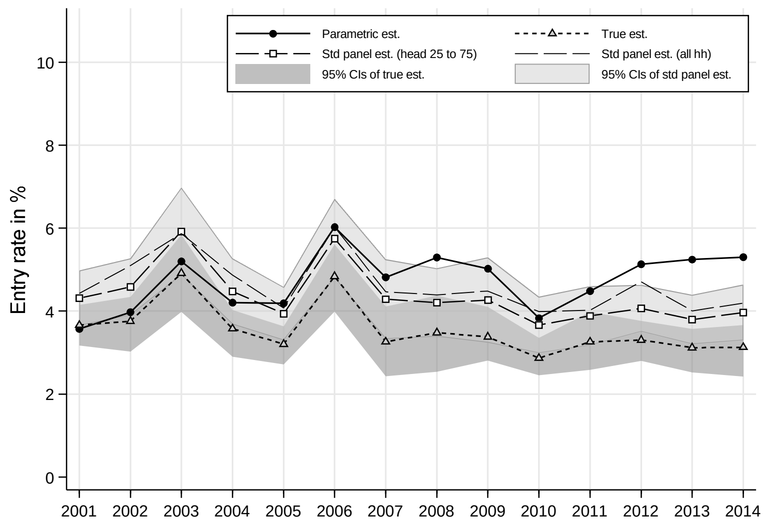
Entry rate = Prob(poor in year 2 | non-poor in year 1)



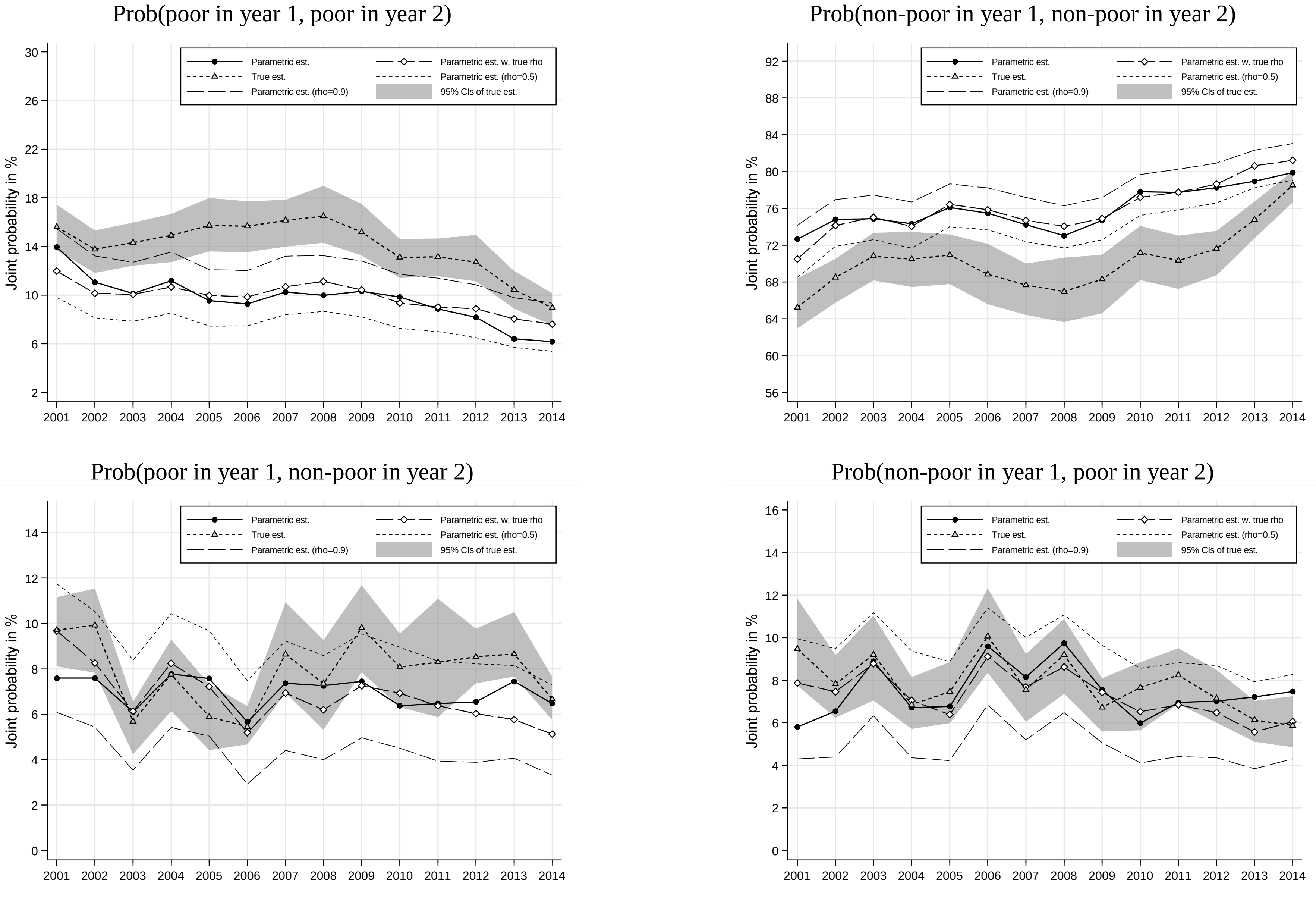
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

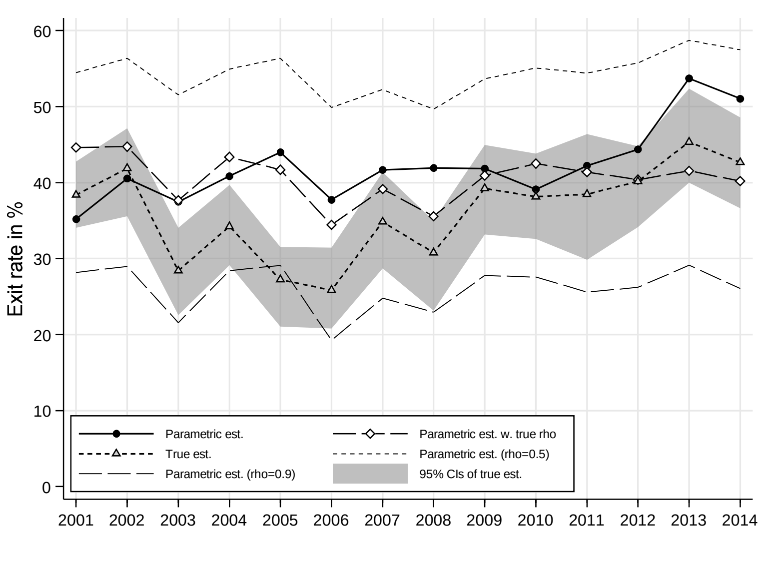


18. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 60+

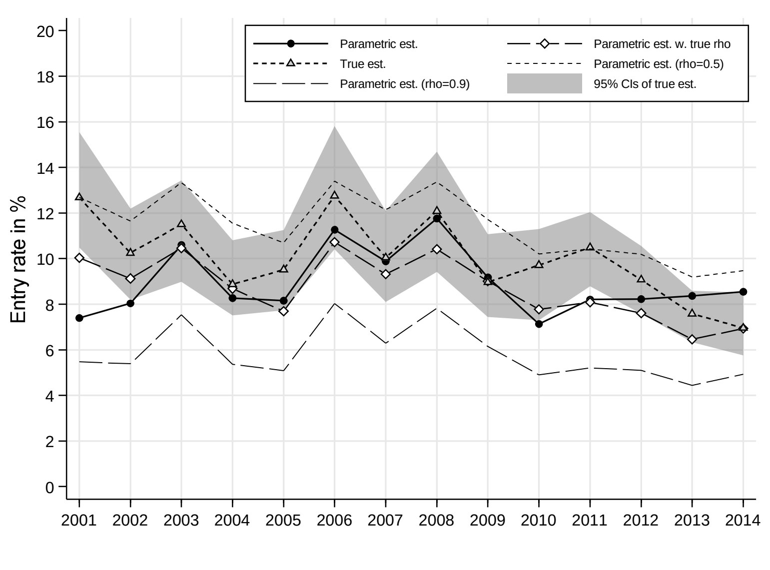


18. HILDA, head 25–75, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 60+

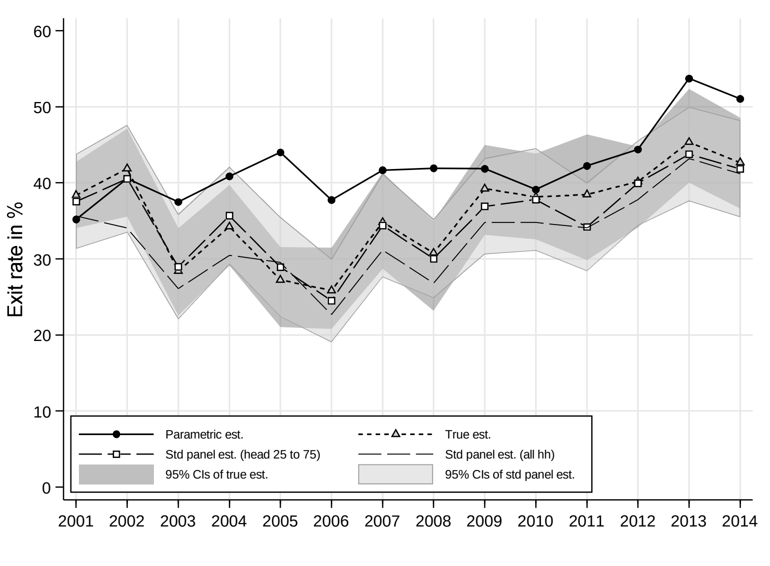
Exit rate = Prob(non-poor in year 2 | poor in year 1)



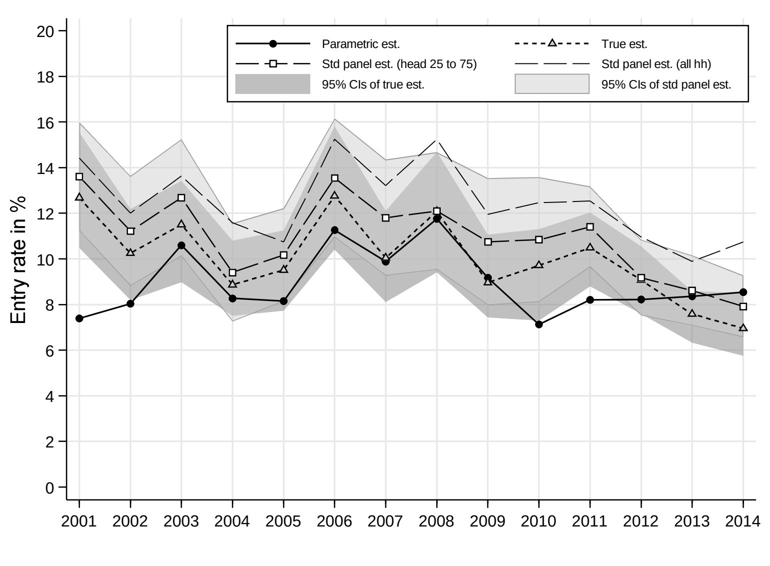
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

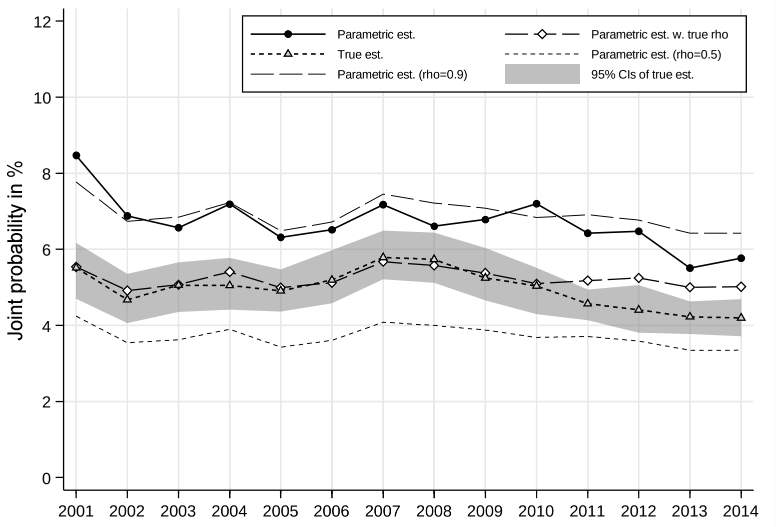


Entry rate = Prob(poor in year 2 | non-poor in year 1)

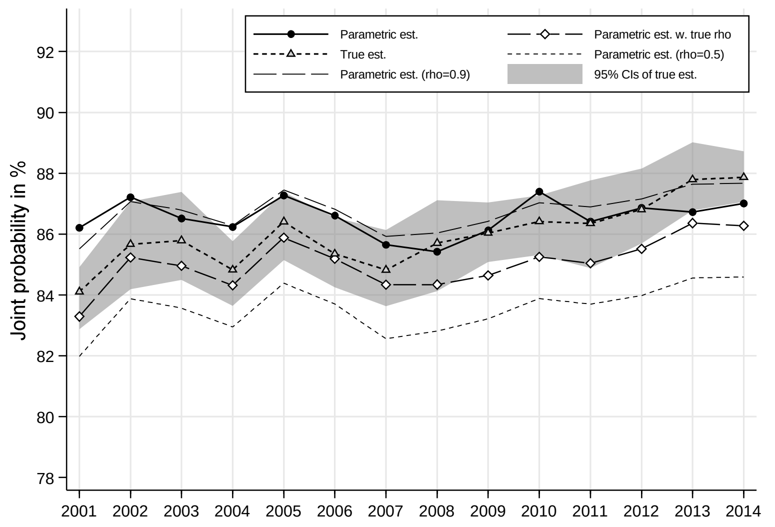


19. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), all individuals

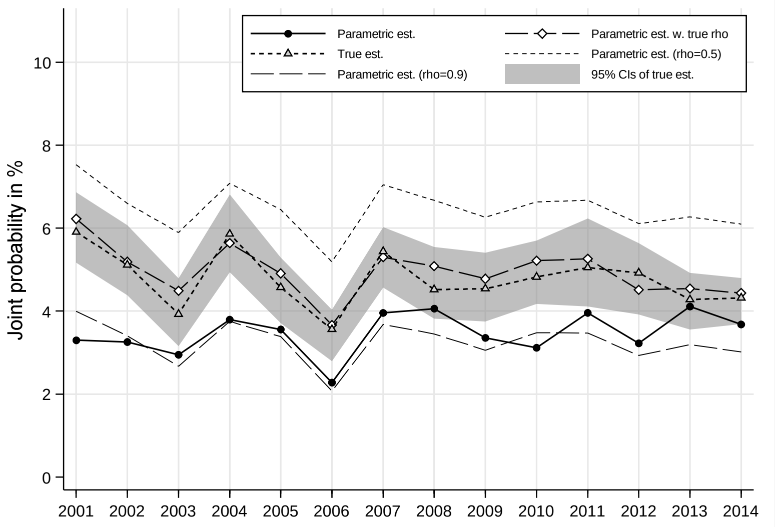
Prob(poor in year 1, poor in year 2)



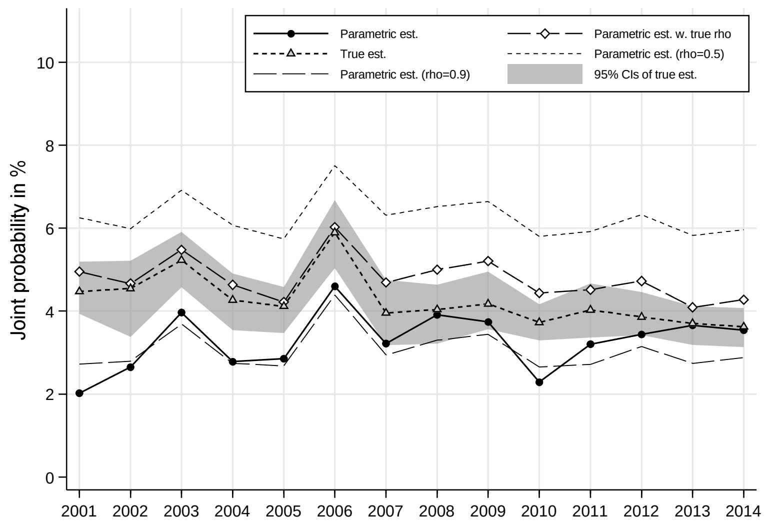
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

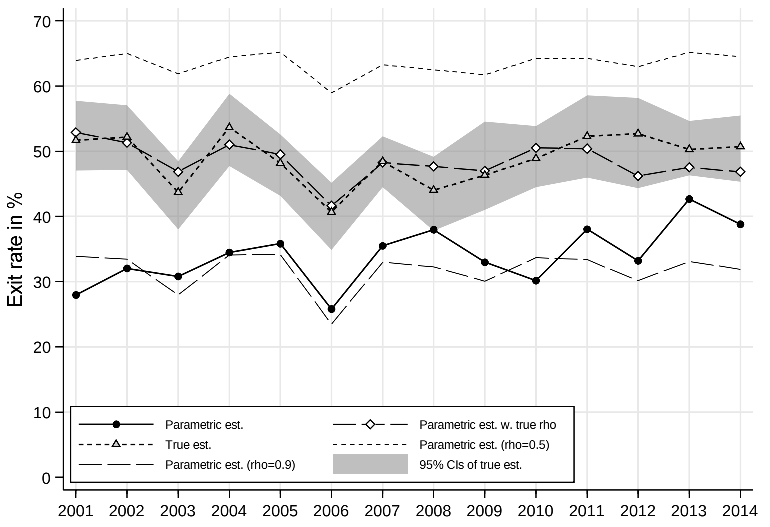


Prob(non-poor in year 1, poor in year 2)

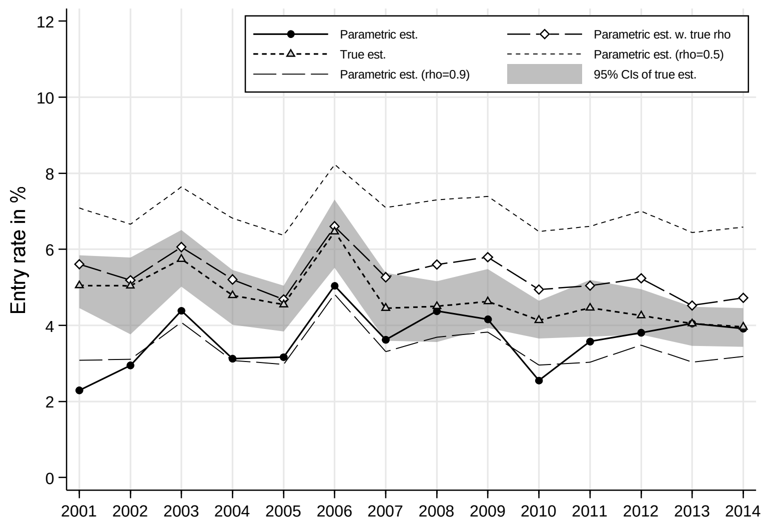


19. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), all individuals

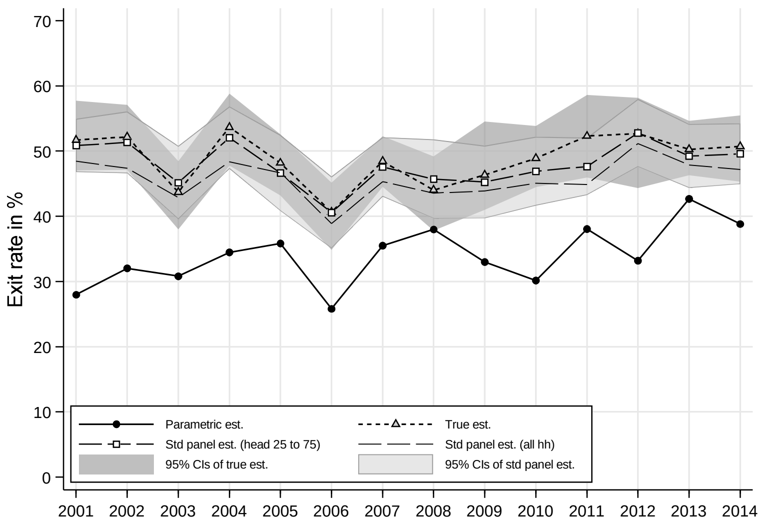
Exit rate = Prob(non-poor in year 2 | poor in year 1)



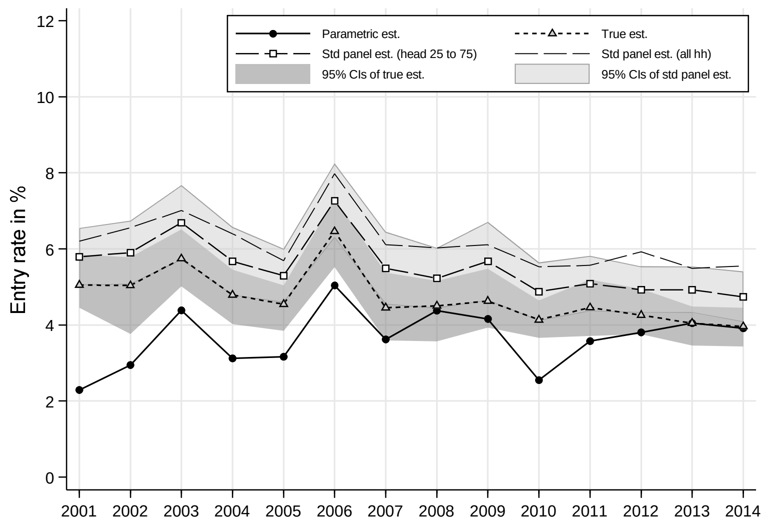
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)



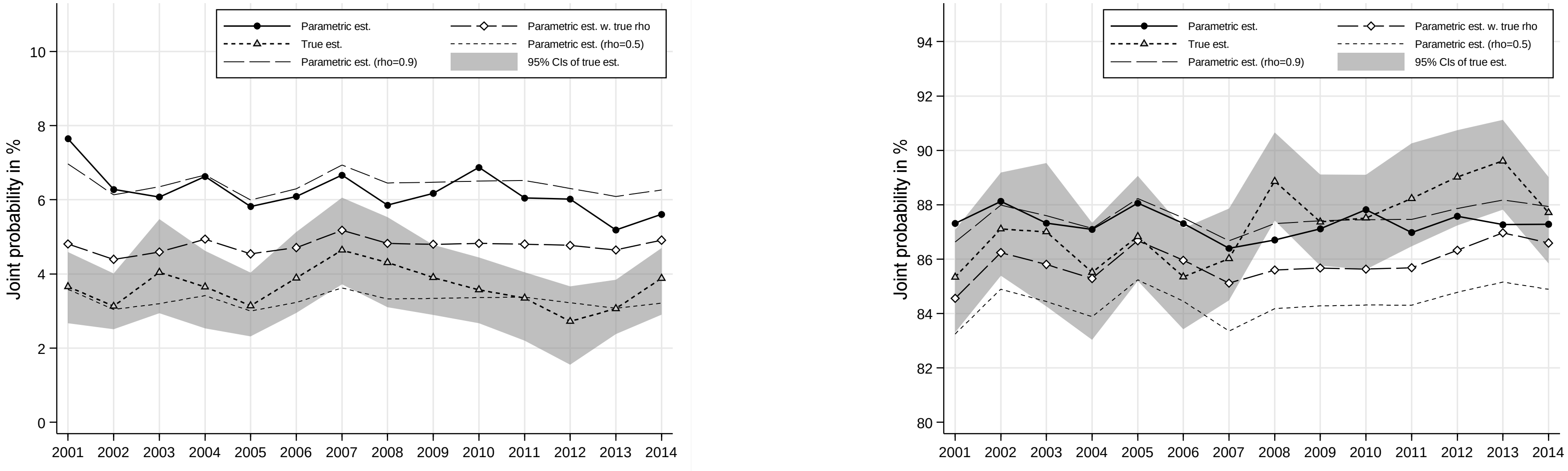
Entry rate = Prob(poor in year 2 | non-poor in year 1)



20. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

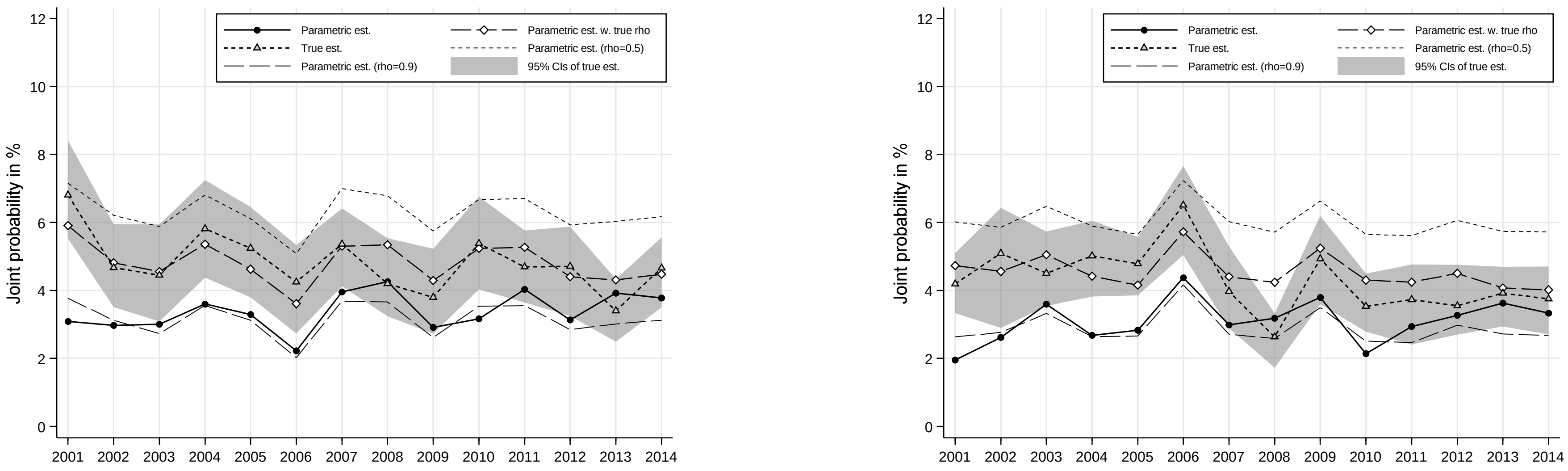
Prob(poor in year 1, poor in year 2)

Prob(non-poor in year 1, non-poor in year 2)

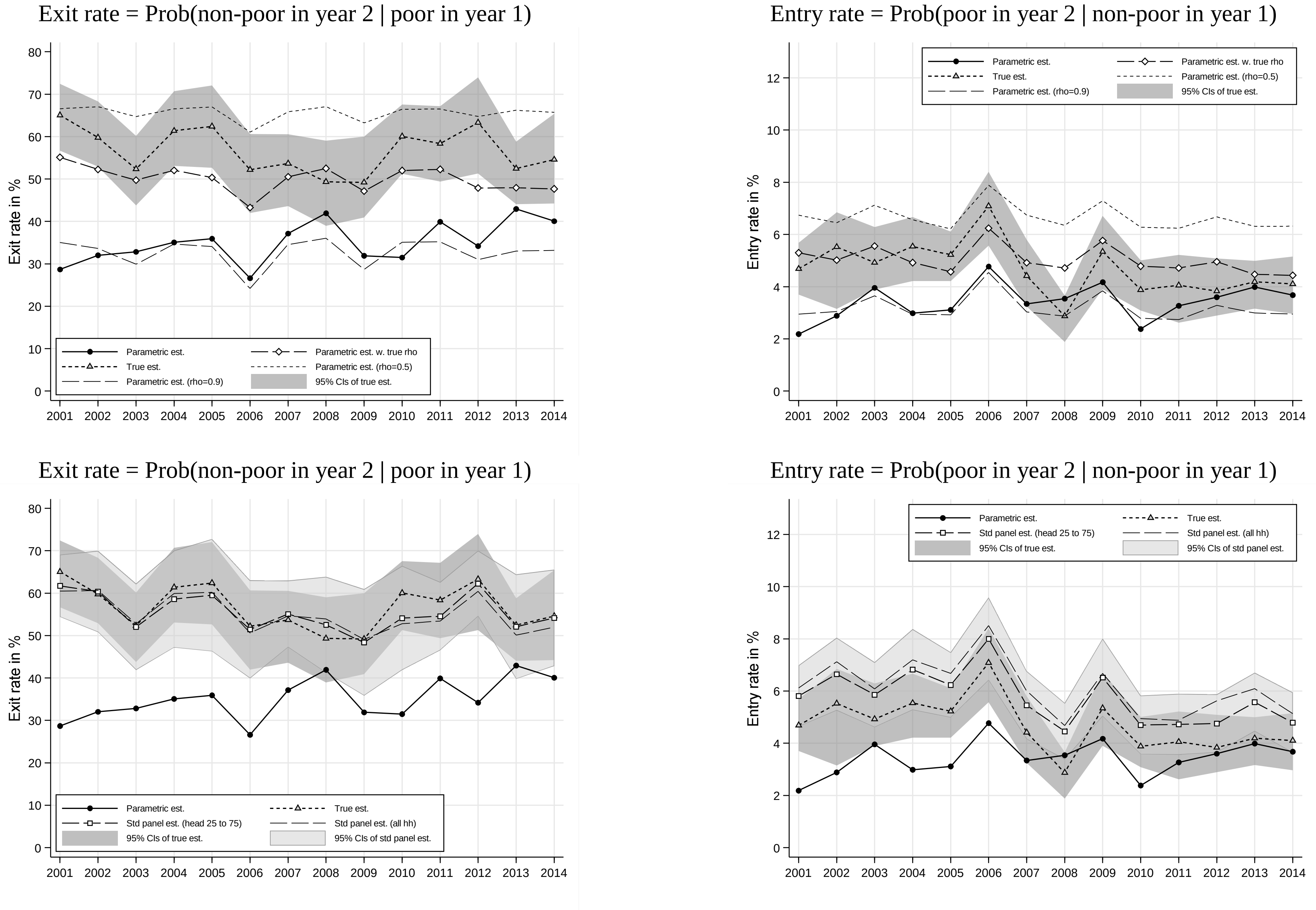


Prob(poor in year 1, non-poor in year 2)

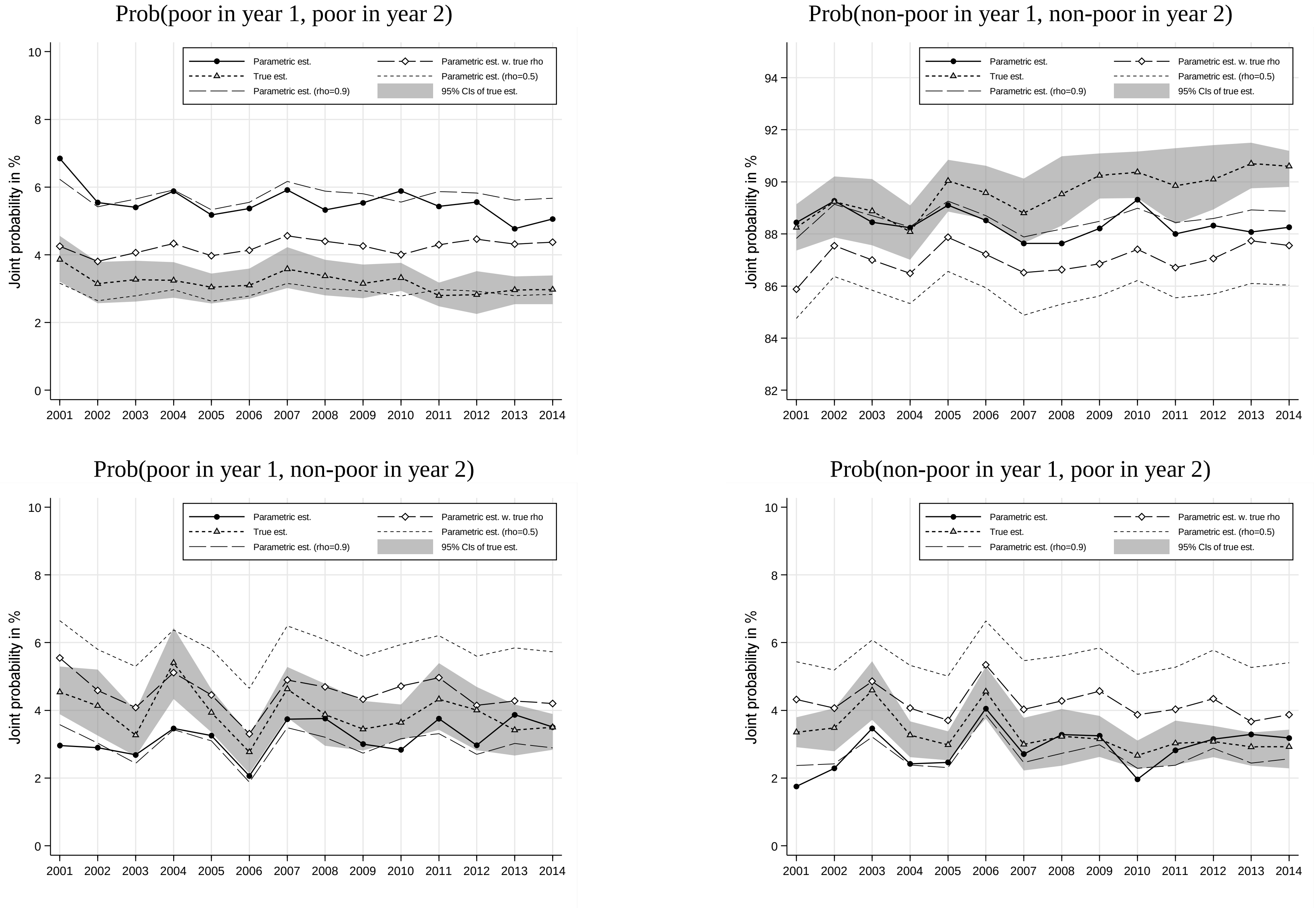
Prob(non-poor in year 1, poor in year 2)



20. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

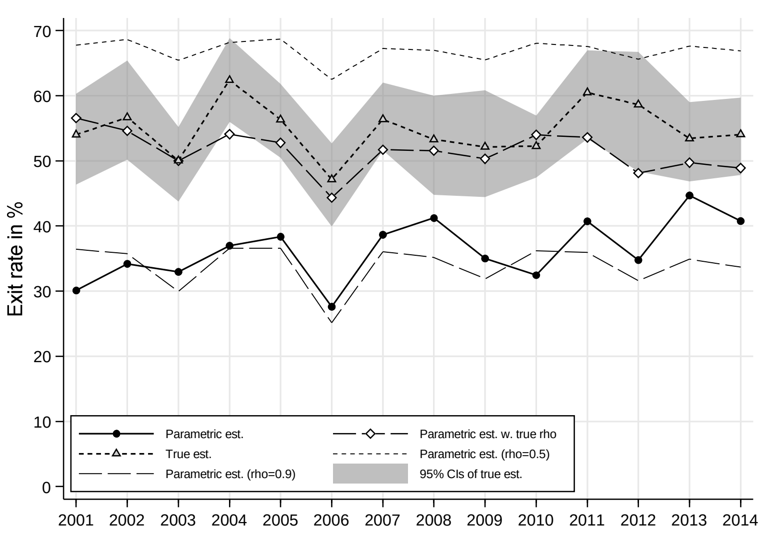


21. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

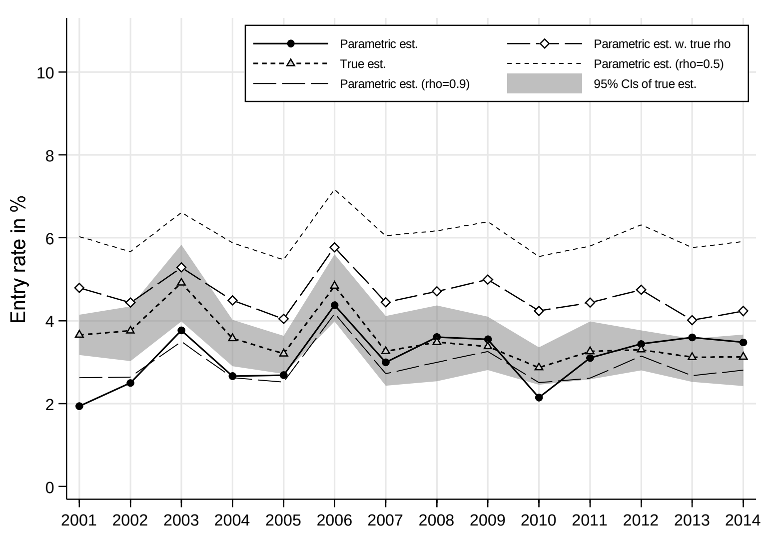


21. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

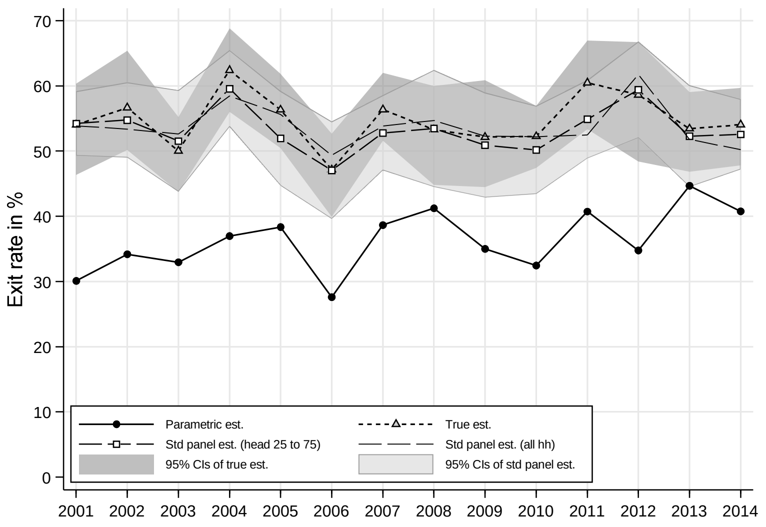
Exit rate = Prob(non-poor in year 2 | poor in year 1)



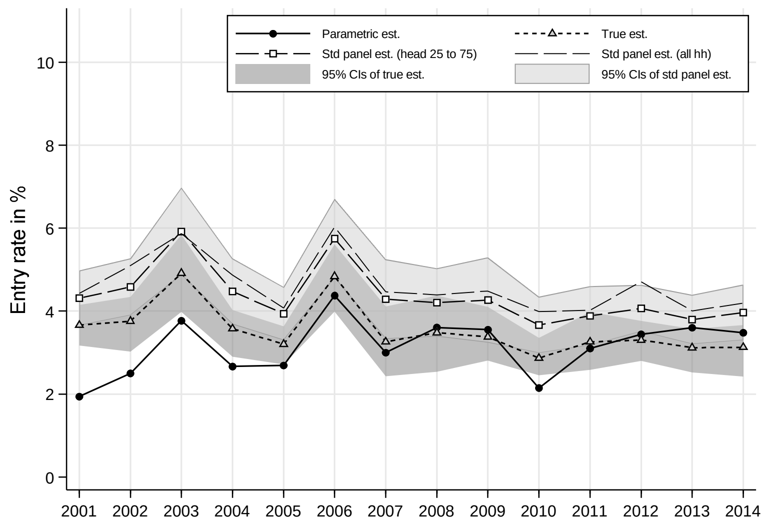
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

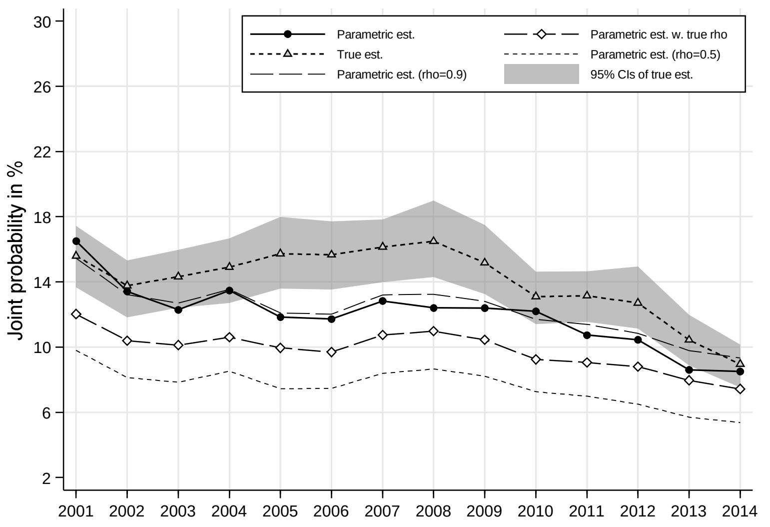


Entry rate = Prob(poor in year 2 | non-poor in year 1)

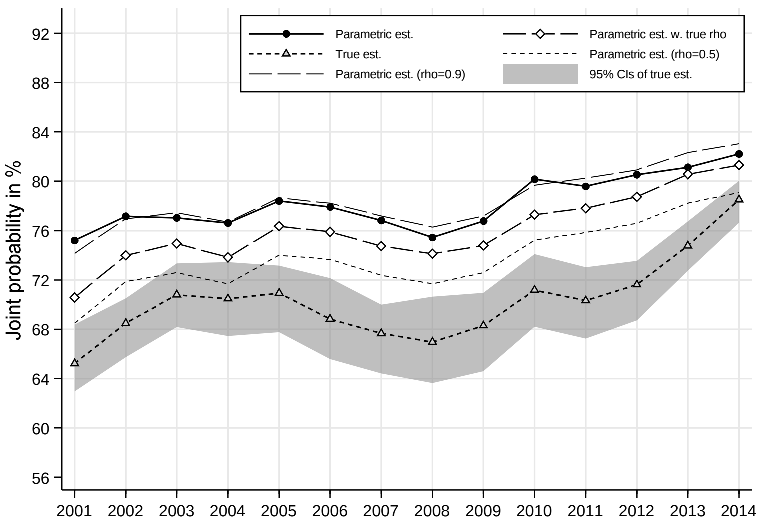


22. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 60+

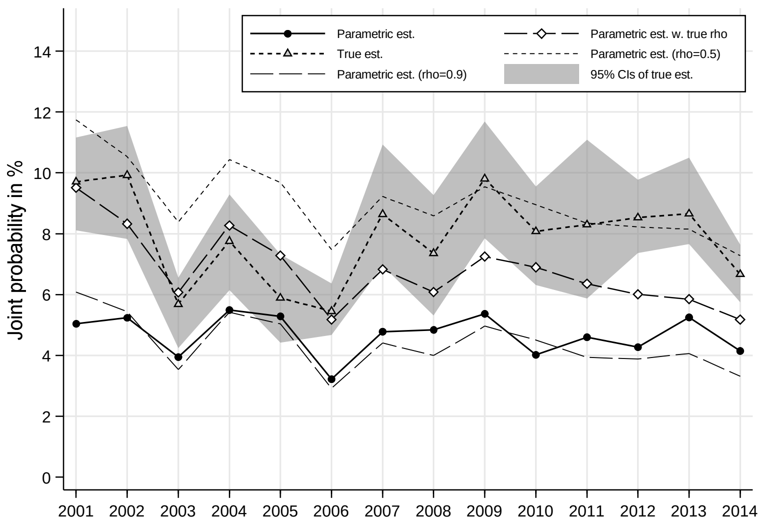
Prob(poor in year 1, poor in year 2)



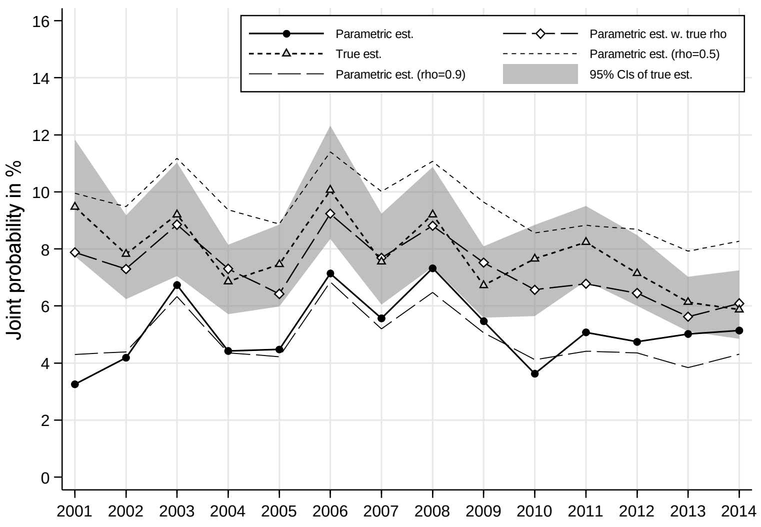
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

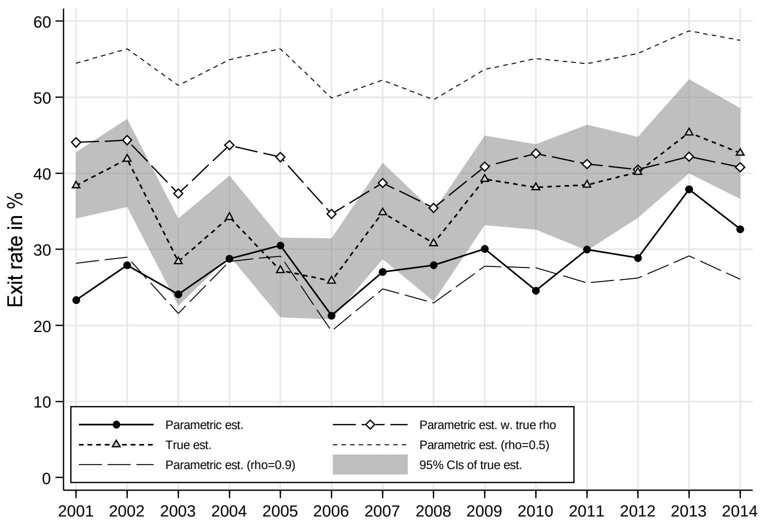


Prob(non-poor in year 1, poor in year 2)

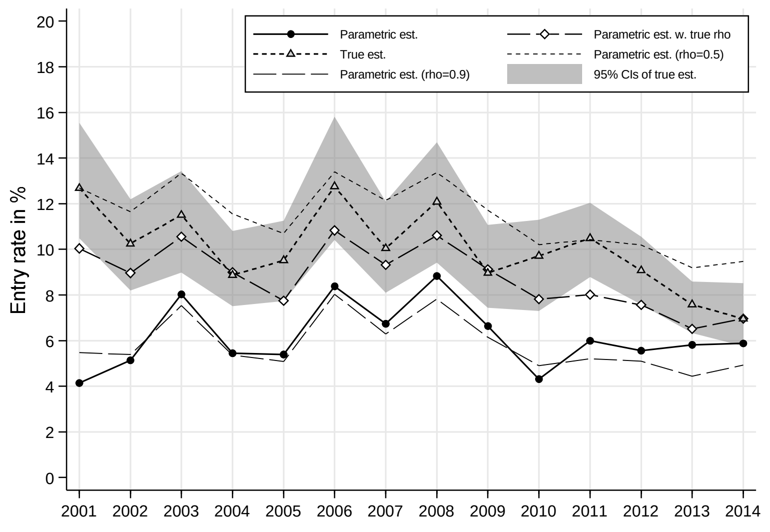


22. HILDA, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 60+

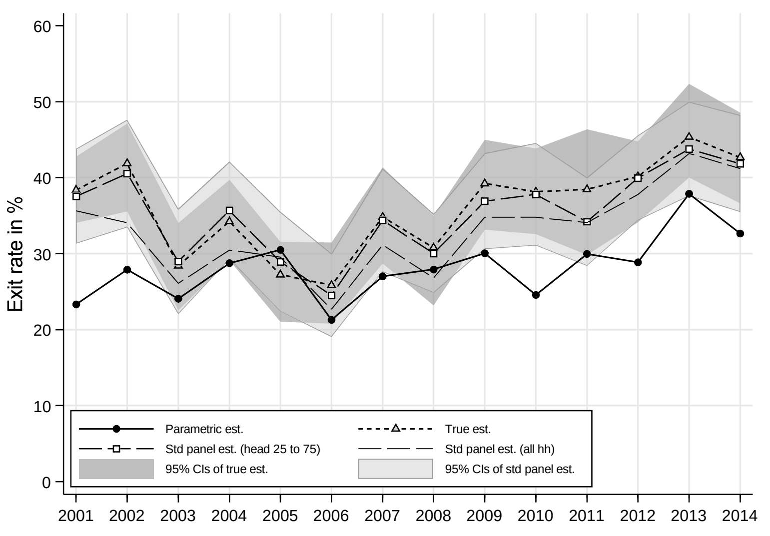
Exit rate = Prob(non-poor in year 2 | poor in year 1)



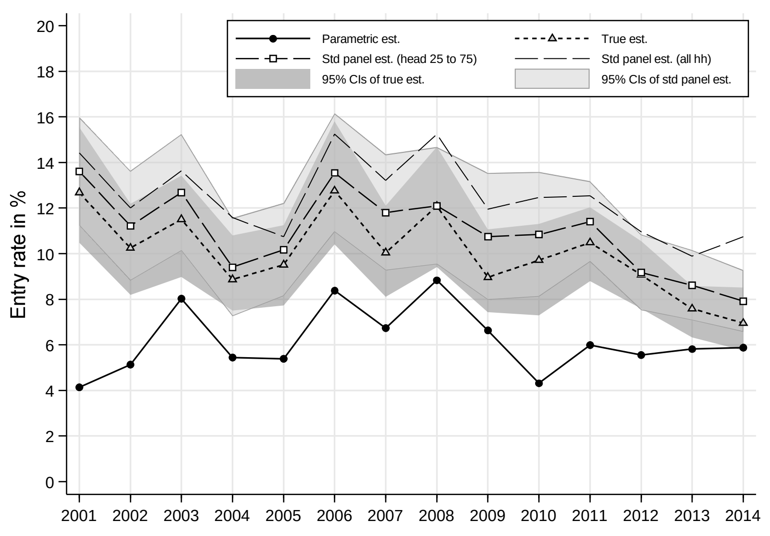
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

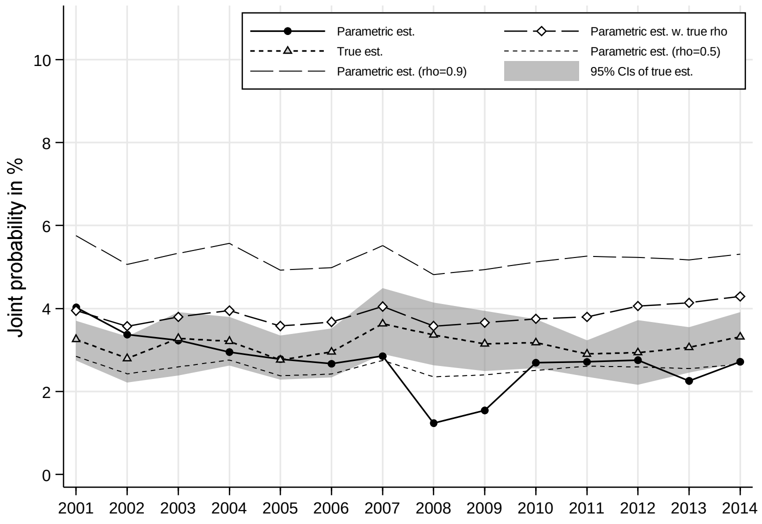


Entry rate = Prob(poor in year 2 | non-poor in year 1)

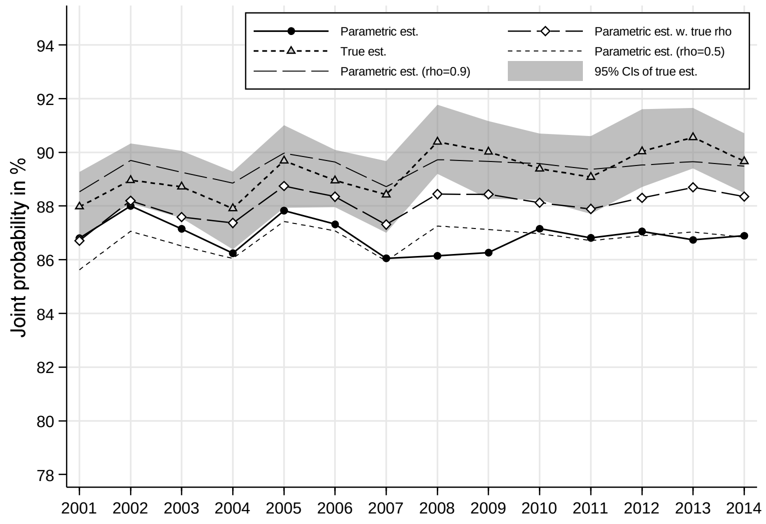


23. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), all individuals

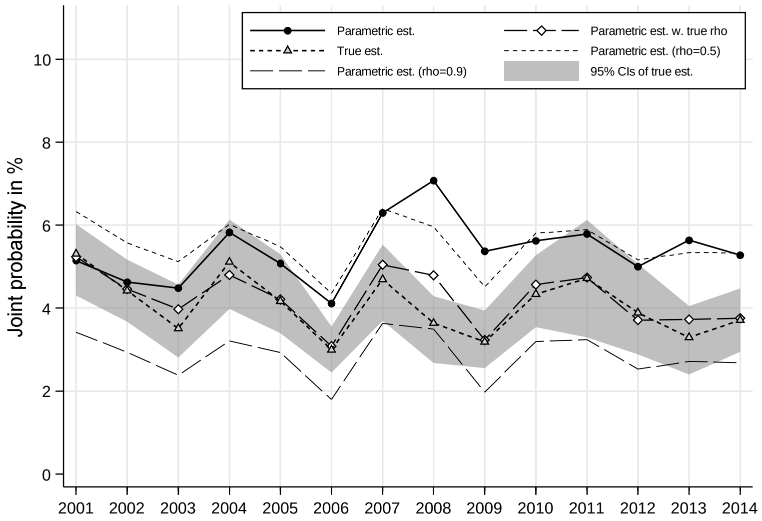
Prob(poor in year 1, poor in year 2)



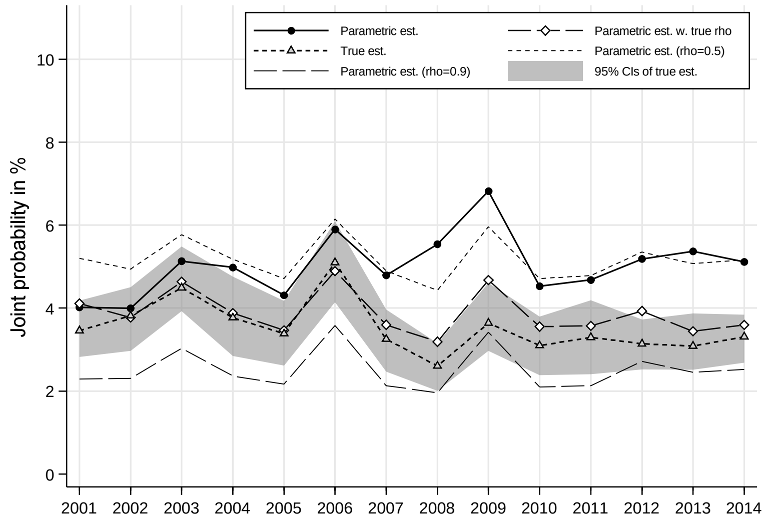
Prob(non-poor in year 1, non-poor in year 2)



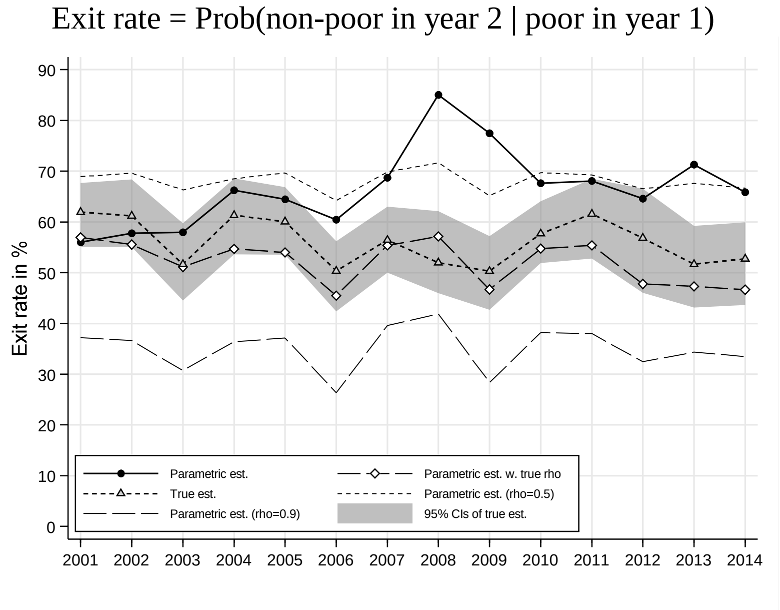
Prob(poor in year 1, non-poor in year 2)

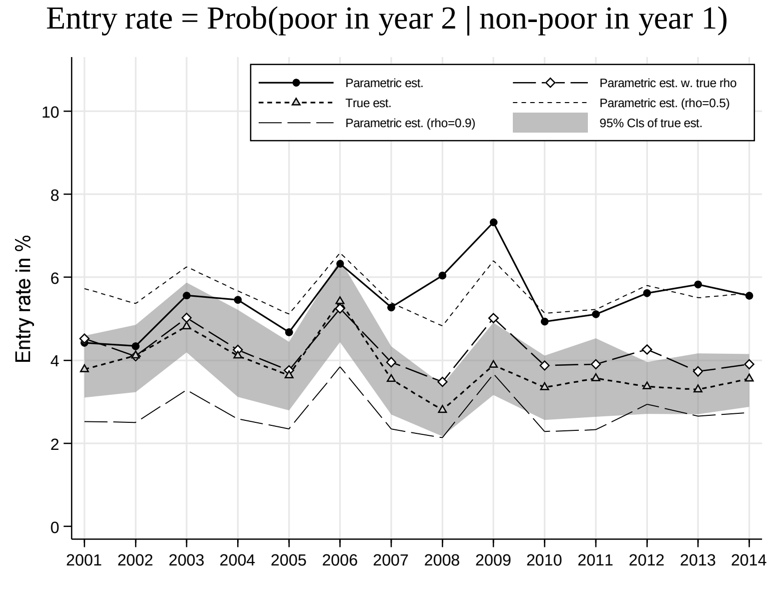


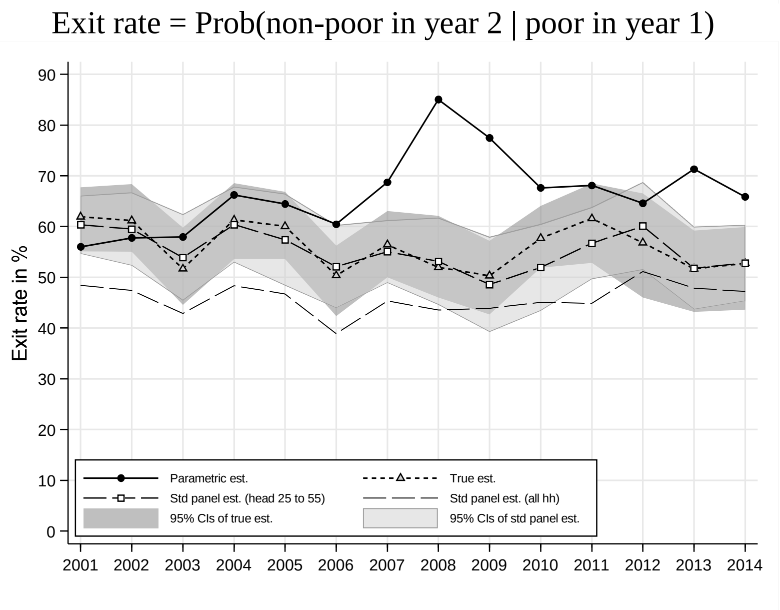
Prob(non-poor in year 1, poor in year 2)

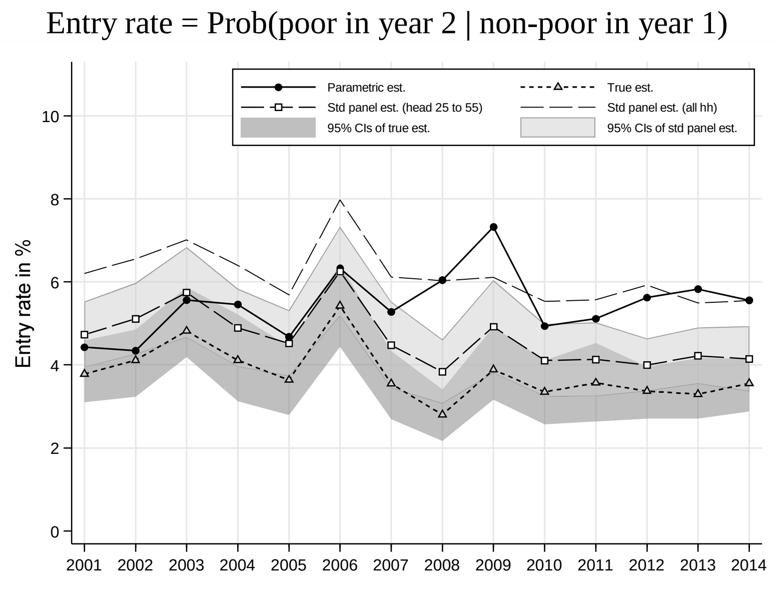


23. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), all individuals



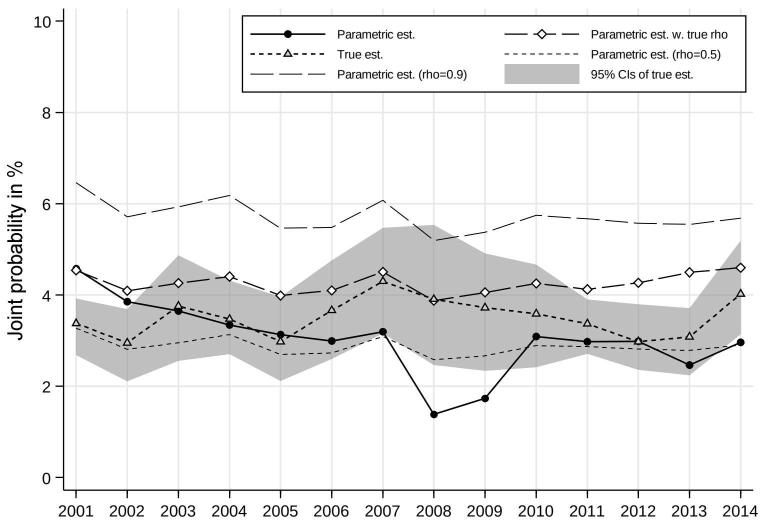




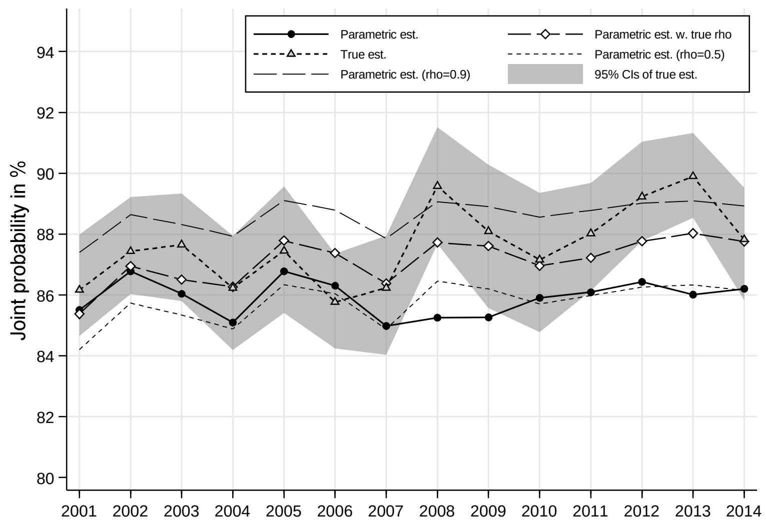


24. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 0–17

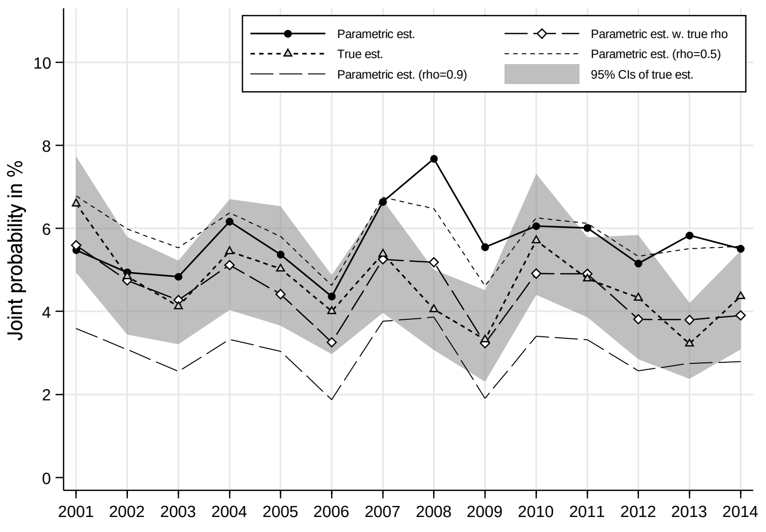
Prob(poor in year 1, poor in year 2)



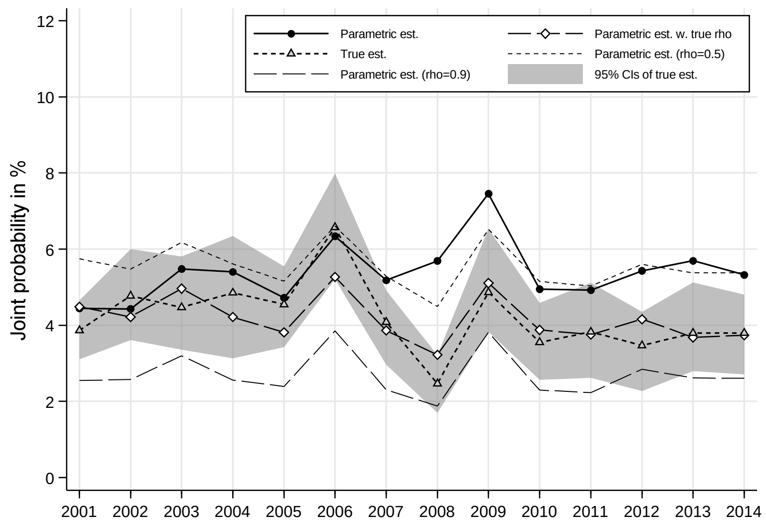
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

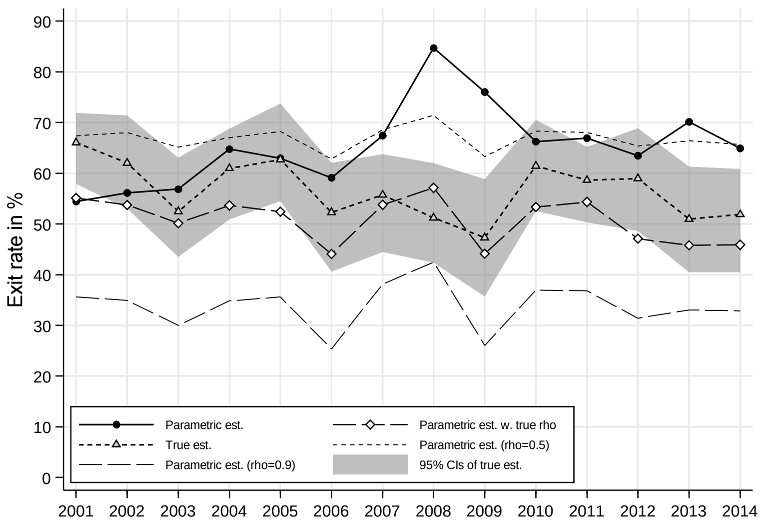


Prob(non-poor in year 1, poor in year 2)

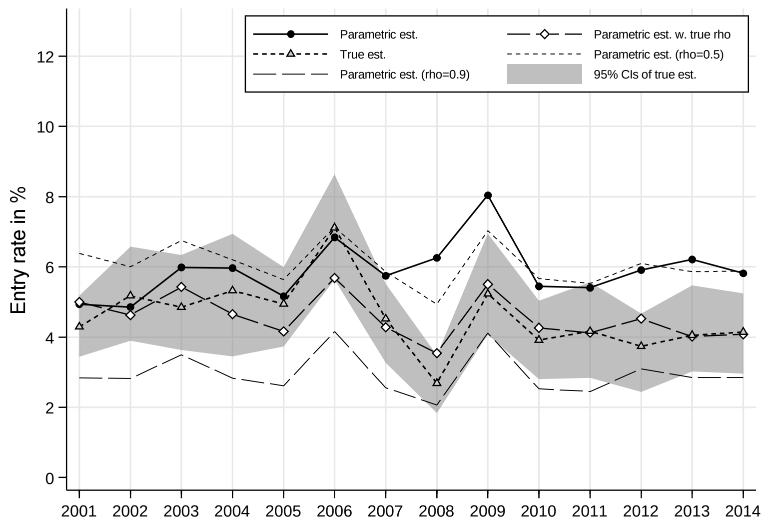


24. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 0–17

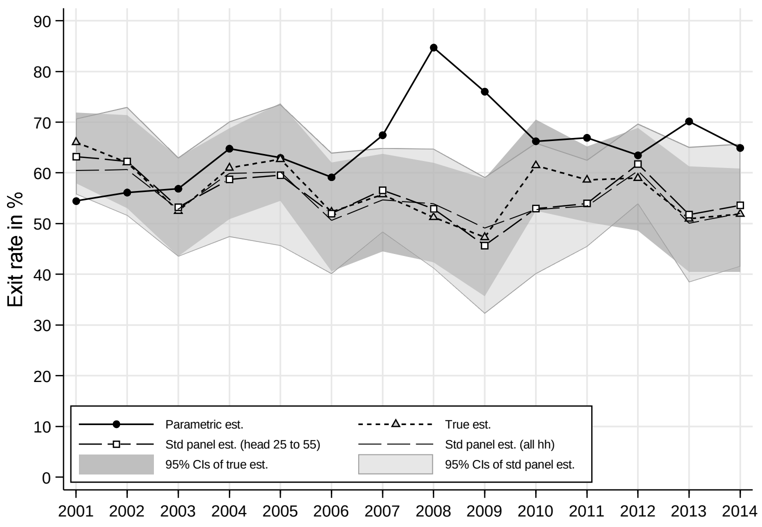
Exit rate = Prob(non-poor in year 2 | poor in year 1)



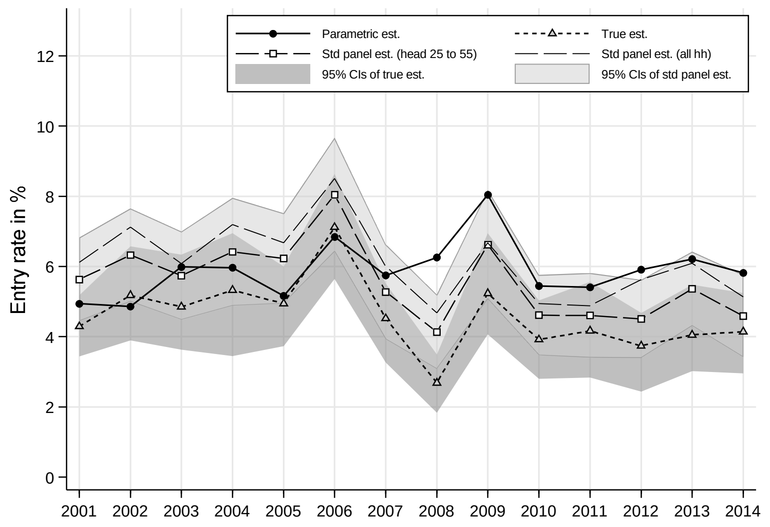
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

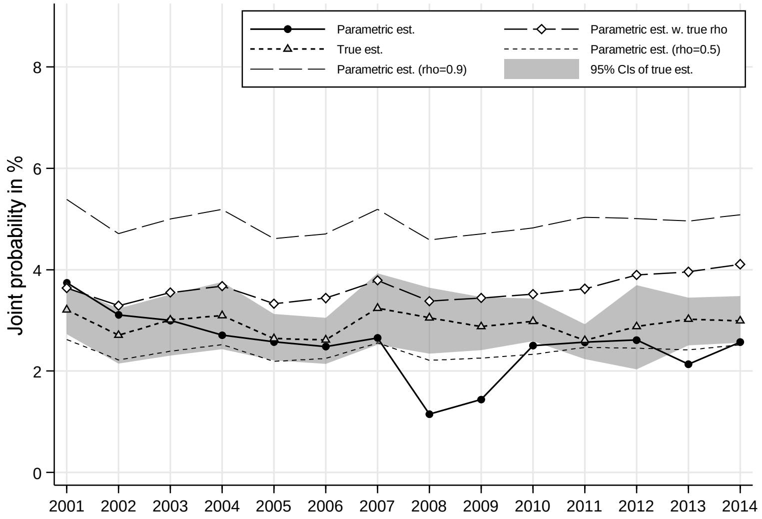


Entry rate = Prob(poor in year 2 | non-poor in year 1)

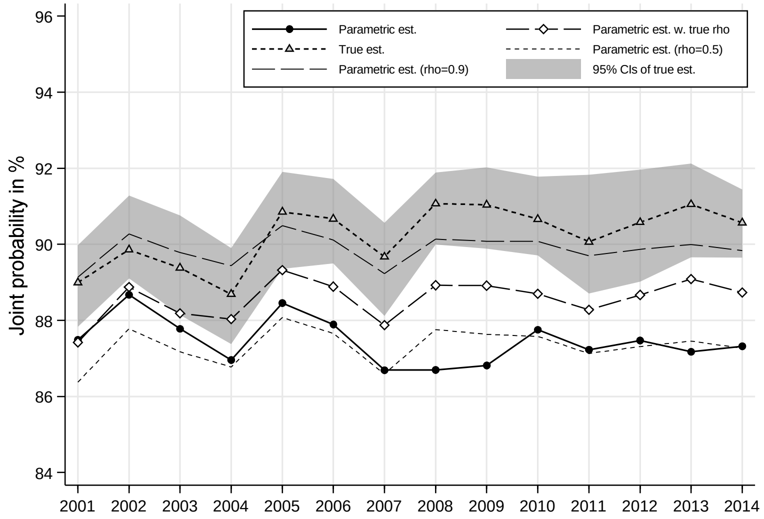


25. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 18–59

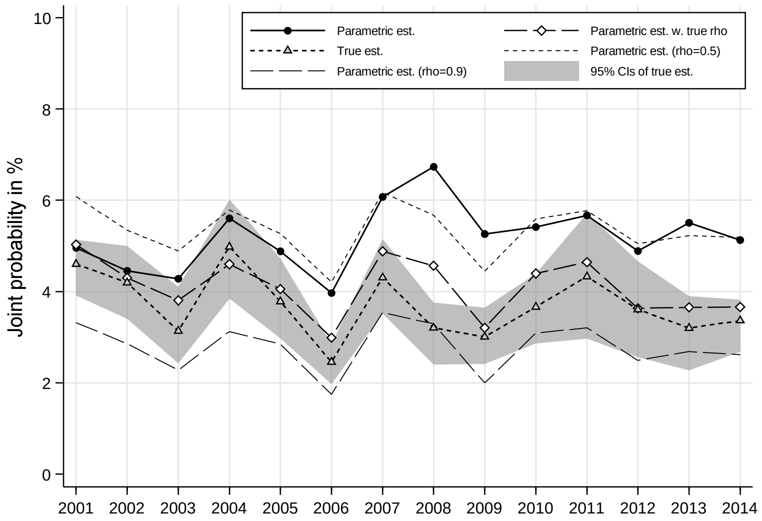
Prob(poor in year 1, poor in year 2)



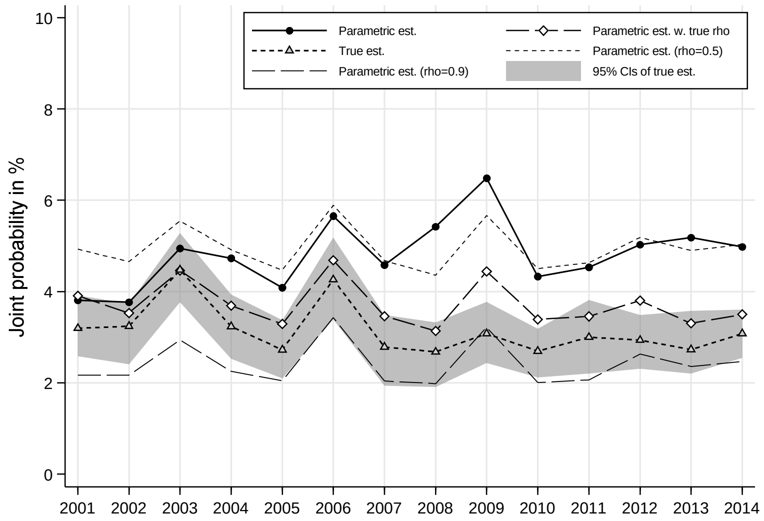
Prob(non-poor in year 1, non-poor in year 2)



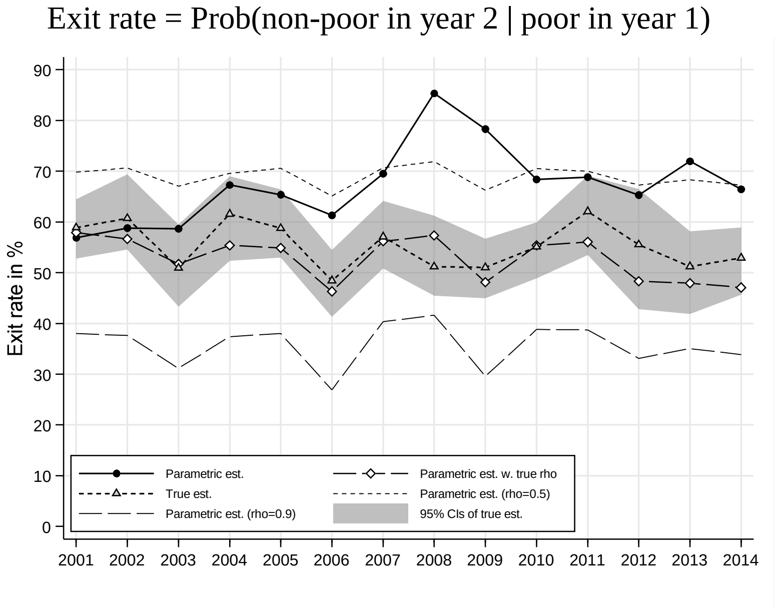
Prob(poor in year 1, non-poor in year 2)

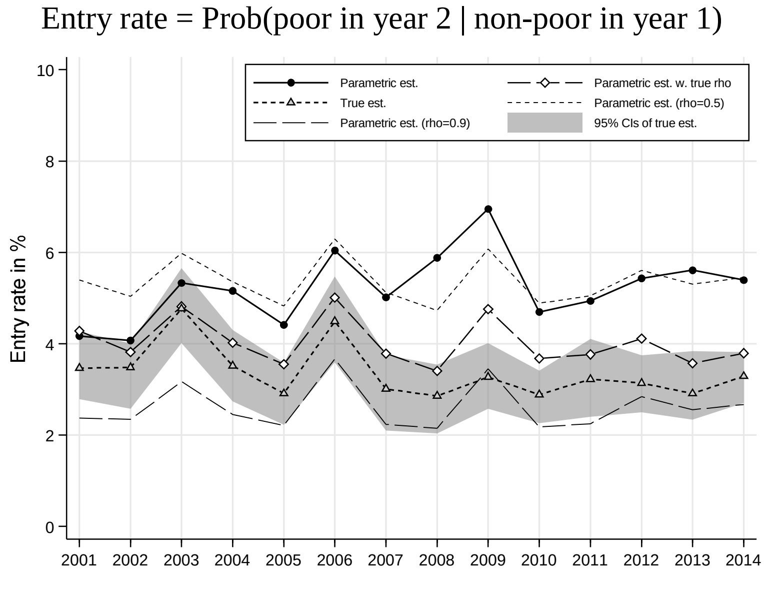


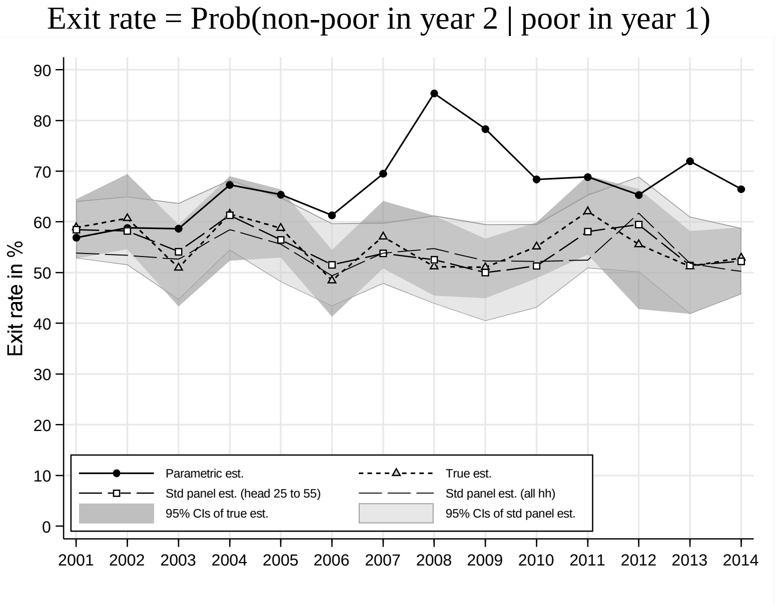
Prob(non-poor in year 1, poor in year 2)

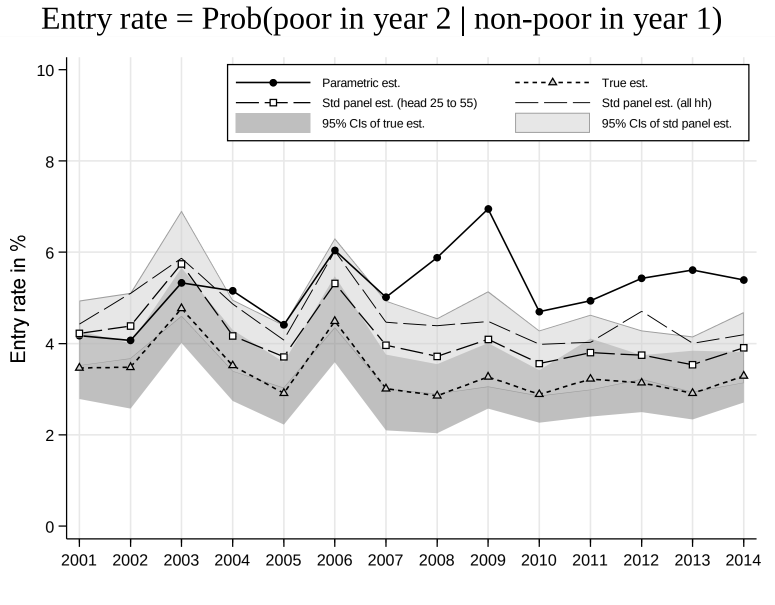


25. HILDA, head 25–55, poverty line 50% median, cohort definition COB*YOB(5), individuals aged 18–59



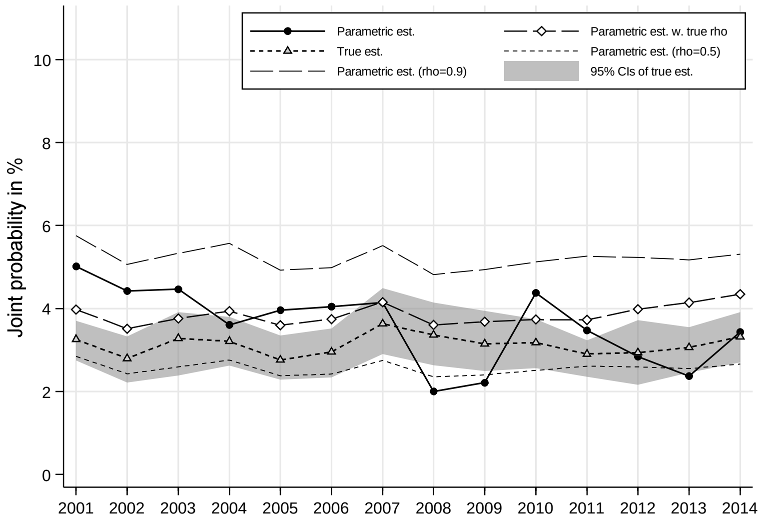




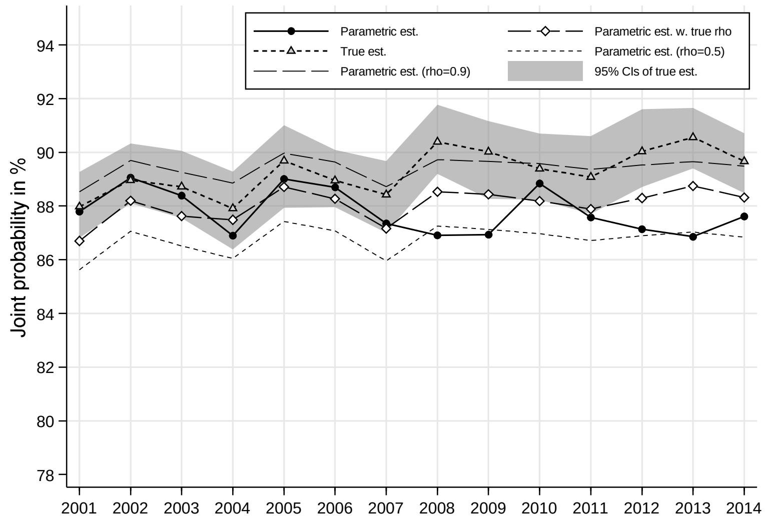


26. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), all individuals

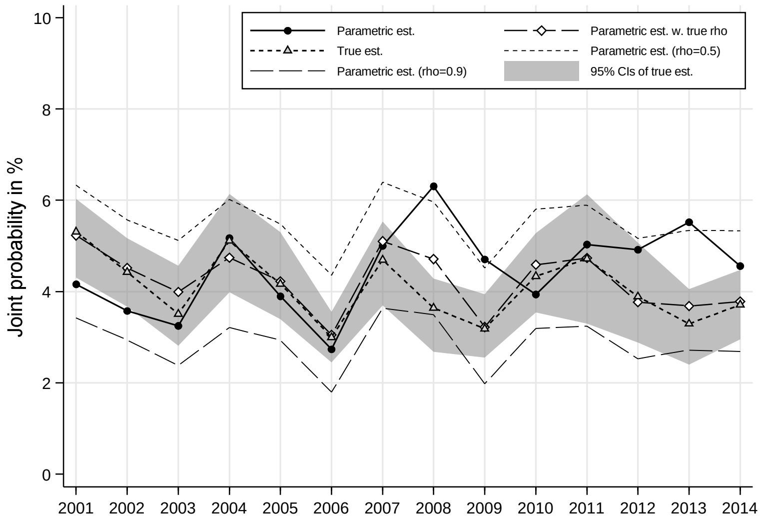
Prob(poor in year 1, poor in year 2)



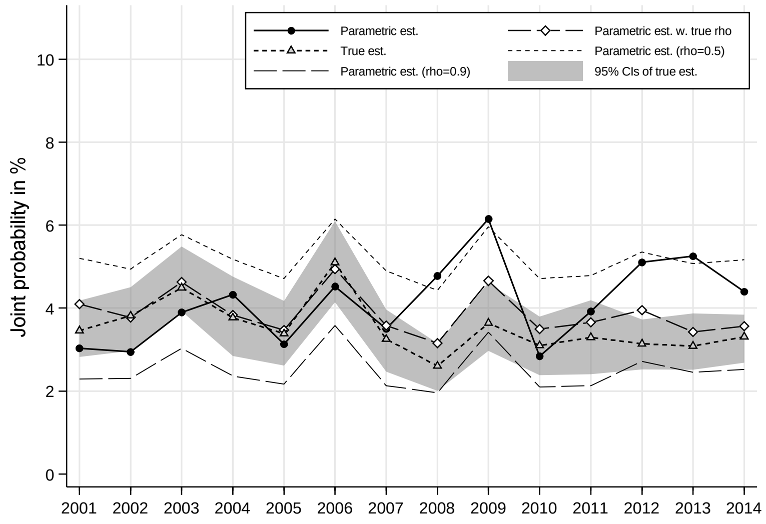
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

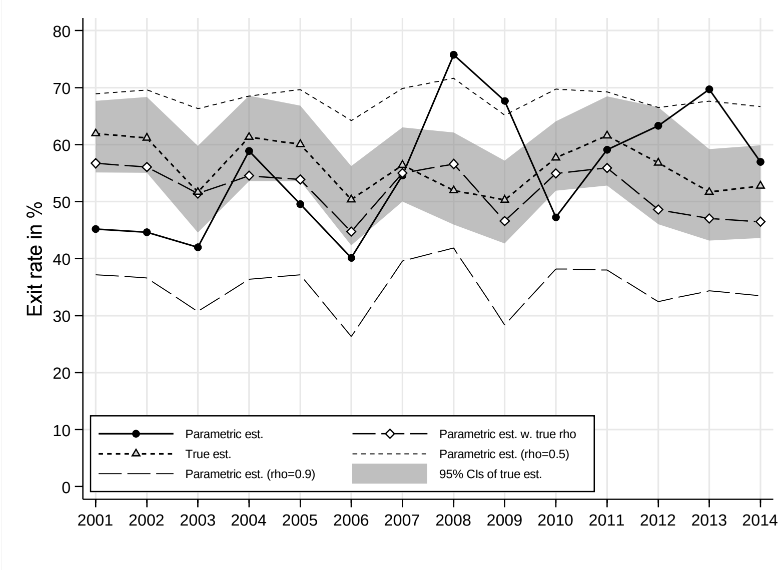


Prob(non-poor in year 1, poor in year 2)

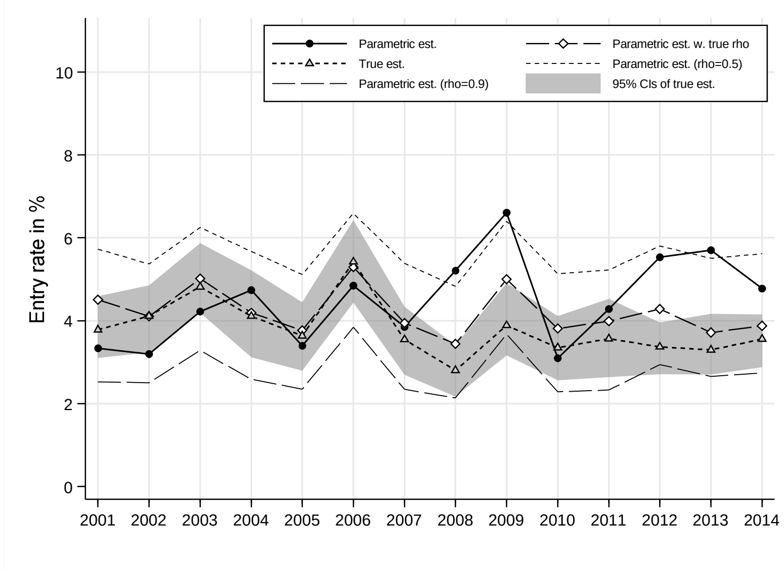


26. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), all individuals

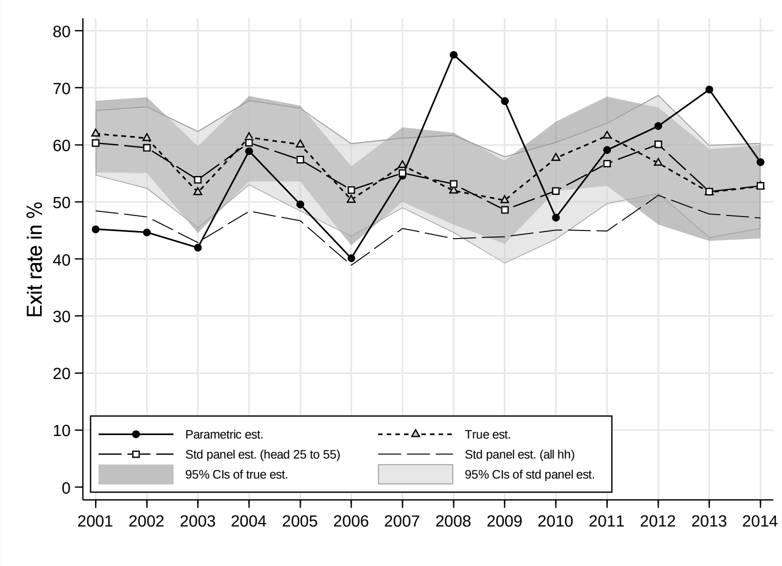
Exit rate = Prob(non-poor in year 2 | poor in year 1)



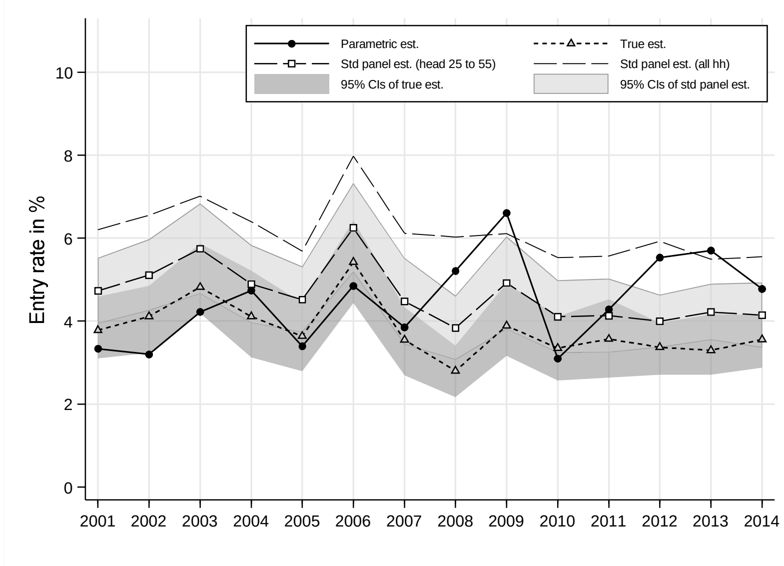
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

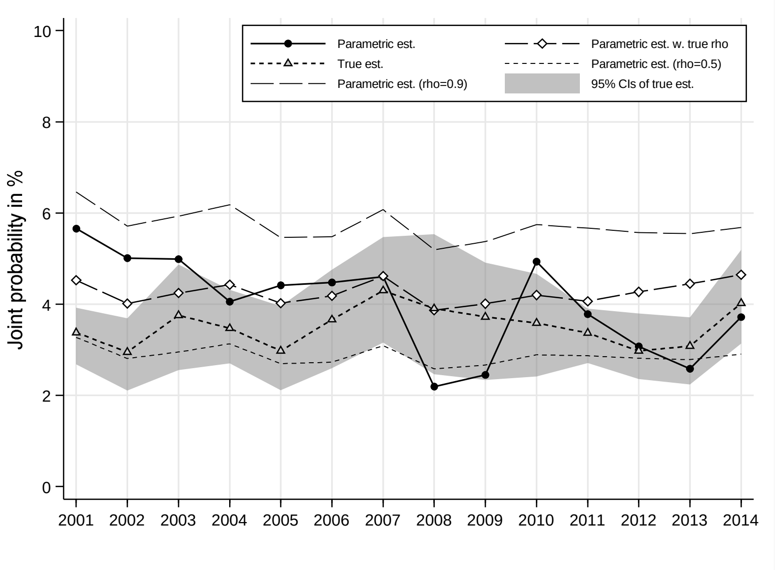


Entry rate = Prob(poor in year 2 | non-poor in year 1)

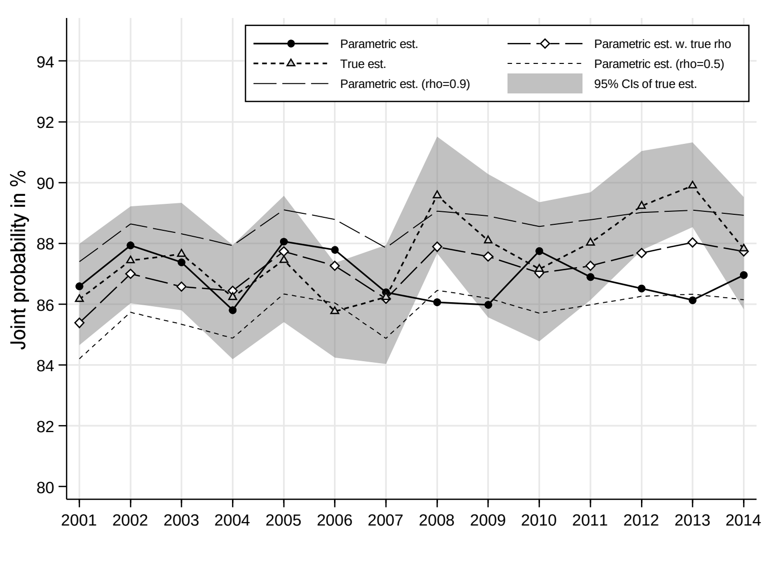


27. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

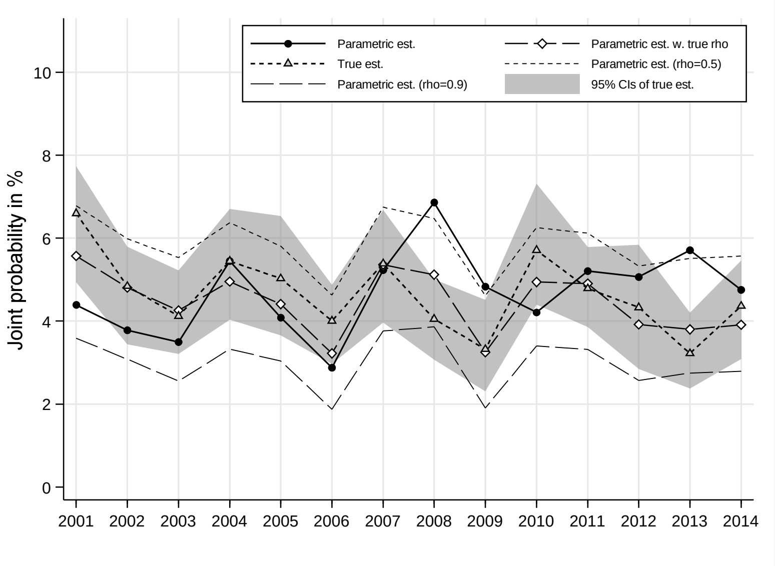
Prob(poor in year 1, poor in year 2)



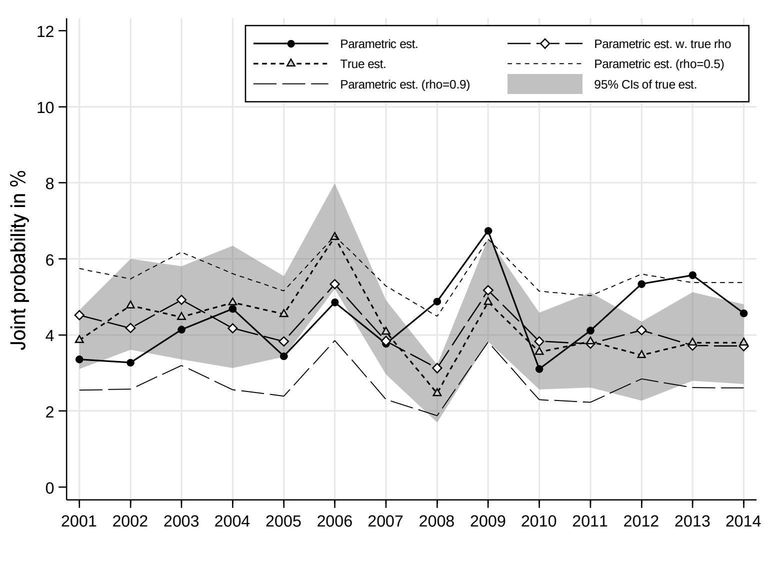
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

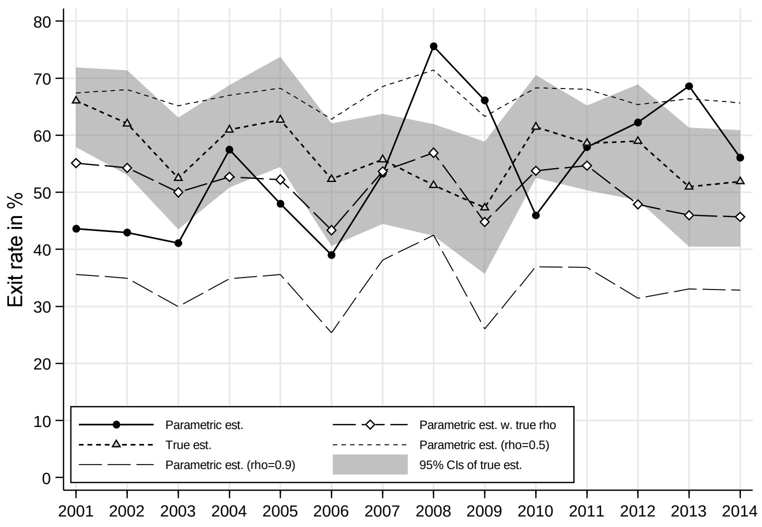


Prob(non-poor in year 1, poor in year 2)

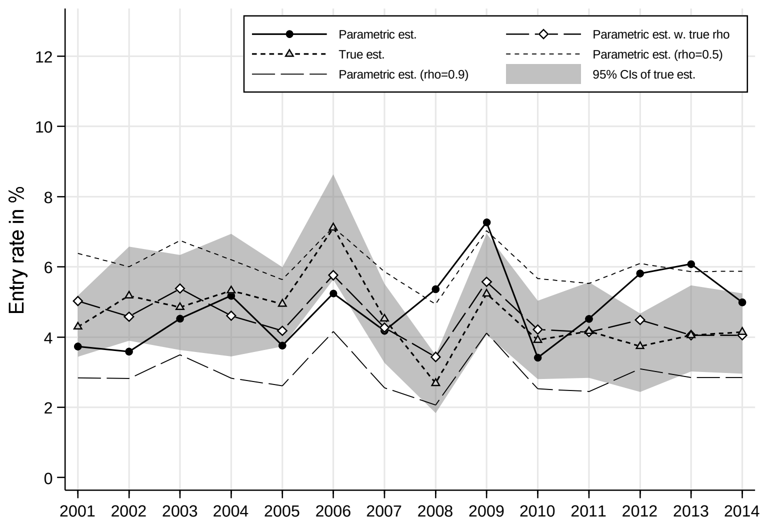


27. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

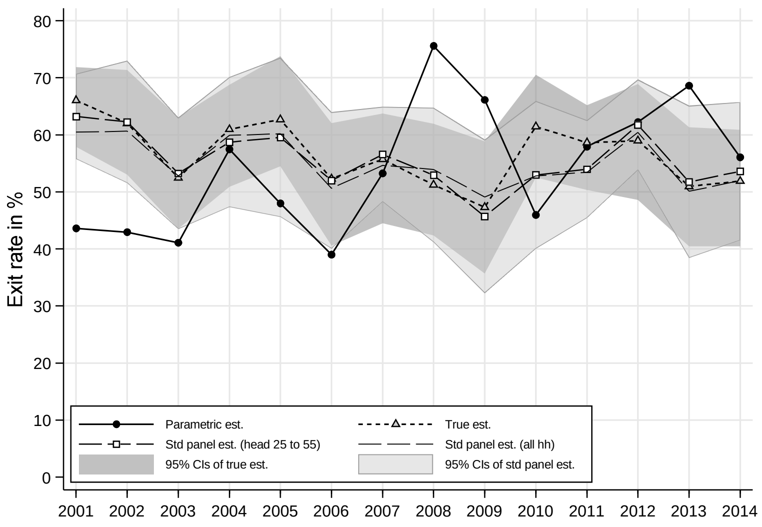
Exit rate = Prob(non-poor in year 2 | poor in year 1)



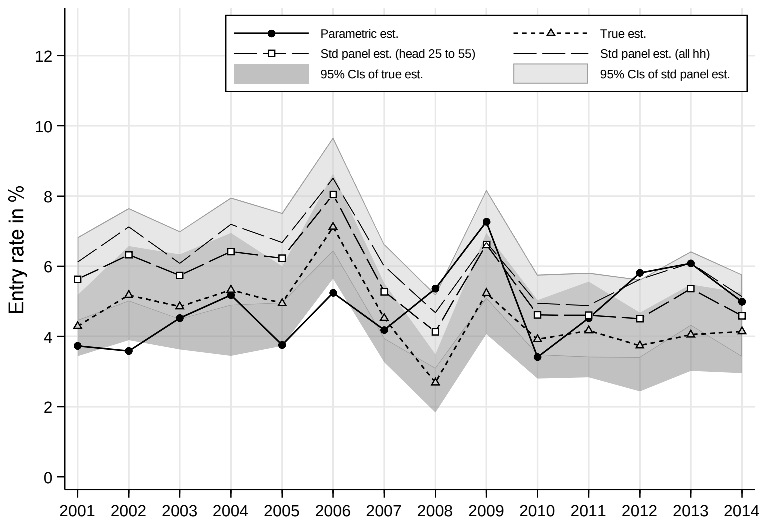
Entry rate = Prob(poor in year 2 | non-poor in year 1)



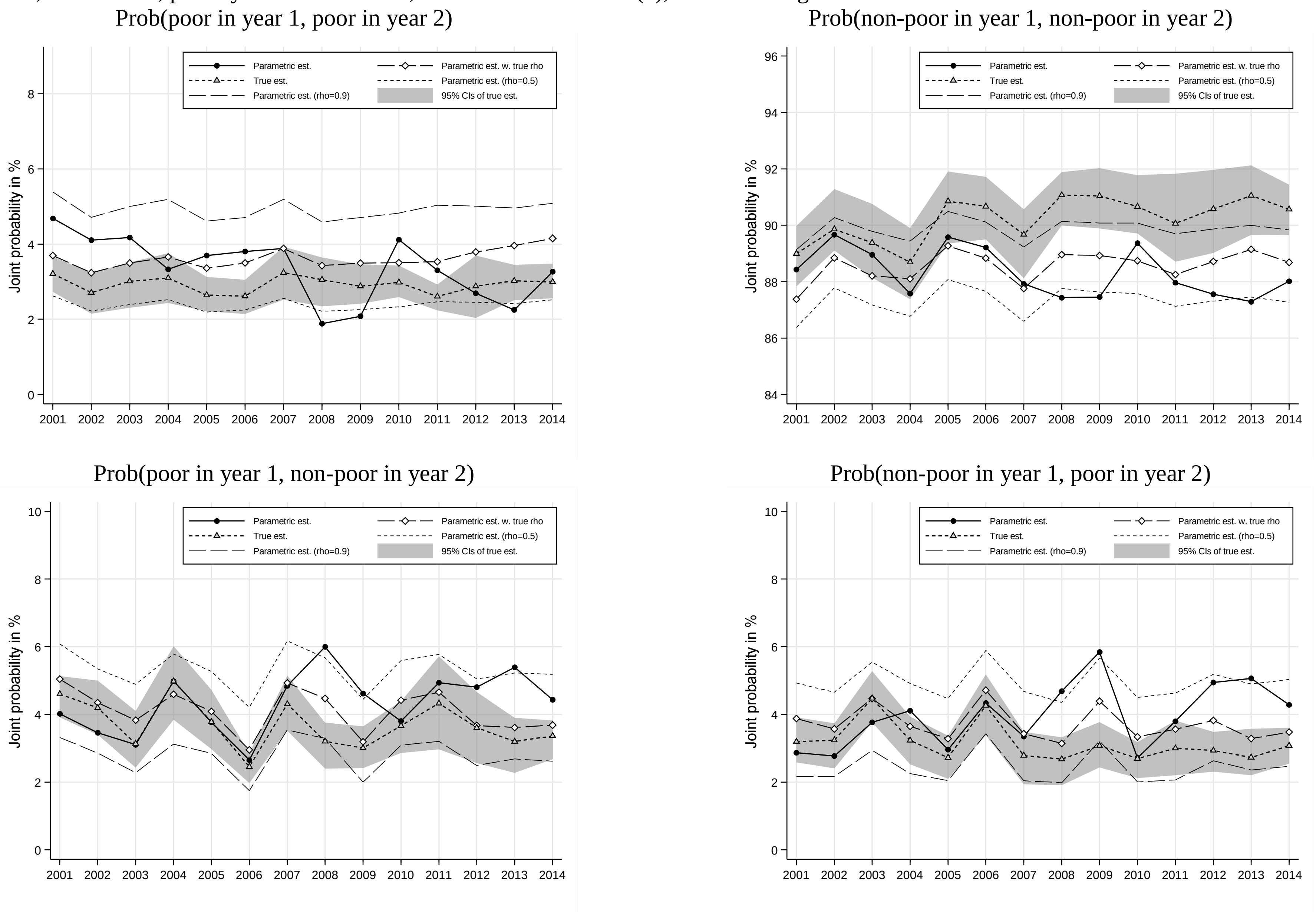
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

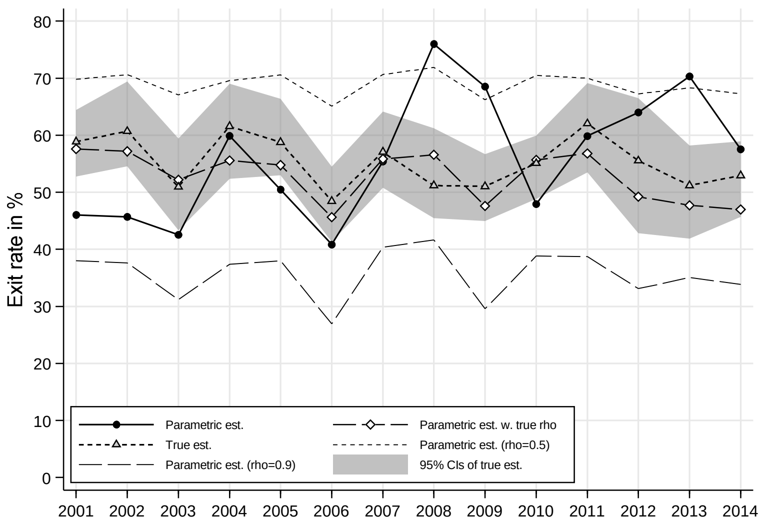


28. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

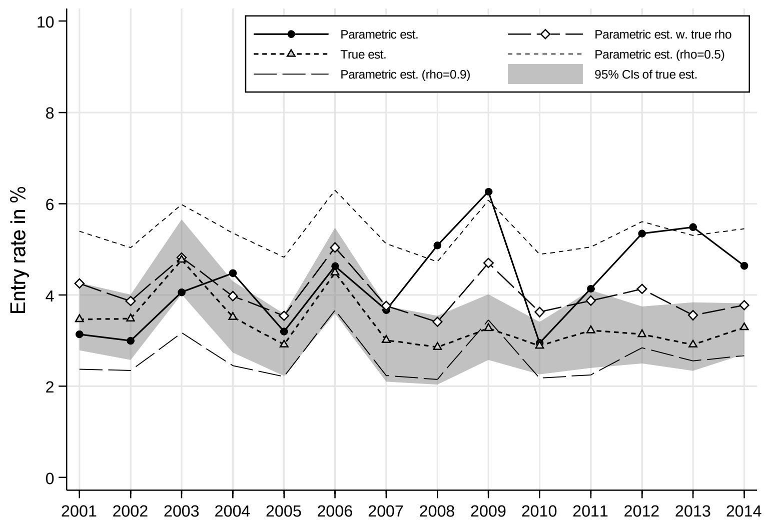


28. HILDA, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

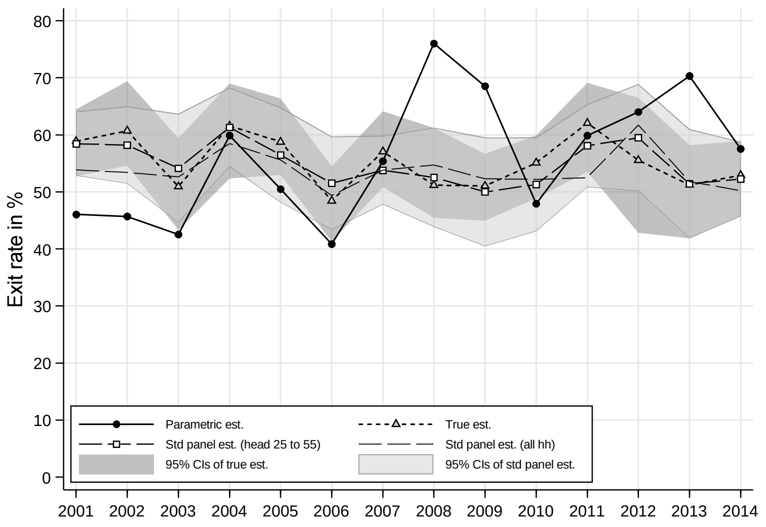
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

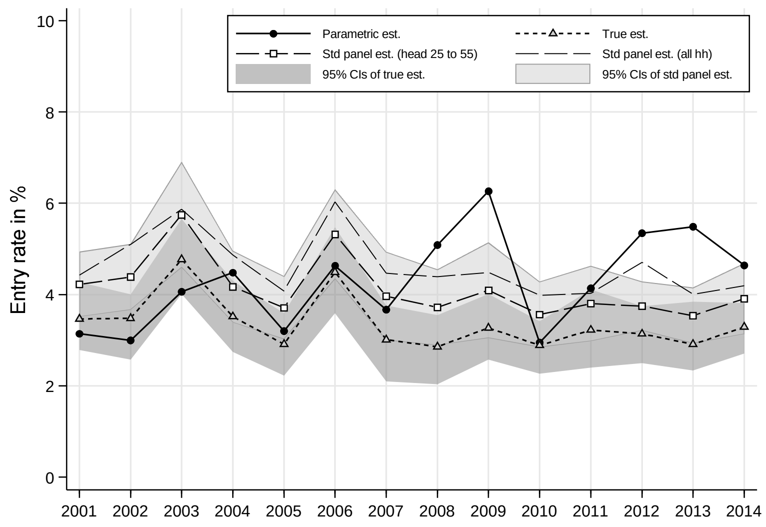


Table B1.1 Estimated coefficients of the income model (household head aged 25–75, household equivalised disposable income)

	1991		1992		1993		1994		1995		1996	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.168*	0.096	-0.054	0.095	-0.088	0.099	-0.197**	0.099	-0.078	0.124	-0.152	0.107
1920 cohort	-0.115**	0.053	-0.054	0.058	0.004	0.054	-0.046	0.066	-0.027	0.072	-0.042	0.077
1925 cohort	0.078	0.061	-0.039	0.059	-0.015	0.057	0.091	0.071	0.107	0.078	-0.031	0.072
1930 cohort	0.162**	0.066	0.082	0.079	0.127*	0.071	0.065	0.09	0.178*	0.101	0.165*	0.095
1935 cohort	0.174***	0.053	0.152**	0.073	0.133**	0.055	0.250***	0.071	0.189***	0.073	0.309***	0.083
1940 cohort	0.185***	0.057	0.253***	0.063	0.216***	0.056	0.264***	0.064	0.267***	0.083	0.309***	0.07
1945 cohort	0.081	0.053	0.078	0.065	0.086*	0.05	0.229***	0.066	0.230***	0.072	0.146*	0.081
1950 cohort	0.012	0.057	-0.033	0.062	-0.015	0.051	0.096	0.066	0.039	0.067	0.02	0.076
1955 cohort	-0.062	0.053	-0.015	0.059	-0.016	0.053	0.079	0.064	0.097	0.066	0.077	0.067
Non-white	-0.009	0.095	-0.146**	0.066	-0.196***	0.067	-0.255***	0.08	0.003	0.08	-0.271***	0.093
No edu. qual.	-0.112*	0.058	-0.028	0.054	-0.024	0.053	-0.048	0.056	-0.134**	0.061	-0.173***	0.06
O-level	0.078	0.058	0.159***	0.06	0.129**	0.058	0.113*	0.062	-0.008	0.072	0.087	0.065
A-level	0.134**	0.066	0.305***	0.067	0.259***	0.065	0.171**	0.069	0.142**	0.066	0.179***	0.068
Other higher	0.231***	0.059	0.318***	0.056	0.301***	0.055	0.239***	0.058	0.217***	0.058	0.192***	0.061
Degree (1st&higher)	0.386***	0.066	0.578***	0.072	0.583***	0.067	0.494***	0.068	0.426***	0.076	0.437***	0.073
female & No edu. qual.	-0.111	0.099	-0.124	0.09	-0.057	0.091	0.036	0.081	0.008	0.092	-0.014	0.094
female & O-level	-0.02	0.104	-0.134	0.098	-0.113	0.104	0.074	0.092	0.032	0.108	0.012	0.098
female & A-level	-0.09	0.124	-0.235**	0.12	0.042	0.158	-0.144	0.16	-0.114	0.124	-0.052	0.149
female & Other higher	-0.042	0.111	-0.1	0.101	-0.102	0.098	0.088	0.088	0.05	0.098	0.014	0.093
female & Degree (1st&higher)	0.184	0.122	-0.068	0.128	0.004	0.116	0.106	0.103	0.094	0.127	0.105	0.121
female & 1920 cohort	0.215**	0.084	0.061	0.081	-0.04	0.085	0.069	0.103	0.02	0.116	0.13	0.121
female & 1925 cohort	0.07	0.105	0.172*	0.093	0.077	0.095	0.044	0.113	-0.073	0.127	0.176	0.118
female & 1930 cohort	0.221**	0.111	0.039	0.127	-0.093	0.103	0.178	0.129	-0.053	0.142	0.007	0.142
female & 1935 cohort	0.260***	0.092	0.156	0.138	0.015	0.107	0.038	0.135	0.074	0.135	0.108	0.145
female & 1940 cohort	0.03	0.123	0.114	0.098	-0.119	0.117	0.047	0.134	0.077	0.135	0.052	0.127
female & 1945 cohort	0.206**	0.101	0.258***	0.097	0.138	0.087	0.174*	0.106	0.046	0.122	0.166	0.119
female & 1950 cohort	0.137	0.102	0.146	0.1	0.109	0.093	0.125	0.109	-0.047	0.121	0.304**	0.12
female & 1955 cohort	0.161*	0.089	0.024	0.109	0.108	0.1	-0.024	0.121	-0.082	0.119	0.108	0.109
1965 cohort							0.096	0.075	0.131	0.089	0.150*	0.078
female & 1965 cohort							-0.011	0.114	-0.116	0.132	-0.208*	0.119
1970 cohort												
female & 1970 cohort												
Constant	9.425***	0.059	9.345***	0.064	9.400***	0.058	9.341***	0.069	9.382***	0.071	9.368***	0.066
Sample size	1667		1595		1516		1550		1579		1530	
R2 (adj.)	0.190		0.201		0.226		0.196		0.175		0.198	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are “other qualification” for education and the 1960 birth cohort.

Table B1.1 (continued)

	1997		1998		1999		2000		2001		2002	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.099	0.097	-0.08	0.112	-0.13	0.118	0	0.097	0.101	0.122	-0.261**	0.116
1920 cohort	-0.074	0.093										
1925 cohort	0.012	0.08	-0.005	0.067	-0.053	0.071	-0.044	0.068	0.01	0.082		
1930 cohort	0.084	0.082	0.156**	0.079	0.109	0.078	-0.007	0.066			-0.115*	0.059
1935 cohort	0.182**	0.079	0.198**	0.085	0.099	0.082	0.018	0.071	0.077	0.065	-0.097	0.069
1940 cohort	0.282***	0.071	0.288***	0.069	0.194***	0.071	0.123*	0.066	0.224***	0.063	0.135**	0.058
1945 cohort	0.308***	0.059	0.340***	0.073	0.251***	0.077	0.320***	0.061	0.277***	0.068	0.177**	0.07
1950 cohort	0.135*	0.073	0.143*	0.075	0.131**	0.066	0.152***	0.058	0.179***	0.065	0.153***	0.057
1955 cohort	0.081	0.058	0.05	0.065	0.165***	0.064	0.106*	0.056	0.113*	0.061	-0.024	0.061
Non-white	-0.179**	0.078	-0.219***	0.069	-0.215***	0.068	-0.079	0.069	-0.064	0.081	-0.165**	0.076
No edu. qual.	-0.178***	0.065	-0.128**	0.057	-0.041	0.075	0.01	0.063	-0.052	0.069	-0.141**	0.066
O-level	0.064	0.063	0.035	0.059	0.083	0.086	0.03	0.068	0.062	0.07	-0.009	0.066
A-level	0.131*	0.067	0.160**	0.07	0.226**	0.089	0.134*	0.072	0.115	0.08	0.115*	0.067
Other higher	0.172***	0.061	0.194***	0.056	0.209***	0.077	0.231***	0.061	0.198***	0.065	0.139**	0.056
Degree (1st&higher)	0.407***	0.07	0.440***	0.074	0.299***	0.096	0.462***	0.069	0.396***	0.075	0.414***	0.067
female & No edu. qual.	0.11	0.094	0.023	0.09	0.015	0.105	-0.058	0.092	0.015	0.12	0.073	0.097
female & O-level	0.036	0.095	-0.003	0.105	0.031	0.114	0.038	0.099	-0.023	0.12	0.13	0.103
female & A-level	-0.015	0.134	0.079	0.123	0.027	0.125	-0.077	0.124	0.018	0.133	-0.01	0.12
female & Other higher	0.056	0.091	0.028	0.102	-0.079	0.107	-0.032	0.092	-0.044	0.118	0.119	0.098
female & Degree (1st&higher)	0.033	0.159	0.017	0.11	0.303**	0.128	0.055	0.123	0.07	0.126	0.131	0.1
female & 1920 cohort	-0.055	0.123										
female & 1925 cohort	-0.083	0.132	-0.045	0.106	0.053	0.118	-0.035	0.109	-0.275**	0.112		
female & 1930 cohort	-0.012	0.143	-0.199	0.146	-0.112	0.126	-0.061	0.114			0.131	0.103
female & 1935 cohort	0.023	0.123	0.084	0.131	0.024	0.135	0.087	0.127	-0.118	0.1	0.278**	0.116
female & 1940 cohort	-0.12	0.125	-0.059	0.119	0.059	0.129	0.126	0.115	-0.263**	0.115	0.116	0.119
female & 1945 cohort	-0.019	0.098	0.008	0.117	0.068	0.11	-0.189*	0.099	-0.275**	0.115	0.15	0.117
female & 1950 cohort	0.011	0.11	-0.075	0.119	0.105	0.106	-0.099	0.113	-0.165	0.102	0	0.102
female & 1955 cohort	-0.073	0.11	-0.071	0.125	-0.114	0.109	-0.235*	0.136	-0.118	0.118	0.329***	0.104
1965 cohort	0.078	0.062	0.098	0.069	0.115	0.074	0.129**	0.063	0.126**	0.063	-0.015	0.065
female & 1965 cohort	-0.246**	0.097	-0.233**	0.113	-0.138	0.106	-0.254**	0.101	-0.197**	0.093	0.11	0.109
1970 cohort							0.138**	0.06	0.046	0.07	-0.004	0.061
female & 1970 cohort							-0.045	0.102	-0.154	0.101	0.056	0.109
Constant	9.419***	0.066	9.458***	0.066	9.440***	0.082	9.471***	0.064	9.511***	0.075	9.685***	0.068
Sample size	1564		1507		1423		1467		1434		1354	
R2 (adj.)	0.177		0.211		0.145		0.175		0.140		0.223	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are “other qualification” for education and the 1960 birth cohort.

Table B1.1 (continued)

	2003		2004		2005		2006		2007		2008	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.163	0.11	0.075	0.105	0.094	0.113	-0.007	0.115	0.191	0.162	-0.036	0.161
1920 cohort												
1925 cohort												
1930 cohort	-0.144**	0.066	0.007	0.084	-0.120*	0.071	0.089	0.074				
1935 cohort	0.027	0.073	0.033	0.081	-0.034	0.099	-0.024	0.073	0.006	0.081	-0.025	0.079
1940 cohort	-0.009	0.07	0.08	0.078	-0.019	0.07	0.064	0.069	0.054	0.081	-0.005	0.077
1945 cohort	0.173**	0.074	0.147*	0.081	0.111	0.081	0.180**	0.075	0.196**	0.081	0.032	0.089
1950 cohort	0.083	0.072	0.139	0.085	0.083	0.064	0.078	0.066	0.205**	0.084	0.198**	0.089
1955 cohort	0.065	0.062	0.139*	0.076	-0.116*	0.07	0.105	0.066	0.180**	0.079	0.023	0.082
Non-white	-0.160**	0.08	-0.114	0.077	-0.127	0.098	0.036	0.078	-0.12	0.112	-0.146**	0.069
No edu. qual.	-0.005	0.077	-0.114	0.073	-0.035	0.089	-0.085	0.086	0.037	0.115	-0.073	0.101
O-level	0.06	0.08	0.042	0.074	0.126	0.085	0.111	0.081	0.165	0.104	0.085	0.084
A-level	0.033	0.09	0.262***	0.067	0.263***	0.087	0.155*	0.094	0.339***	0.115	0.190**	0.091
Other higher	0.159**	0.074	0.207***	0.061	0.262***	0.077	0.194**	0.076	0.264***	0.097	0.184**	0.079
Degree (1st&higher)	0.374***	0.085	0.476***	0.079	0.548***	0.086	0.436***	0.087	0.515***	0.104	0.524***	0.09
female & No edu. qual.	-0.062	0.105	-0.024	0.109	-0.195	0.121	0.043	0.123	-0.186	0.165	-0.076	0.163
female & O-level	0.102	0.11	0.027	0.11	-0.148	0.123	-0.068	0.119	-0.221	0.16	-0.086	0.151
female & A-level	0.193	0.127	-0.045	0.125	-0.207	0.136	-0.017	0.141	-0.132	0.173	0.036	0.168
female & Other higher	-0.006	0.104	-0.035	0.103	-0.253**	0.115	-0.048	0.11	-0.107	0.149	0.059	0.132
female & Degree (1st&higher)	0.211*	0.116	-0.035	0.12	-0.235*	0.126	0.014	0.121	-0.124	0.165	-0.057	0.152
female & 1920 cohort												
female & 1925 cohort												
female & 1930 cohort	0.064	0.097	-0.163	0.115	-0.026	0.103	-0.118	0.124				
female & 1935 cohort	0.023	0.1	-0.139	0.118	0.144	0.131	0.02	0.111	-0.084	0.118	0.047	0.148
female & 1940 cohort	-0.075	0.118	-0.104	0.147	0.065	0.113	-0.026	0.118	-0.126	0.159	0.166	0.164
female & 1945 cohort	-0.121	0.104	-0.124	0.118	-0.075	0.114	-0.066	0.118	-0.057	0.13	0.133	0.16
female & 1950 cohort	-0.009	0.1	-0.266**	0.129	-0.036	0.099	-0.14	0.125	-0.239*	0.133	-0.124	0.153
female & 1955 cohort	0.032	0.094	-0.211*	0.128	0.15	0.107	0.049	0.099	-0.059	0.123	0.085	0.147
1965 cohort	0.097	0.07	0.037	0.071	-0.042	0.066	0.069	0.069	0.108	0.072	0.042	0.081
female & 1965 cohort	-0.063	0.099	-0.132	0.099	-0.079	0.103	-0.114	0.105	-0.233**	0.117	-0.088	0.153
1970 cohort	0.053	0.066	0.024	0.077	-0.021	0.059	-0.004	0.06	0.121	0.074	0.023	0.07
female & 1970 cohort	-0.088	0.099	-0.203*	0.104	-0.149	0.102	-0.131	0.096	-0.305***	0.115	-0.182	0.134
Constant	9.674***	0.079	9.574***	0.07	9.598***	0.078	9.611***	0.076	9.473***	0.102	9.564***	0.084
Sample size	1341		1312		1250		1315		1236		1232	
R2 (adj.)	0.168		0.152		0.169		0.131		0.146		0.159	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are “other qualification” for education and the 1960 birth cohort.

Table B1.2 Estimated coefficients of the income model (household head aged 25–55, household equivalised disposable income)

	1991		1992		1993		1994		1995		1996	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.126*	0.071	-0.213**	0.105	-0.139	0.086	-0.064	0.112	-0.119	0.112	-0.078	0.106
1940 cohort	0.191***	0.045	0.142***	0.05	0.123***	0.041	0.249***	0.057	0.300***	0.061	0.252***	0.064
1945 cohort	0.148***	0.046	0.022	0.052	0.151***	0.045	0.220***	0.056	0.189***	0.066	0.235***	0.071
1950 cohort	0.011	0.045	-0.095*	0.052	0.039	0.046	0.074	0.061	0.093	0.059	0.085	0.064
1955 cohort	-0.023	0.043	-0.018	0.052	0.05	0.045	0.116**	0.055	0.151**	0.068	0.123**	0.055
Non-white	-0.185***	0.062	-0.148**	0.062	-0.157***	0.055	-0.253***	0.073	-0.013	0.085	-0.207**	0.084
No edu. qual.	-0.019	0.057	-0.117*	0.061	-0.071	0.066	-0.026	0.08	-0.185***	0.057	-0.152**	0.076
O-level	0.029	0.054	0.085	0.062	0.117*	0.064	0.082	0.078	-0.02	0.071	0.054	0.07
A-level	0.204***	0.056	0.158**	0.064	0.173**	0.068	0.144*	0.086	0.107*	0.061	0.194***	0.074
Other higher	0.301***	0.054	0.199***	0.061	0.271***	0.066	0.255***	0.079	0.106**	0.05	0.162**	0.068
Degree (1st&higher)	0.445***	0.065	0.314***	0.077	0.385***	0.074	0.437***	0.086	0.324***	0.065	0.429***	0.074
female & No edu. qual.	-0.062	0.082	-0.049	0.11	0.048	0.093	0.074	0.106	0.11	0.1	0.007	0.11
female & O-level	0.039	0.084	0.018	0.116	-0.037	0.096	0.056	0.107	0.052	0.108	0.045	0.105
female & A-level	-0.137	0.104	0.003	0.125	-0.071	0.139	0.024	0.163	-0.02	0.2	0.007	0.146
female & Other higher	-0.027	0.093	-0.006	0.112	0.019	0.097	0.046	0.112	0.047	0.1	-0.045	0.102
female & Degree (1st&higher)	0.057	0.115	0.165	0.125	0.141	0.116	0.135	0.117	0.192*	0.11	0.103	0.117
female & 1940 cohort	0.138*	0.08	0.197**	0.084	0.150*	0.078	-0.108	0.107	0.033	0.131	0.048	0.119
female & 1945 cohort	0.016	0.079	0.329***	0.091	0.094	0.077	-0.014	0.101	0.045	0.105	0.044	0.106
female & 1950 cohort	0.128	0.082	0.204**	0.093	0.002	0.083	-0.051	0.104	-0.003	0.104	0.054	0.106
female & 1955 cohort	0.107	0.075	0.159*	0.093	0.121	0.075	-0.115	0.107	-0.122	0.107	0.048	0.099
1965 cohort							0.102	0.072	0.018	0.083	0.096	0.072
female & 1965 cohort							-0.148	0.122	-0.015	0.129	-0.089	0.111
1970 cohort												
female & 1970 cohort												
Constant	9.514***	0.05	9.619***	0.063	9.563***	0.059	9.466***	0.082	9.503***	0.061	9.454***	0.069
Sample size	1131		1036		1088		1080		1074		1046	
R2 (adj.)	0.206		0.168		0.202		0.176		0.158		0.183	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are “other qualification” for education and the 1960 birth cohort.

Table B1.2 (continued)

	1997		1998		1999		2000		2001		2002	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.137	0.099	0.062	0.102	-0.209*	0.119	0.003	0.131	-0.052	0.144	-0.123	0.125
1940 cohort	0.308***	0.062										
1945 cohort	0.309***	0.055	0.339***	0.056	0.276***	0.061	0.272***	0.059	0.177***	0.068	0.153**	0.072
1950 cohort	0.139**	0.065	0.131**	0.066	0.07	0.062	0.079	0.067	0.116**	0.058	0.144**	0.06
1955 cohort	0.092	0.056	0.084	0.057	0.098	0.064	0.110*	0.058	0.057	0.055	0.014	0.054
Non-white	-0.211**	0.083	-0.194**	0.083	-0.051	0.068	-0.183**	0.086	-0.209***	0.078	-0.149	0.095
No edu. qual.	-0.130*	0.072	-0.033	0.067	-0.105	0.098	-0.095	0.081	-0.126	0.111	-0.077	0.082
O-level	0.018	0.076	0.107*	0.063	-0.12	0.099	-0.016	0.079	0.137	0.108	0.041	0.078
A-level	0.136*	0.077	0.284***	0.074	0.05	0.098	0.086	0.089	0.11	0.115	0.151*	0.082
Other higher	0.191***	0.071	0.208***	0.061	0.148	0.091	0.147**	0.071	0.203*	0.105	0.237***	0.074
Degree (1st&higher)	0.375***	0.077	0.568***	0.078	0.347***	0.101	0.492***	0.078	0.484***	0.107	0.366***	0.083
female & No edu. qual.	-0.045	0.11	-0.04	0.102	-0.009	0.127	-0.032	0.136	0.077	0.149	0.019	0.129
female & O-level	-0.007	0.108	0.005	0.094	0.269**	0.124	-0.076	0.133	-0.056	0.143	0.029	0.117
female & A-level	-0.181	0.12	-0.007	0.11	0.211	0.141	-0.098	0.157	0.205	0.151	-0.054	0.131
female & Other higher	-0.069	0.107	0.055	0.1	-0.053	0.122	-0.163	0.129	0.065	0.138	-0.06	0.117
female & Degree (1st&higher)	0.138	0.116	0.007	0.128	0.178	0.148	-0.18	0.147	-0.018	0.141	0.156	0.125
female & 1940 cohort	0.031	0.125										
female & 1945 cohort	0.087	0.096	-0.183*	0.101	0.11	0.108	-0.047	0.098	-0.082	0.115	0.08	0.14
female & 1950 cohort	0.173*	0.096	-0.16	0.106	0.185*	0.102	0.015	0.112	-0.023	0.105	-0.058	0.095
female & 1955 cohort	0.067	0.091	-0.08	0.117	0.043	0.103	-0.063	0.151	-0.034	0.106	0.128	0.096
1965 cohort	0.168***	0.065	0.1	0.062	0.077	0.069	0.119**	0.06	0.038	0.064	0.028	0.06
female & 1965 cohort	-0.101	0.096	-0.282***	0.099	-0.078	0.096	-0.174*	0.102	-0.074	0.105	0.125	0.105
1970 cohort							0.027	0.069	-0.012	0.065	0.057	0.058
female & 1970 cohort							0.02	0.105	0.054	0.115	-0.037	0.097
Constant	9.480***	0.068	9.433***	0.062	9.582***	0.092	9.599***	0.077	9.597***	0.104	9.664***	0.075
Sample size	1053		1041		957		1012		898		849	
R2 (adj.)	0.208		0.219		0.185		0.178		0.180		0.153	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are “other qualification” for education and the 1960 birth cohort.

Table B1.2 (continued)

	2003		2004		2005		2006		2007		2008	
	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E	Coef.	S.E
female	-0.097	0.145	-0.003	0.126	-0.06	0.133	-0.106	0.121	-0.087	0.142	0.013	0.164
1940 cohort												
1945 cohort												
1950 cohort	0.111*	0.062	-0.024	0.068	0.09	0.082	0.093	0.068	0.169***	0.06		
1955 cohort	-0.006	0.055	0.08	0.064	0.002	0.075	-0.025	0.062	0.023	0.066	0.034	0.07
Non-white	-0.215***	0.078	-0.025	0.069	-0.018	0.073	-0.059	0.084	-0.084	0.097	-0.188**	0.083
No edu. qual.	0.171	0.109	-0.177*	0.106	-0.105	0.105	-0.196*	0.113	-0.231**	0.11	-0.126	0.154
O-level	0.217**	0.095	0.129	0.09	-0.056	0.087	-0.026	0.087	-0.016	0.098	0.088	0.113
A-level	0.127	0.111	0.182**	0.092	0.116	0.091	0.145	0.093	0.047	0.101	0.275**	0.128
Other higher	0.219**	0.092	0.253***	0.087	0.168**	0.083	0.106	0.073	0.119	0.091	0.256**	0.107
Degree (1st&higher)	0.420***	0.099	0.441***	0.093	0.357***	0.093	0.410***	0.085	0.302***	0.097	0.548***	0.121
female & No edu. qual.	-0.15	0.166	0.051	0.149	-0.006	0.149	0.018	0.16	-0.116	0.154	0.035	0.231
female & O-level	-0.07	0.156	-0.057	0.135	0.112	0.133	-0.006	0.13	-0.097	0.148	0.011	0.171
female & A-level	0.116	0.165	-0.022	0.143	0.065	0.147	-0.061	0.143	-0.013	0.152	0.062	0.196
female & Other higher	0.035	0.151	-0.15	0.133	-0.02	0.127	0.06	0.117	-0.012	0.142	-0.014	0.157
female & Degree (1st&higher)	0.14	0.154	0.028	0.14	0.07	0.141	-0.006	0.132	0.107	0.143	-0.062	0.172
female & 1940 cohort												
female & 1945 cohort												
female & 1950 cohort	-0.023	0.095	0.008	0.113	-0.089	0.119	-0.155	0.119	-0.058	0.107		
female & 1955 cohort	0.075	0.097	-0.073	0.113	0.081	0.118	0.116	0.094	0.038	0.103	0.001	0.112
1965 cohort	0.088	0.06	-0.041	0.064	0.015	0.081	0.008	0.067	0.001	0.068	0.045	0.087
female & 1965 cohort	-0.097	0.099	-0.047	0.1	-0.129	0.114	-0.035	0.099	0.062	0.105	-0.229*	0.129
1970 cohort	0.077	0.056	-0.011	0.067	-0.022	0.074	-0.061	0.061	-0.013	0.056	0.037	0.068
female & 1970 cohort	-0.11	0.089	-0.135	0.096	-0.195*	0.112	-0.076	0.092	-0.044	0.096	-0.257**	0.112
Constant	9.654***	0.088	9.645***	0.087	9.721***	0.093	9.772***	0.076	9.759***	0.086	9.559***	0.103
Sample size	864		857		817		859		833		763	
R2 (adj.)	0.143		0.164		0.135		0.157		0.172		0.179	

Notes: * p<0.10, ** p<0.05, *** p<0.01. The reference groups are "other qualification" for education and the 1960 birth cohort.

Table B2.1 Sample mean of the income model covariates (household head aged 25–75)

		1991		1992		1993		1994		1995		1996	
		Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Sex													
male		0.64207	0.00751	0.61682	0.00787	0.60781	0.0081	0.6055	0.00811	0.6033	0.00825	0.6005	0.00814
female		0.35793	0.00751	0.38318	0.00787	0.39219	0.0081	0.3945	0.00811	0.3967	0.00825	0.3995	0.00814
Total		1		1		1		1		1		1	
Birth cohort (5-y intervals)													
1930		0.3116	0.00725	0.28994	0.00734	0.2687	0.00735	0.25585	0.00724	0.24069	0.00721	0.21454	0.00683
1935		0.08164	0.00429	0.07569	0.00428	0.07481	0.00436	0.07015	0.00424	0.07218	0.00436	0.06939	0.00423
1940		0.09463	0.00458	0.09429	0.00473	0.09323	0.00482	0.09409	0.00484	0.09179	0.00487	0.09207	0.00481
1945		0.11768	0.00505	0.11812	0.00522	0.11579	0.00531	0.11637	0.00532	0.11054	0.00529	0.11252	0.00525
1950		0.11204	0.00494	0.10896	0.00504	0.10589	0.0051	0.10812	0.00515	0.10372	0.00514	0.10451	0.00509
1955		0.12184	0.00512	0.12074	0.00527	0.12239	0.00544	0.12352	0.00546	0.11992	0.00548	0.11778	0.00536
1960		0.11866	0.00506	0.12651	0.00538	0.13201	0.00561	0.12655	0.00551	0.131	0.00569	0.13768	0.00573
1965		0.04192	0.00314	0.06574	0.00401	0.08718	0.00468	0.10536	0.00509	0.13015	0.00567	0.15151	0.00596
Total		1		1		1		1		1		1	
nowhite													
	0	0.96462	0.0029	0.96898	0.00281	0.96798	0.00292	0.96771	0.00294	0.96723	0.00301	0.96701	0.00297
	1	0.03538	0.0029	0.03102	0.00281	0.03202	0.00292	0.03229	0.00294	0.03277	0.00301	0.03299	0.00297
Total		1		1		1		1		1		1	
Education													
no ed qual		0.34763	0.00746	0.31928	0.00754	0.29703	0.00758	0.28968	0.00752	0.27423	0.00752	0.26403	0.00733
other qual		0.10248	0.00475	0.09743	0.0048	0.10121	0.005	0.10371	0.00506	0.09804	0.00501	0.09842	0.00495
O-level		0.17063	0.00589	0.18203	0.00624	0.17987	0.00637	0.17854	0.00635	0.18045	0.00648	0.17556	0.00633
A-level		0.09193	0.00452	0.09429	0.00473	0.09076	0.00476	0.08886	0.00472	0.09122	0.00485	0.09621	0.0049
Other higher etc		0.19196	0.00617	0.20613	0.00655	0.22085	0.00688	0.22586	0.00694	0.24013	0.0072	0.24385	0.00714
Degree:1st&higher		0.09537	0.0046	0.10084	0.00487	0.11029	0.00519	0.11334	0.00526	0.11594	0.0054	0.12192	0.00544

Table B2.1 (continued)

	1997		1998		1999		2000		2001		2002	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Sex												
male	0.60229	0.00819	0.59456	0.00822	0.59885	0.0083	0.60816	0.00839	0.60747	0.00854	0.6031	0.0087
female	0.39771	0.00819	0.40544	0.00822	0.40115	0.0083	0.39184	0.00839	0.39253	0.00854	0.3969	0.0087
Total	1		1		1		1		1		1	
Birth cohort (5-y intervals)												
1930	0.19675	0.00665	0.18042	0.00644	0.16413	0.00627	0.14864	0.00612	0.12982	0.00588	0.1148	0.00567
1935	0.07417	0.00438	0.07211	0.00433	0.0726	0.0044	0.0724	0.00445	0.07318	0.00456	0.07653	0.00473
1940	0.0932	0.00486	0.09259	0.00486	0.08838	0.00481	0.08599	0.00482	0.08634	0.00491	0.08729	0.00502
1945	0.10831	0.0052	0.10943	0.00523	0.1076	0.00525	0.10993	0.00538	0.1041	0.00534	0.10247	0.00539
1950	0.10635	0.00516	0.10073	0.00504	0.09727	0.00502	0.09781	0.00511	0.09737	0.00519	0.09646	0.00525
1955	0.11699	0.00538	0.12065	0.00546	0.1165	0.00543	0.11229	0.00543	0.11329	0.00555	0.11259	0.00562
1960	0.1321	0.00566	0.13159	0.00566	0.13171	0.00573	0.13121	0.0058	0.13625	0.006	0.13346	0.00605
1965	0.17212	0.00632	0.19248	0.0066	0.22181	0.00704	0.24173	0.00736	0.25964	0.00767	0.27641	0.00795
Total	1		1		1		1		1		1	
nowhite												
0	0.9649	0.00308	0.96709	0.00299	0.96635	0.00306	0.96711	0.00307	0.9684	0.00306	0.96732	0.00317
1	0.0351	0.00308	0.03291	0.00299	0.03365	0.00306	0.03289	0.00307	0.0316	0.00306	0.03268	0.00317
Total	1		1		1		1		1		1	
Education												
no ed qual	0.25385	0.00728	0.23878	0.00714	0.22353	0.00706	0.20922	0.00699	0.19535	0.00694	0.18501	0.00691
other qual	0.09768	0.00497	0.09203	0.00484	0.08981	0.00484	0.08658	0.00483	0.08206	0.0048	0.07843	0.00478
O-level	0.171	0.0063	0.1734	0.00634	0.16872	0.00634	0.16135	0.00632	0.15983	0.00641	0.1635	0.00658
A-level	0.09544	0.00492	0.09343	0.00488	0.09584	0.00499	0.09752	0.0051	0.09982	0.00525	0.09551	0.00523
Other higher etc	0.25385	0.00728	0.27189	0.00745	0.28436	0.00764	0.29905	0.00787	0.31323	0.00812	0.32353	0.00832
Degree:1st&higher	0.12818	0.00559	0.13047	0.00564	0.13773	0.00584	0.14628	0.00607	0.14972	0.00624	0.15402	0.00642

Table B2.1 (continued)

	2003		2004		2005		2006		2007		2008	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Sex												
male	0.60498	0.00873	0.60392	0.00884	0.59235	0.00885	0.59097	0.00893	0.59021	0.0091	0.58772	0.00925
female	0.39502	0.00873	0.39608	0.00884	0.40765	0.00885	0.40903	0.00893	0.40979	0.0091	0.41228	0.00925
Total	1		1		1		1		1		1	
Birth cohort (5-y intervals)												
1930	0.1037	0.00545	0.08758	0.00511	0.06902	0.00456	0.059	0.00428	0.04519	0.00384	0.02859	0.00313
1935	0.07211	0.00462	0.07288	0.0047	0.07259	0.00467	0.07185	0.00469	0.07189	0.00478	0.0713	0.00483
1940	0.08647	0.00502	0.08529	0.00505	0.08814	0.0051	0.08833	0.00515	0.0873	0.00522	0.09001	0.00538
1945	0.10562	0.00549	0.10556	0.00555	0.10467	0.00551	0.10415	0.00555	0.10442	0.00566	0.10413	0.00574
1950	0.09732	0.00529	0.10098	0.00545	0.09754	0.00534	0.09822	0.0054	0.09586	0.00545	0.09884	0.00561
1955	0.112	0.00563	0.11438	0.00575	0.1118	0.00567	0.10943	0.00567	0.10339	0.00563	0.10342	0.00572
1960	0.1305	0.00602	0.13235	0.00613	0.12735	0.006	0.12624	0.00603	0.1253	0.00613	0.12037	0.00611
1965	0.29228	0.00812	0.30098	0.00829	0.3289	0.00846	0.34278	0.00862	0.36666	0.00892	0.38334	0.00913
Total	1		1		1		1		1		1	
nowhite												
0	0.96031	0.00349	0.95015	0.00394	0.94349	0.00416	0.93521	0.00448	0.93746	0.00449	0.92642	0.00491
1	0.03969	0.00349	0.04985	0.00394	0.05651	0.00416	0.06479	0.00448	0.06254	0.00449	0.07358	0.00491
Total	1		1		1		1		1		1	
Education												
no ed qual	0.17581	0.0068	0.16078	0.00664	0.151	0.00645	0.13843	0.00627	0.1342	0.00631	0.12637	0.00624
other qual	0.07626	0.00474	0.07222	0.00468	0.07032	0.0046	0.06526	0.00448	0.06197	0.00446	0.06001	0.00446
O-level	0.14997	0.00638	0.14575	0.00638	0.14614	0.00636	0.14535	0.0064	0.13317	0.00629	0.13378	0.0064
A-level	0.0986	0.00533	0.09575	0.00532	0.09203	0.0052	0.09262	0.00526	0.09175	0.00534	0.09354	0.00547
Other higher etc	0.33535	0.00843	0.35163	0.00863	0.35936	0.00864	0.37508	0.00879	0.38514	0.009	0.39358	0.00918
Degree:1st&higher	0.16401	0.00661	0.17386	0.00685	0.18114	0.00693	0.18326	0.00702	0.19377	0.00731	0.19273	0.00741

Table B2.2 Sample mean of the income model covariates (household head aged 25–55)

	1991		1992		1993		1994		1995		1996
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.
Sex											
male	0.68056	0.00891	0.64885	0.00936	0.63242	0.00962	0.62715	0.00966	0.6265	0.00984	0.61502
female	0.31944	0.00891	0.35115	0.00936	0.36758	0.00962	0.37285	0.00966	0.3735	0.00984	0.38498
Total	1		1		1		1		1		1
Birth cohort (i.e. 5-y intervals)											
1935	0.09539	0.00562	0.06846	0.00495	0.04938	0.00432	0.02196	0.00293	0	0	0
1940	0.14108	0.00666	0.13846	0.00677	0.13501	0.00682	0.13653	0.00686	0.13251	0.0069	0.10791
1945	0.17544	0.00727	0.17346	0.00743	0.16766	0.00746	0.16886	0.00749	0.16108	0.00748	0.16087
1950	0.16703	0.00713	0.16	0.00719	0.15333	0.00719	0.15689	0.00727	0.15114	0.00729	0.14941
1955	0.18165	0.00737	0.17731	0.00749	0.17722	0.00762	0.17924	0.00766	0.17474	0.00773	0.16838
1960	0.1769	0.0073	0.18577	0.00763	0.19116	0.00785	0.18363	0.00774	0.19089	0.008	0.19684
1965	0.0625	0.00463	0.09654	0.00579	0.12624	0.00663	0.15289	0.00719	0.18965	0.00798	0.2166
Total	1		1		1		1		1		1
nowhite											
0	0.9546	0.00398	0.96025	0.00384	0.95925	0.00395	0.95917	0.00396	0.9589	0.00404	0.96116
1	0.0454	0.00398	0.03975	0.00384	0.04075	0.00395	0.04083	0.00396	0.0411	0.00404	0.03884
Total	1		1		1		1		1		1
Education											
no ed qual	0.24123	0.00818	0.21269	0.00803	0.20112	0.008	0.19122	0.00786	0.17019	0.00765	0.16087
other qual	0.09905	0.00571	0.09269	0.00569	0.09677	0.0059	0.09621	0.00589	0.09193	0.00588	0.09209
O-level	0.20285	0.00769	0.21308	0.00803	0.20709	0.00809	0.20559	0.00807	0.20911	0.00828	0.20119
A-level	0.11842	0.00618	0.12115	0.0064	0.11629	0.0064	0.11497	0.00637	0.1176	0.00656	0.12372
Other higher etc	0.21308	0.00783	0.22885	0.00824	0.23736	0.00849	0.24551	0.0086	0.2617	0.00894	0.26838
Degree:1st&higher	0.12537	0.00633	0.13154	0.00663	0.14138	0.00695	0.14651	0.00707	0.14948	0.00726	0.15375

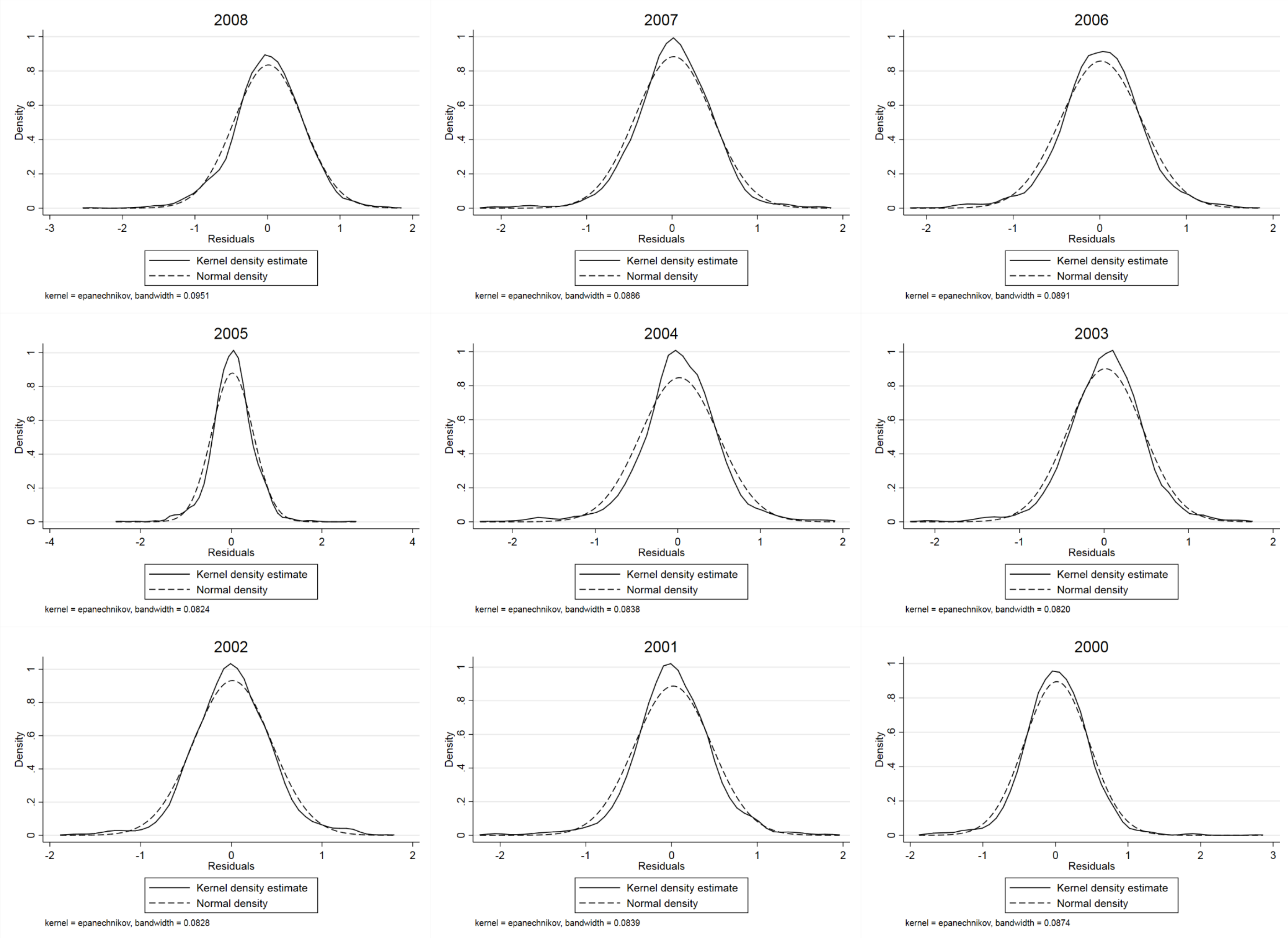
Table B2.2 (continued)

	1997		1998		1999		2000		2001		2002	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Sex												
male	0.61823	0.00973	0.60947	0.00981	0.60141	0.00996	0.60691	0.01009	0.60417	0.0103	0.59991	0.01054
female	0.38177	0.00973	0.39053	0.00981	0.39859	0.00996	0.39309	0.01009	0.39583	0.0103	0.40009	0.01054
Total	1		1		1		1		1		1	
Birth cohort (i.e. 5-y intervals)												
												0
1935	0	0	0	0	0	0	0	0	0	0	0	
1940	0.08792	0.00567	0.05544	0.0046	0.02649	0.00327	0	0	0	0	0	0
1945	0.15536	0.00726	0.15783	0.00733	0.15522	0.00737	0.15792	0.00753	0.1219	0.00689	0.09482	0.0063
1950	0.15255	0.0072	0.14529	0.00709	0.14031	0.00707	0.14127	0.0072	0.14096	0.00733	0.14107	0.00749
1955	0.1678	0.00749	0.17402	0.00763	0.16805	0.00761	0.16219	0.00762	0.16401	0.0078	0.16466	0.00798
1960	0.18948	0.00785	0.1898	0.00789	0.18998	0.00798	0.1895	0.0081	0.19725	0.00838	0.19519	0.00852
1965	0.24689	0.00864	0.27762	0.00901	0.31995	0.00949	0.34913	0.00985	0.37589	0.0102	0.40426	0.01055
Total	1		1		1		1		1		1	
nowhite												
0	0.96013	0.00393	0.96026	0.00393	0.95975	0.004	0.96147	0.00398	0.96268	0.00399	0.96284	0.00408
1	0.03987	0.00393	0.03974	0.00393	0.04025	0.004	0.03853	0.00398	0.03732	0.00399	0.03716	0.00408
Total	1		1		1		1		1		1	
Education												
no ed qual	0.14894	0.00713	0.14124	0.00701	0.12583	0.00675	0.11524	0.0066	0.10771	0.00653	0.1013	0.00649
other qual	0.09153	0.00578	0.08256	0.00554	0.08278	0.00561	0.0781	0.00554	0.07137	0.00542	0.07077	0.00552
O-level	0.1931	0.00791	0.19385	0.00795	0.18502	0.0079	0.17968	0.00793	0.17642	0.00803	0.17669	0.0082
A-level	0.12043	0.00652	0.11615	0.00645	0.11838	0.00657	0.11524	0.0066	0.11791	0.00679	0.11332	0.00682
Other higher etc	0.28382	0.00903	0.3015	0.00923	0.31126	0.00942	0.3265	0.00969	0.34309	0.01	0.34968	0.01026
Degree:1st&higher	0.16218	0.00739	0.16471	0.00746	0.17674	0.00776	0.18523	0.00803	0.18351	0.00815	0.18825	0.00841

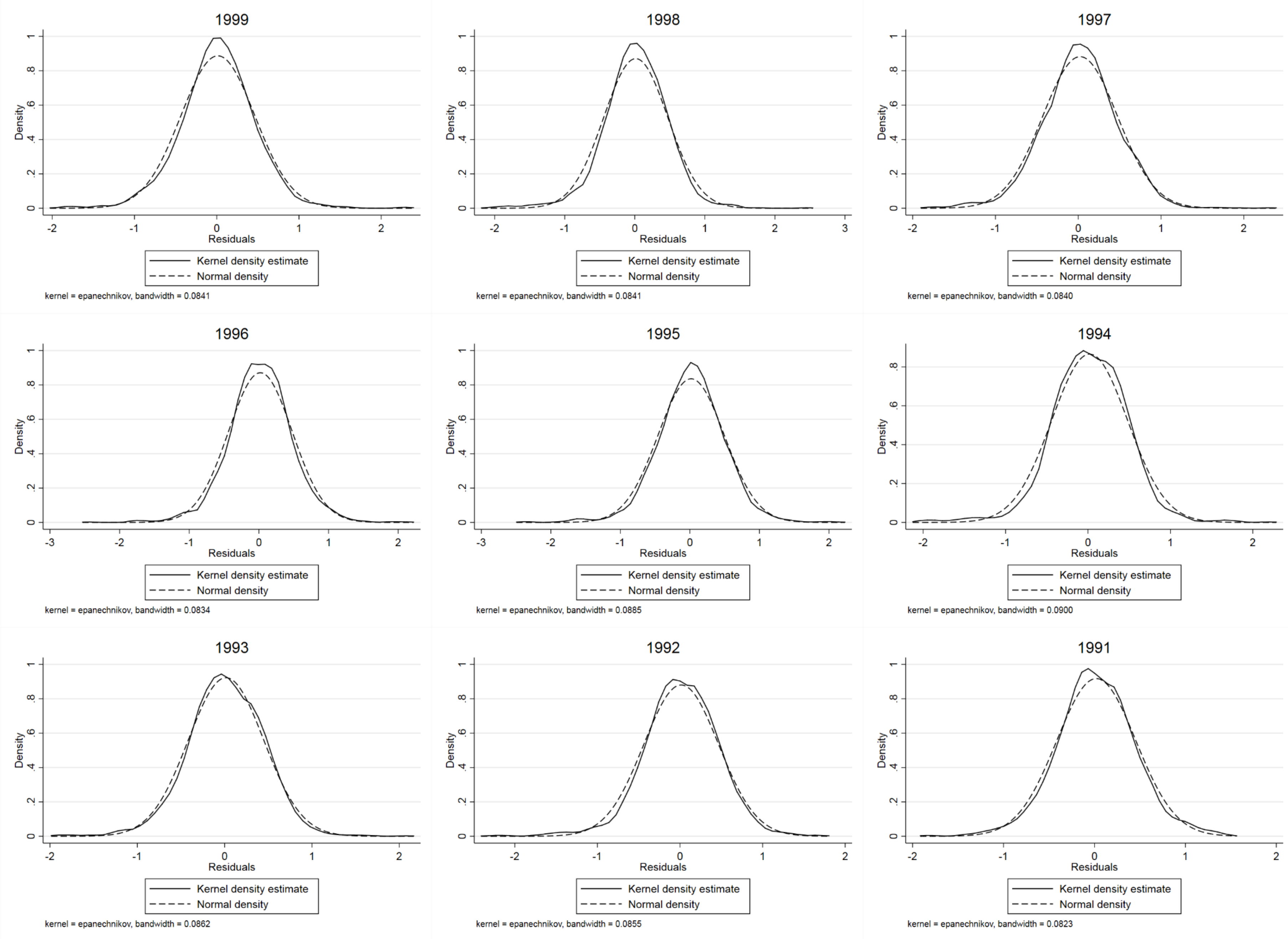
Table B2.2 (continued)

	2003		2004		2005		2006		2007		2008	
	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE	Prop.	SE
Sex												
male	0.59382	0.0107	0.59912	0.01084	0.58695	0.01087	0.59016	0.01096	0.58511	0.01124	0.58148	0.01148
female	0.40618	0.0107	0.40088	0.01084	0.41305	0.01087	0.40984	0.01096	0.41489	0.01124	0.41852	0.01148
Total	1		1		1		1		1		1	
Birth cohort (i.e. 5-y intervals)												
1935	0	0	0	0	0	0	0	0	0	0	0	0
1940	0	0	0	0	0	0	0	0	0	0	0	0
1945	0.05891	0.00513	0.02839	0.00367	0	0	0	0	0	0	0	0
1950	0.14489	0.00767	0.15125	0.00793	0.14613	0.0078	0.12817	0.00745	0.09474	0.00668	0.06876	0.00589
1955	0.16675	0.00812	0.17132	0.00834	0.16805	0.00825	0.16493	0.00827	0.15721	0.00831	0.15864	0.0085
1960	0.1943	0.00862	0.19824	0.00882	0.19143	0.00868	0.19026	0.00875	0.19053	0.00896	0.18462	0.00903
1965	0.43515	0.01081	0.45081	0.01101	0.4944	0.01103	0.51664	0.01114	0.55752	0.01133	0.58798	0.01145
Total	1		1		1		1		1		1	
nowhite												
0	0.95277	0.00463	0.93953	0.00529	0.9292	0.00567	0.91771	0.00614	0.92098	0.00617	0.90657	0.00678
1	0.04723	0.00463	0.06047	0.00529	0.0708	0.00567	0.08229	0.00614	0.07902	0.00617	0.09343	0.00678
Total	1		1		1		1		1		1	
Education												
no ed qual	0.09739	0.00646	0.08664	0.00622	0.07599	0.00585	0.06806	0.00561	0.06559	0.00565	0.0628	0.00565
other qual	0.06841	0.0055	0.06461	0.00544	0.0643	0.00541	0.05912	0.00526	0.05518	0.00521	0.05414	0.00527
O-level	0.15487	0.00789	0.14782	0.00785	0.15149	0.00791	0.14357	0.00782	0.13378	0.00777	0.13048	0.00784
A-level	0.11734	0.00701	0.11356	0.00702	0.10375	0.00673	0.10383	0.0068	0.10151	0.00689	0.10395	0.0071
Other higher etc	0.35724	0.01044	0.372	0.01069	0.38091	0.01072	0.40189	0.01093	0.40916	0.01122	0.41635	0.01147
Degree:1st&higher	0.20475	0.0088	0.21537	0.00909	0.22358	0.0092	0.22355	0.00929	0.23477	0.00967	0.23227	0.00983

Lognormality plots (leading case)



Appendix B3 (BHPS Lognormality plots – leading case): 1



Appendix B3 (BHPS Lognormality plots – leading case): 2

Synthetic panel estimates of joint and conditional probabilities, by analytical choice

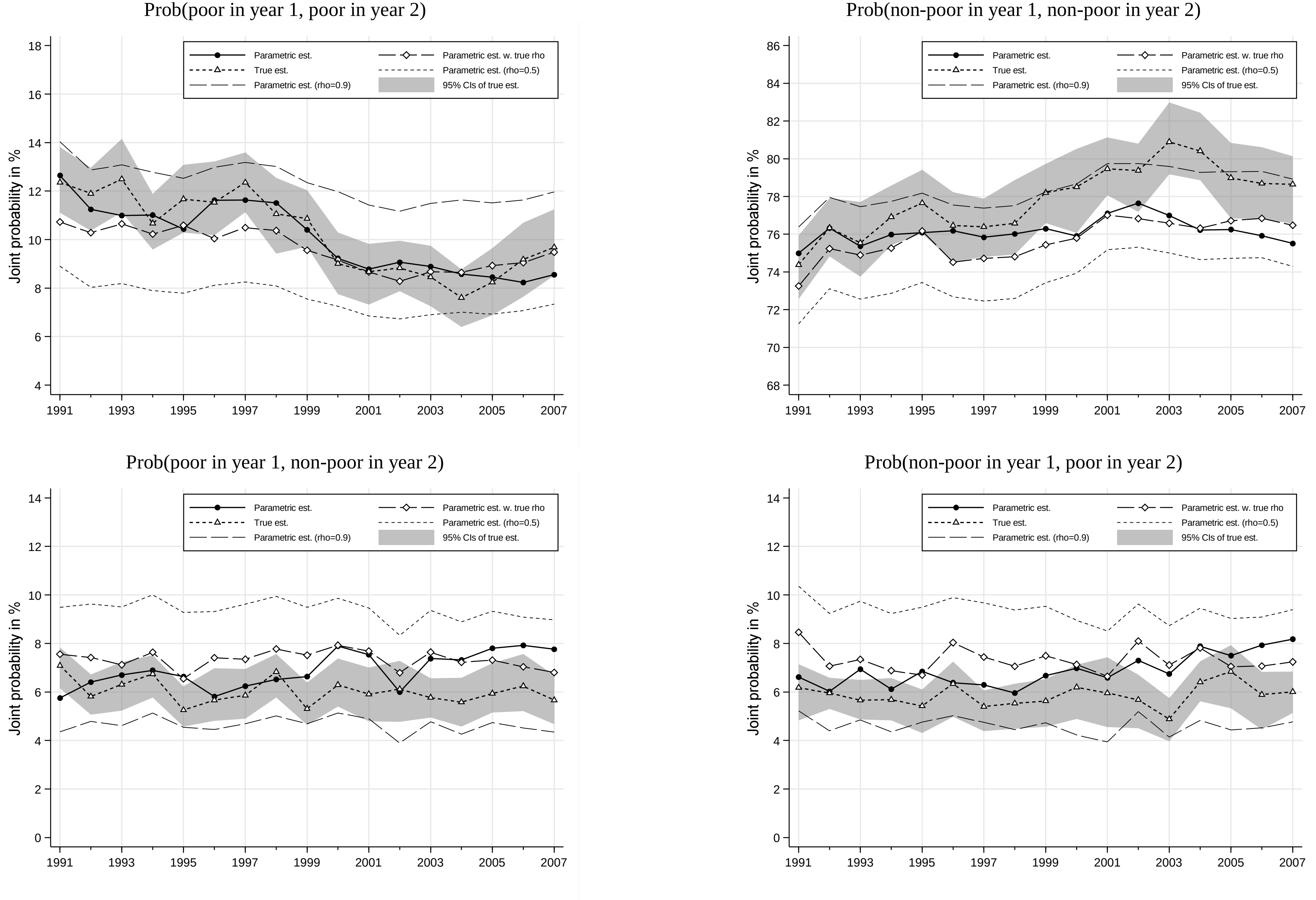
The ‘leading case’ estimates are case #1.

#	Head’s age	Poverty line (% median)	Cohort definition	Group
1	25–75	60%	SEX*YOB(5)	All
2	25–75	60%	SEX*YOB(5)	0–17
3	25–75	60%	SEX*YOB(5)	18–59
4	25–75	60%	SEX*YOB(5)	60+
5	25–75	60%	YOB(5)	All
6	25–75	60%	YOB(5)	0–17
7	25–75	60%	YOB(5)	18–59
8	25–75	60%	YOB(5)	60+
9	25–55	60%	SEX*YOB(5)	All
10	25–55	60%	SEX*YOB(5)	0–17
11	25–55	60%	SEX*YOB(5)	18–59
12	25–55	60%	YOB(5)	All
13	25–55	60%	YOB(5)	0–17
14	25–55	60%	YOB(5)	18–59
15	25–75	50%	SEX*YOB(5)	All
16	25–75	50%	SEX*YOB(5)	0–17
17	25–75	50%	SEX*YOB(5)	18–59
18	25–75	50%	SEX*YOB(5)	60+
19	25–75	50%	YOB(5)	All
20	25–75	50%	YOB(5)	0–17
21	25–75	50%	YOB(5)	18–59
22	25–75	50%	YOB(5)	60+
23	25–55	50%	SEX*YOB(5)	All
24	25–55	50%	SEX*YOB(5)	0–17
25	25–55	50%	SEX*YOB(5)	18–59
26	25–55	50%	YOB(5)	All
27	25–55	50%	YOB(5)	0–17
28	25–55	50%	YOB(5)	18–59

For each combination, we show:

Prob(poor in year 1, poor in year 2)	Prob(non-poor in year 1, non-poor in year 2)
Prob(poor in year 1, non-poor in year 2)	Prob(non-poor in year 1, poor in year 2)
Exit rate = Prob(non-poor in year 2 | poor in year 1)	Entry rate = Prob(poor in year 2 | non-poor in year 1)
Exit rate with ‘std. panel est.’	Entry rate with ‘std. panel est.’

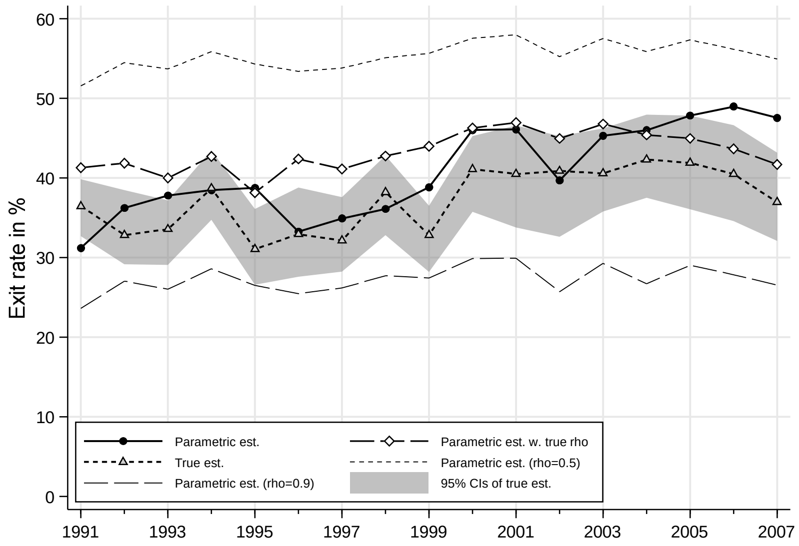
1. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), all individuals



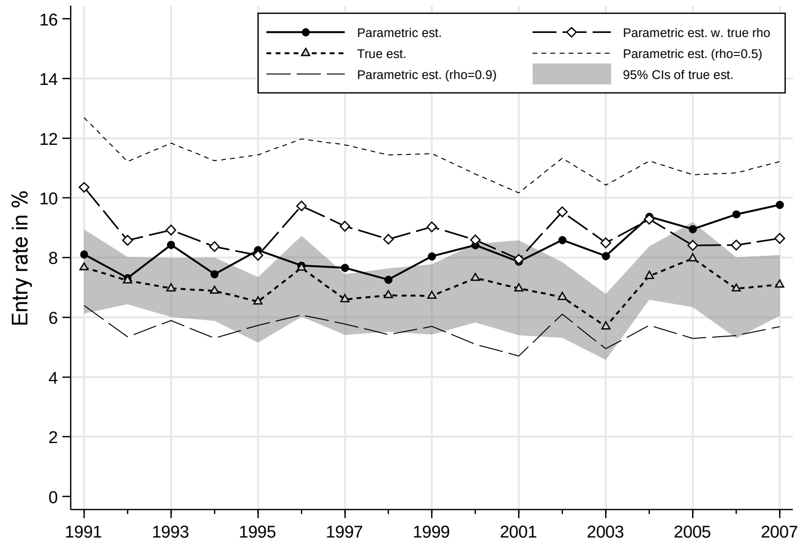
Appendix B4 (BHPS Estimates of joint and conditional poverty probabilities): 1

1. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), all individuals

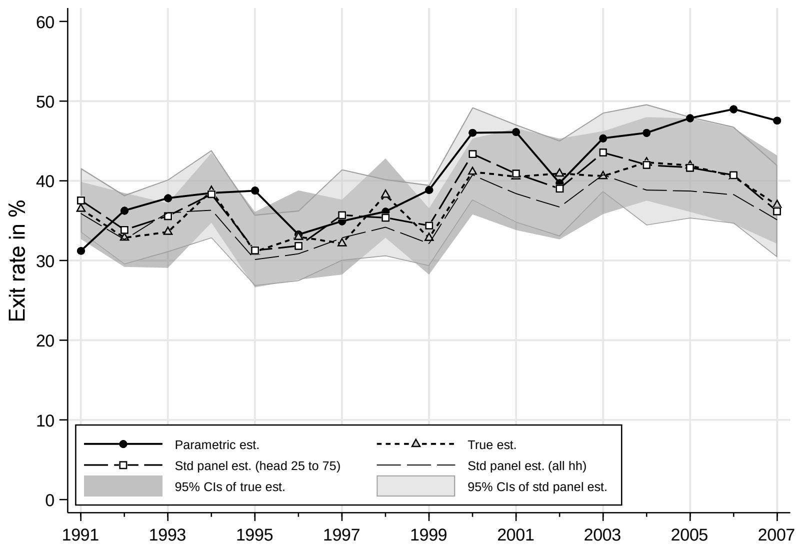
Exit rate = Prob(non-poor in year 2 | poor in year 1)



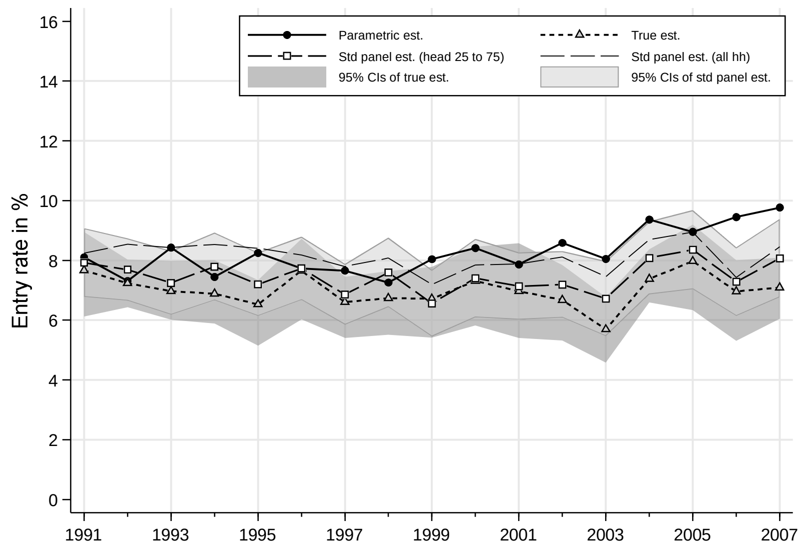
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

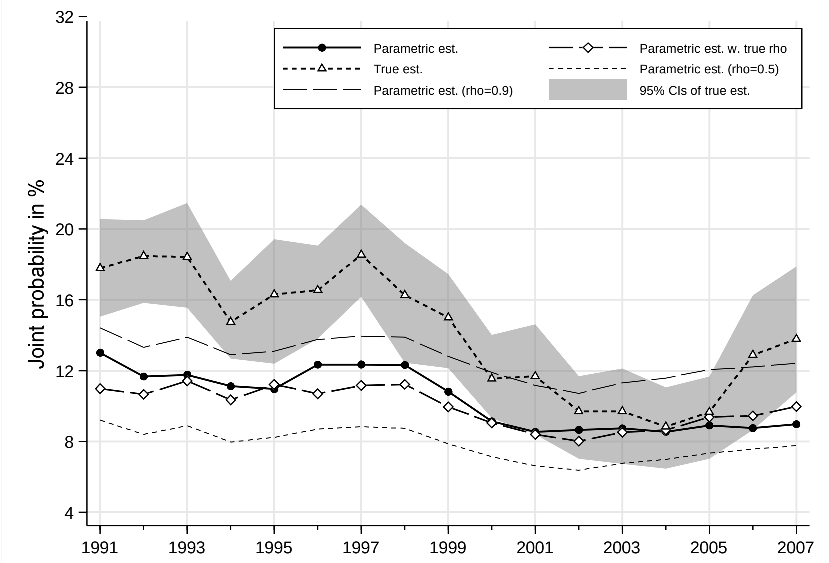


Entry rate = Prob(poor in year 2 | non-poor in year 1)

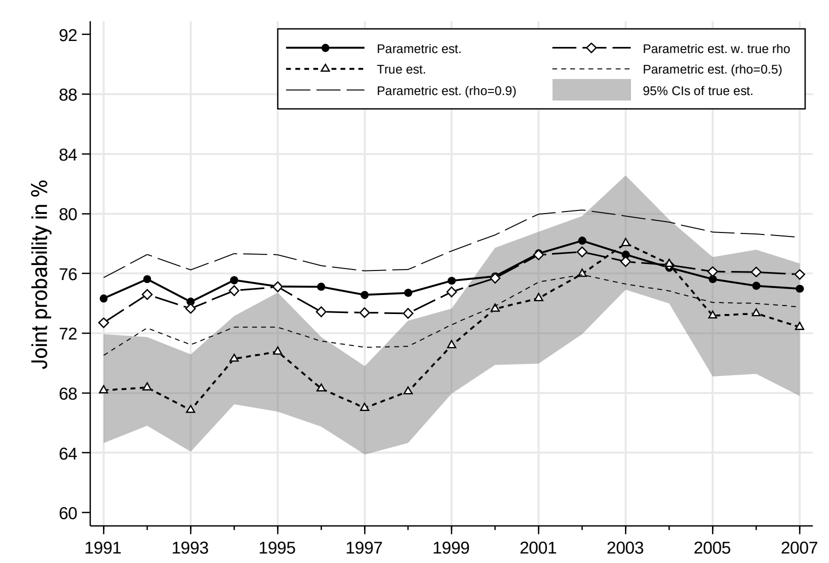


2. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 0–17

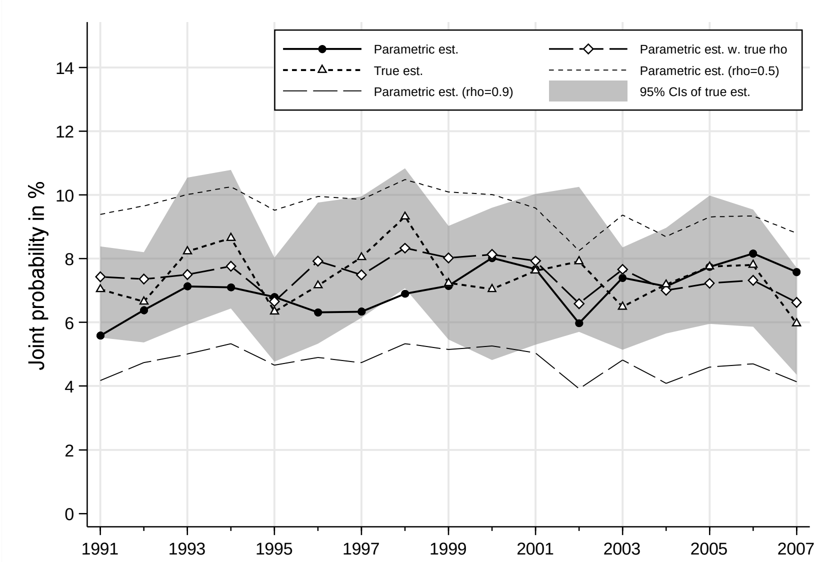
Prob(poor in year 1, poor in year 2)



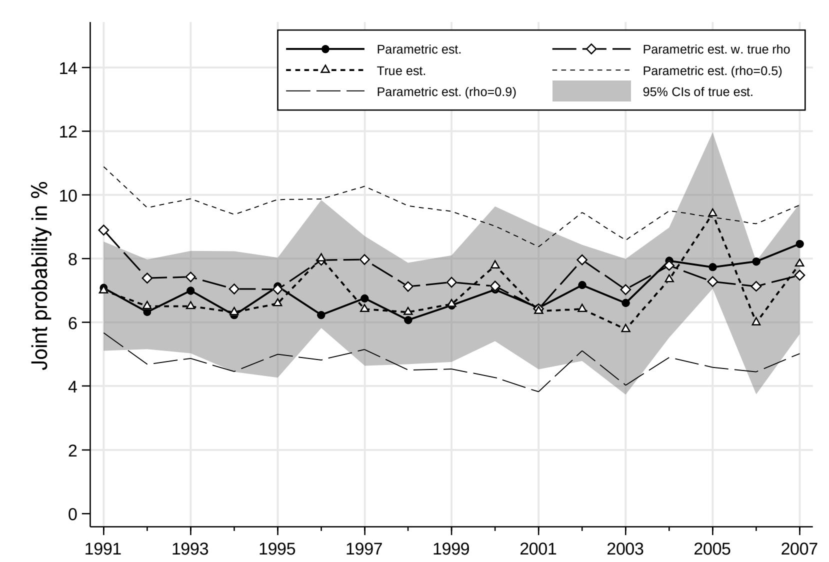
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

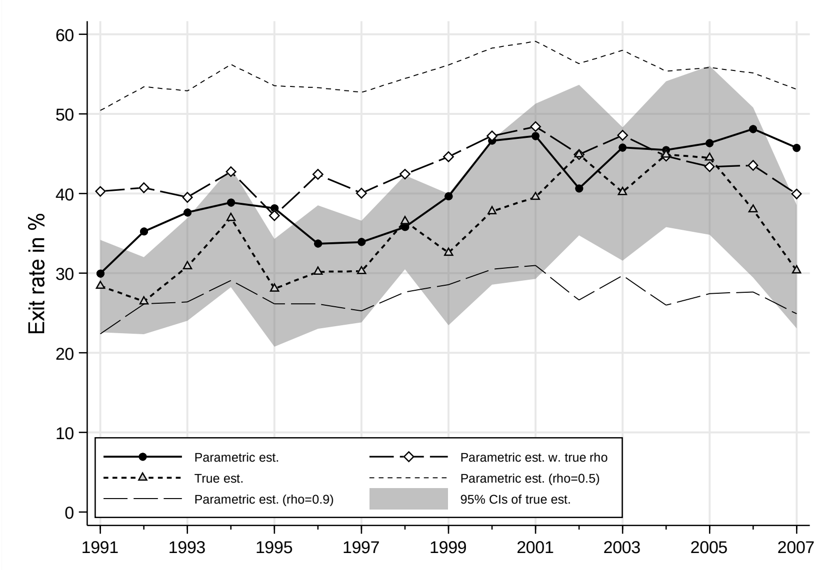


Prob(non-poor in year 1, poor in year 2)

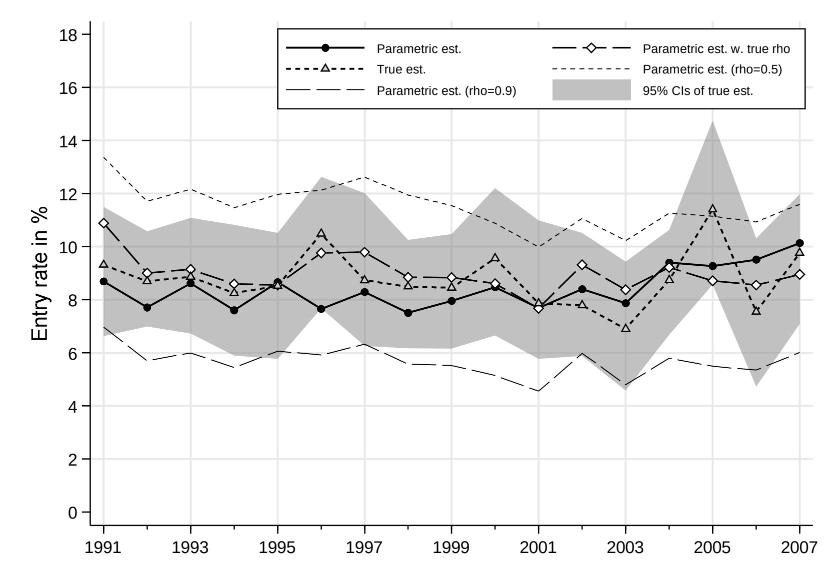


2. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 0–17

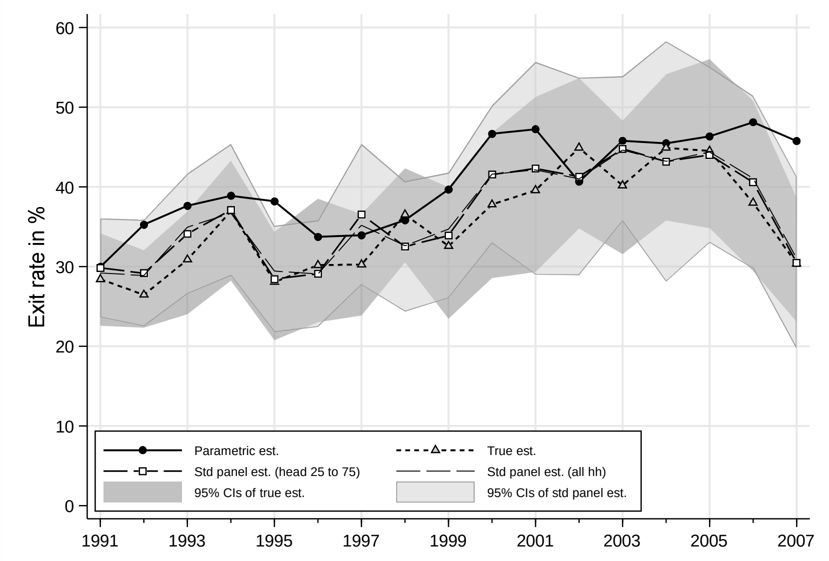
Exit rate = Prob(non-poor in year 2 | poor in year 1)



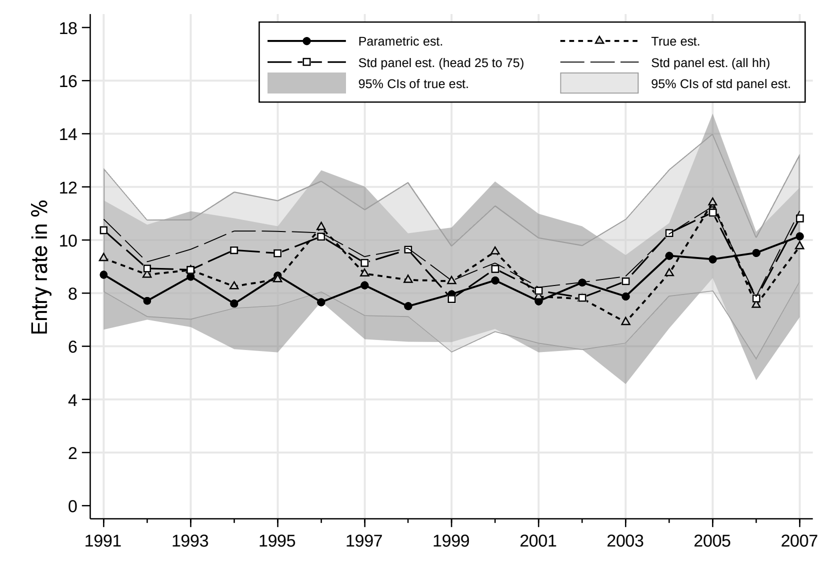
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

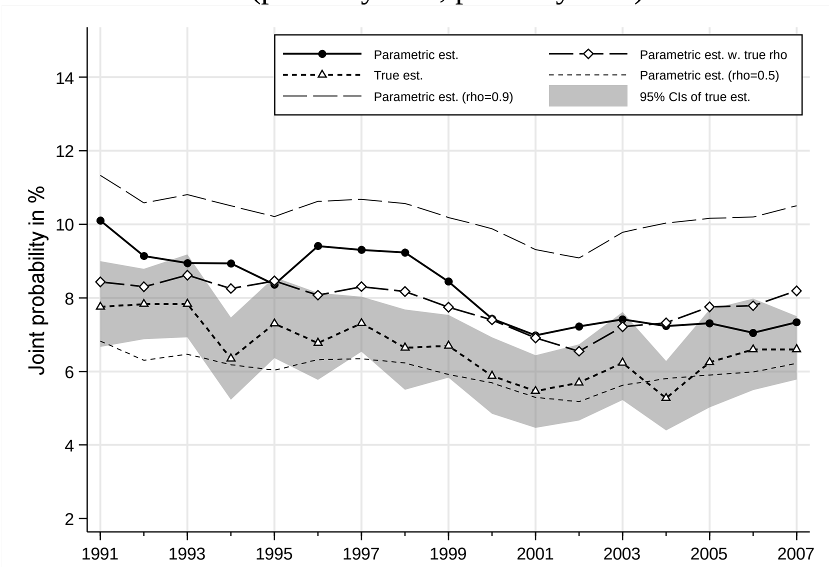


Entry rate = Prob(poor in year 2 | non-poor in year 1)

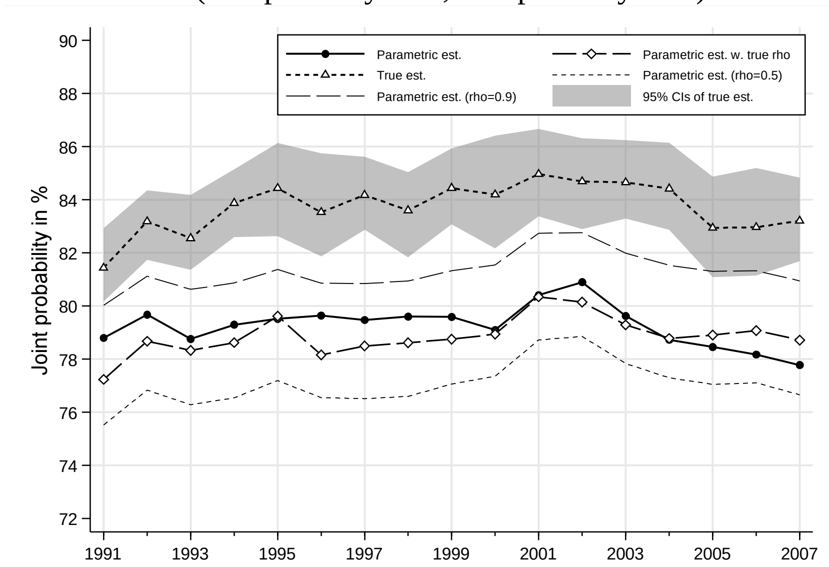


3. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 18–59

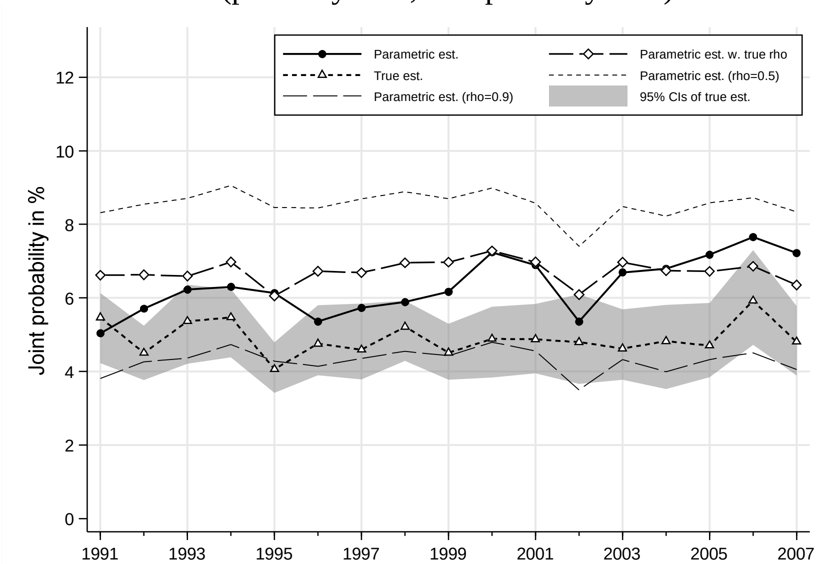
Prob(poor in year 1, poor in year 2)



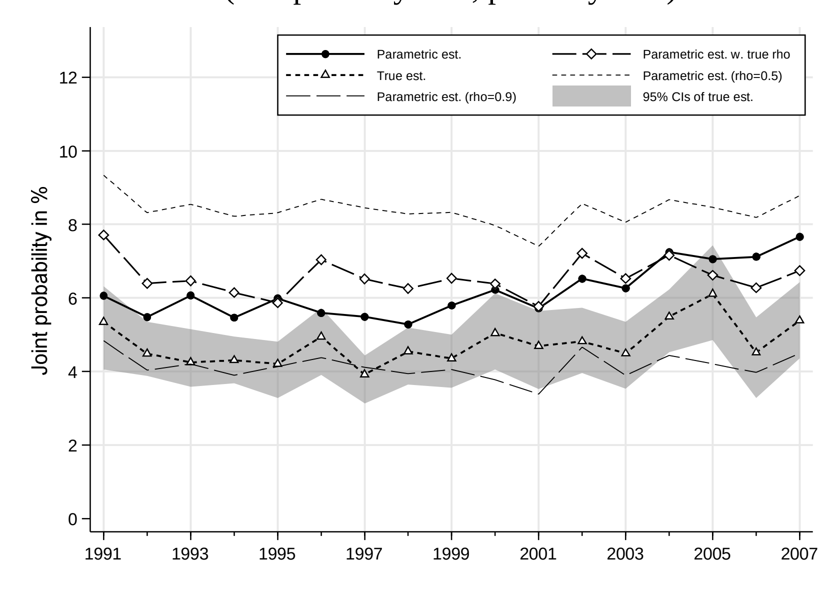
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

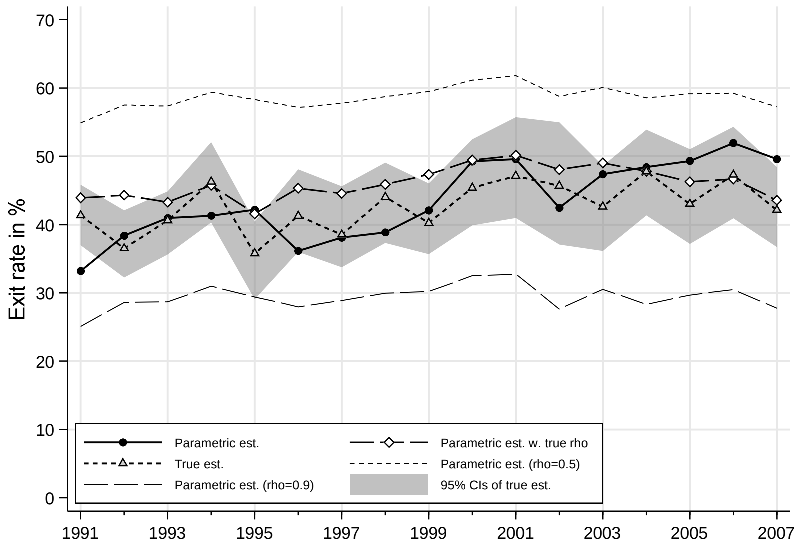


Prob(non-poor in year 1, poor in year 2)

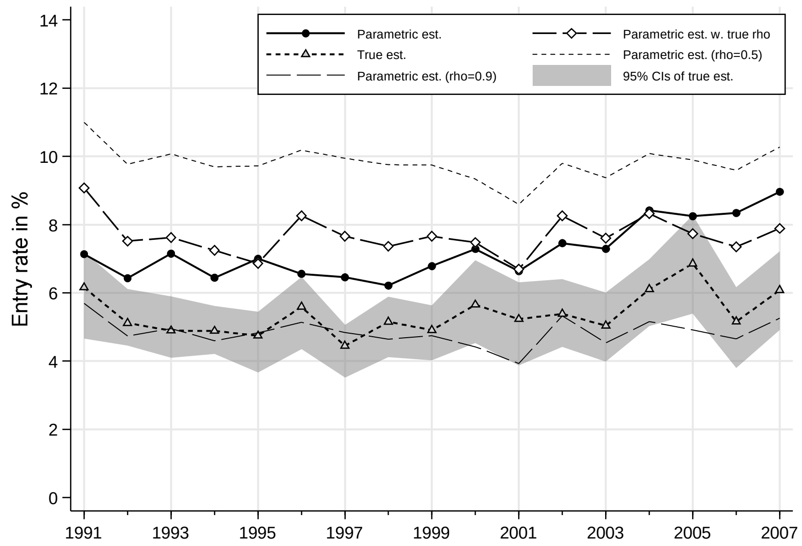


3. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 18–59

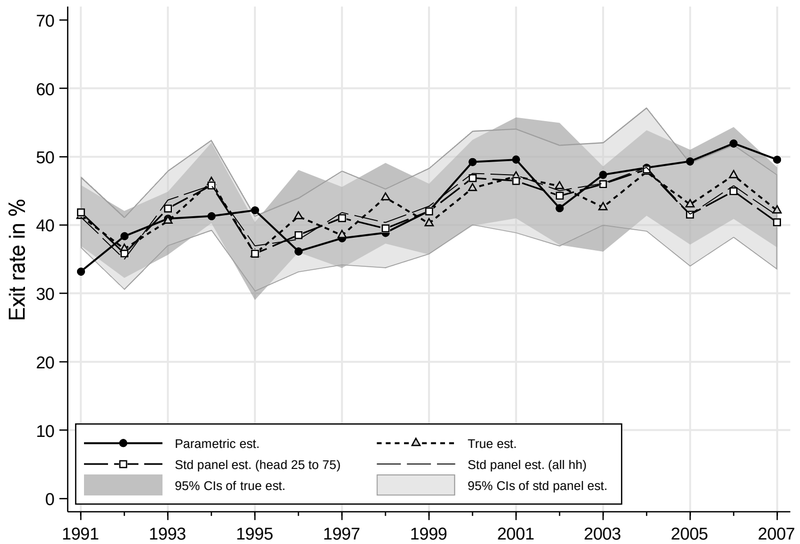
Exit rate = Prob(non-poor in year 2 | poor in year 1)



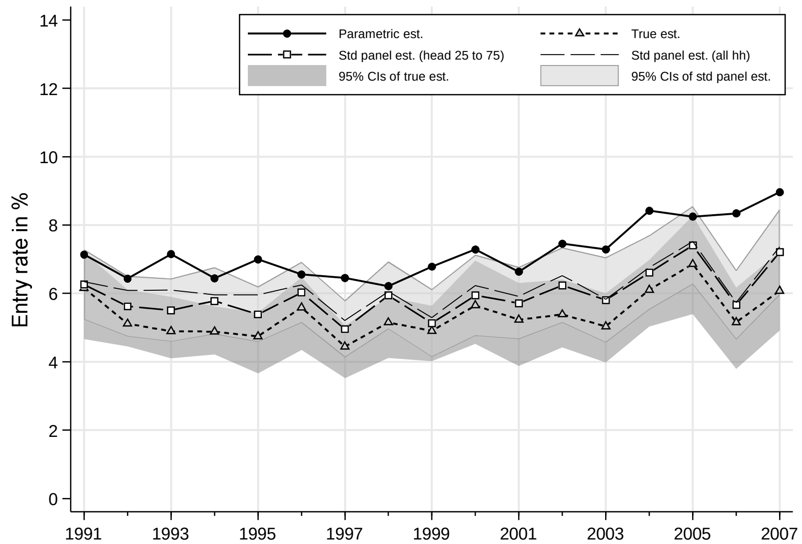
Entry rate = Prob(poor in year 2 | non-poor in year 1)



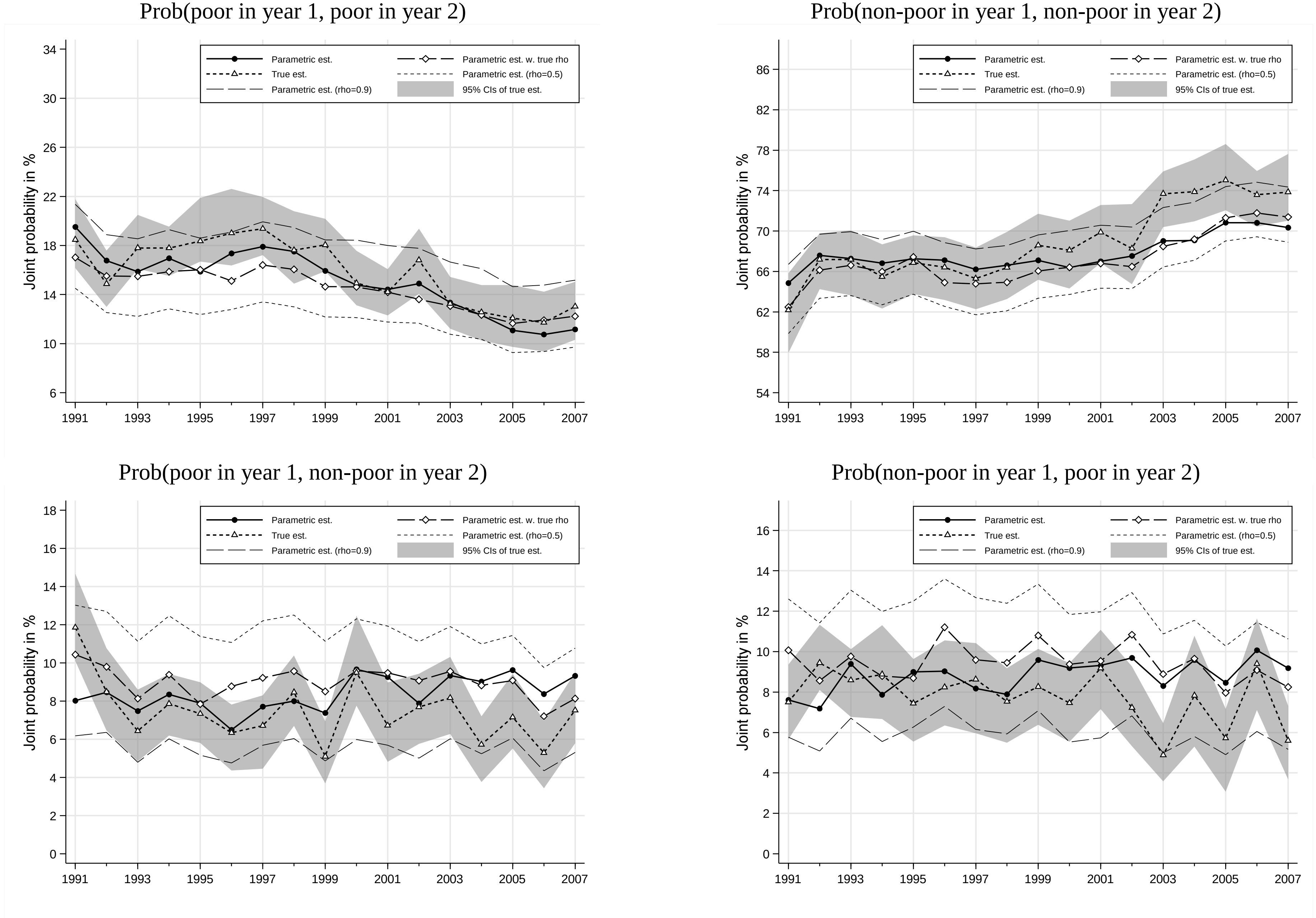
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

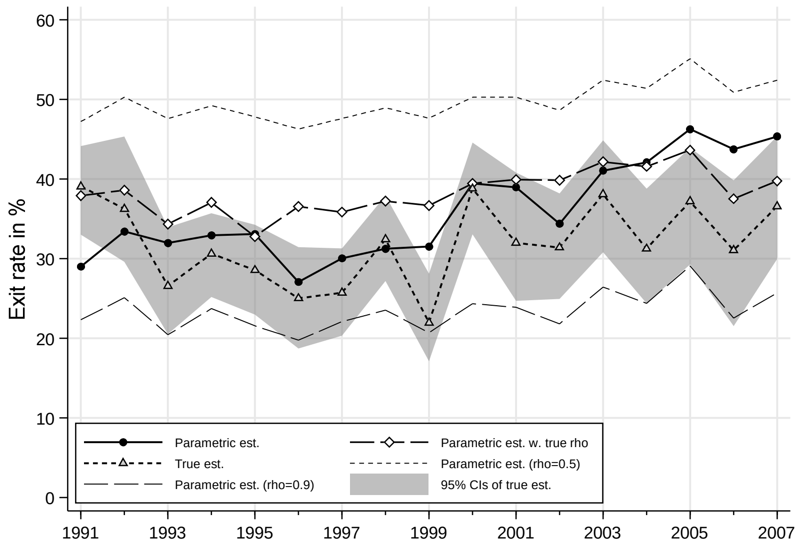


4. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 60+

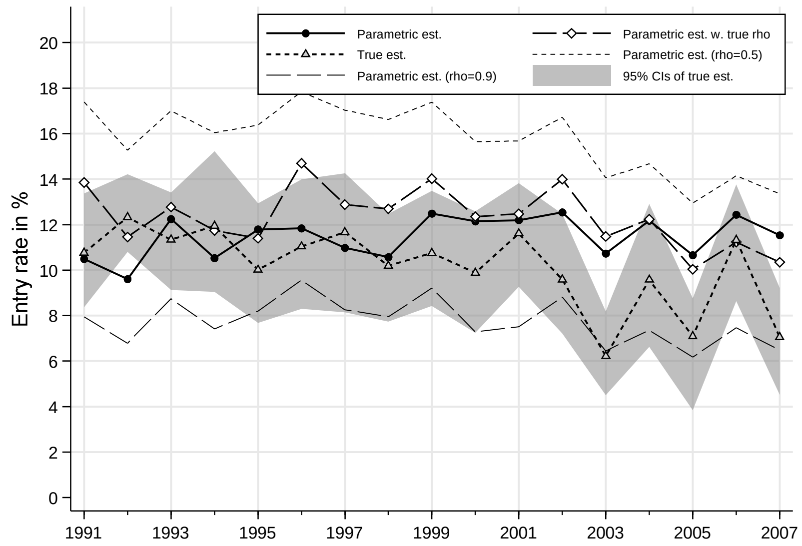


4. BHPS, head 25–75, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 60+

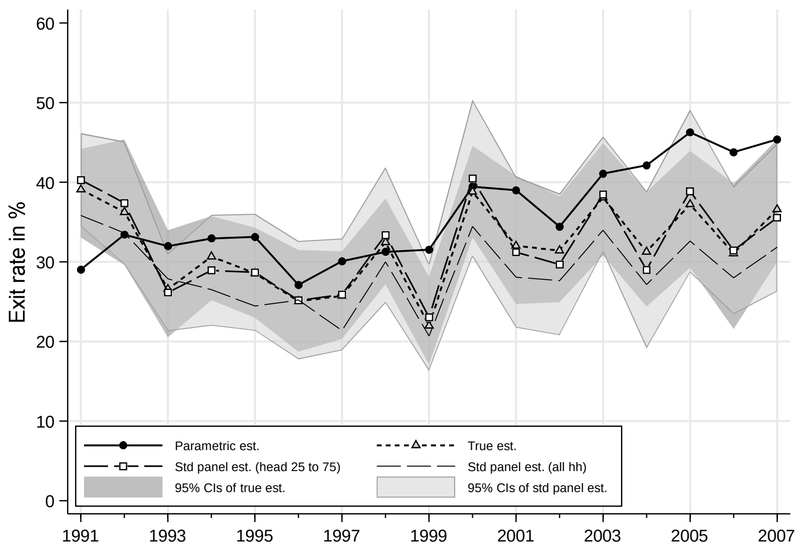
Exit rate = Prob(non-poor in year 2 | poor in year 1)



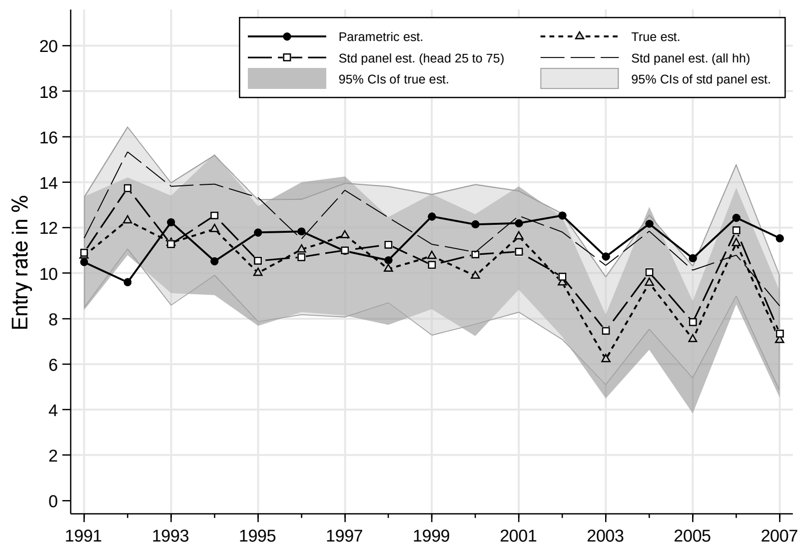
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

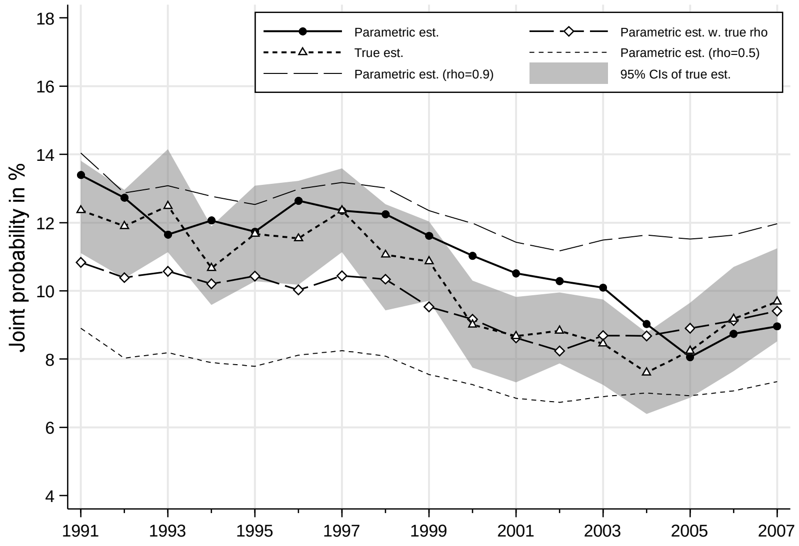


Entry rate = Prob(poor in year 2 | non-poor in year 1)

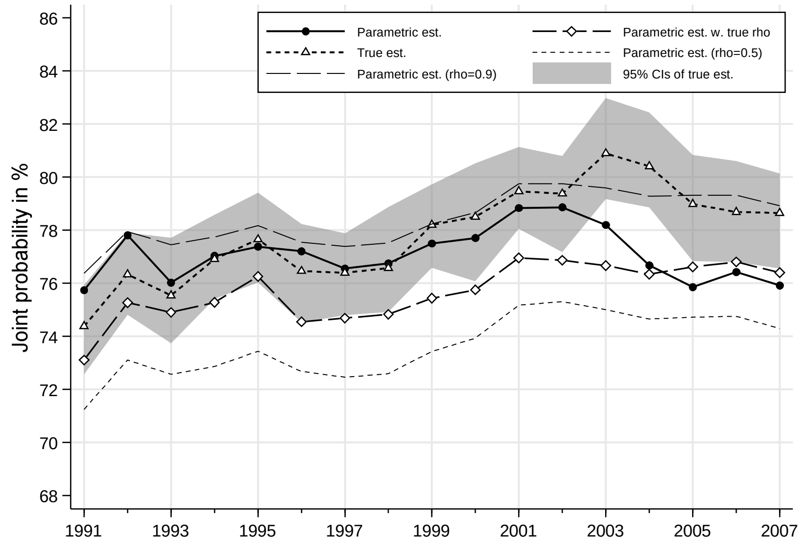


5. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), all individuals

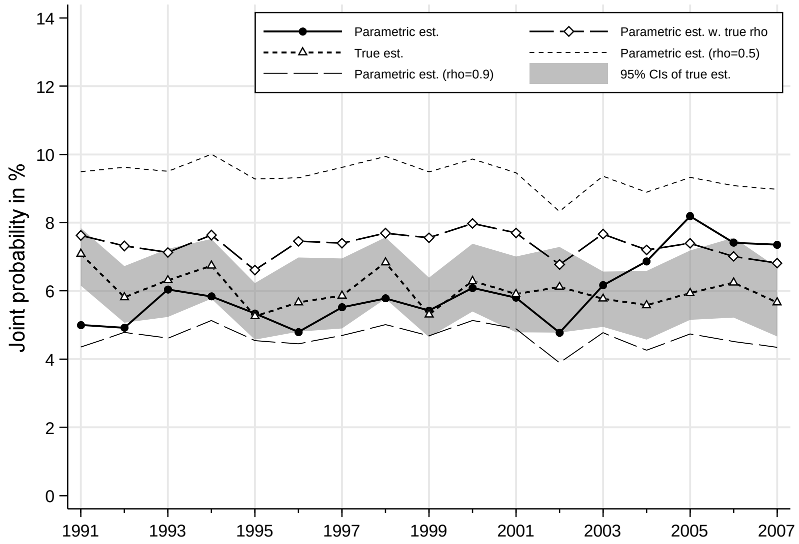
Prob(poor in year 1, poor in year 2)



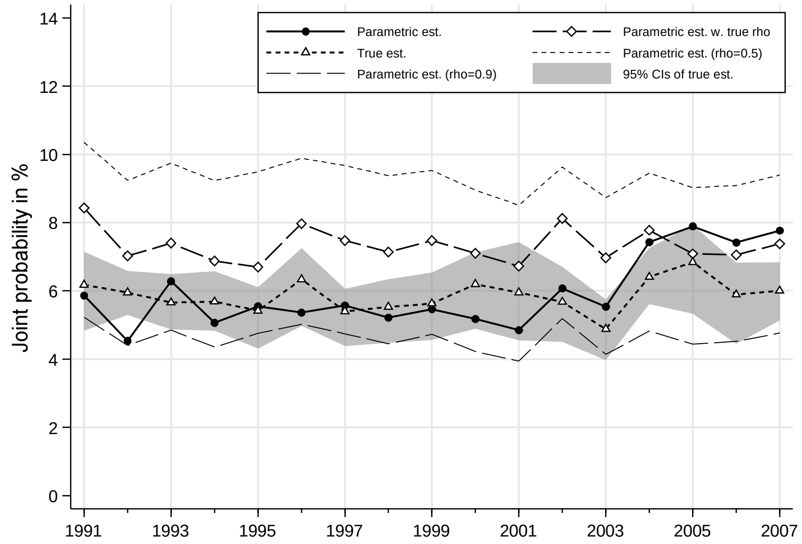
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

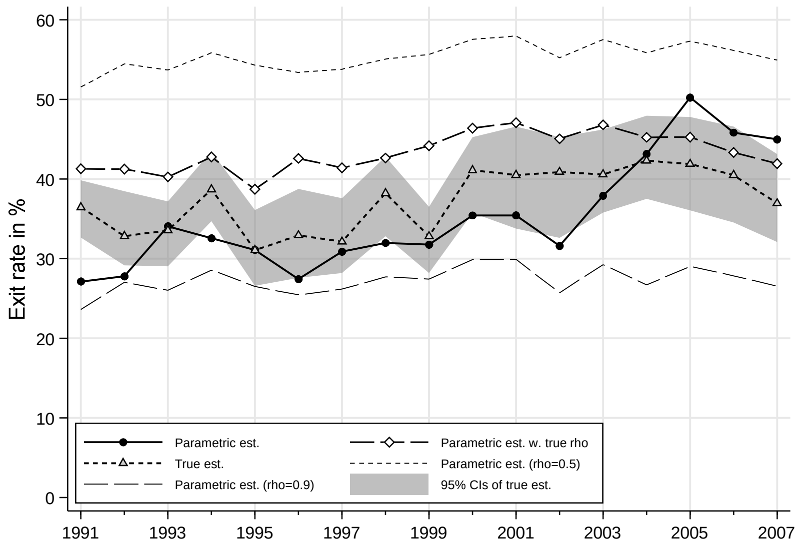


Prob(non-poor in year 1, poor in year 2)

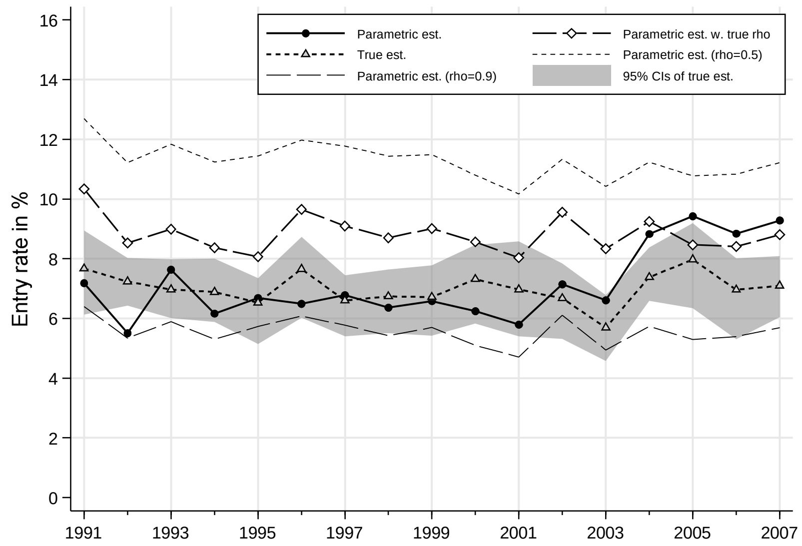


5. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), all individuals

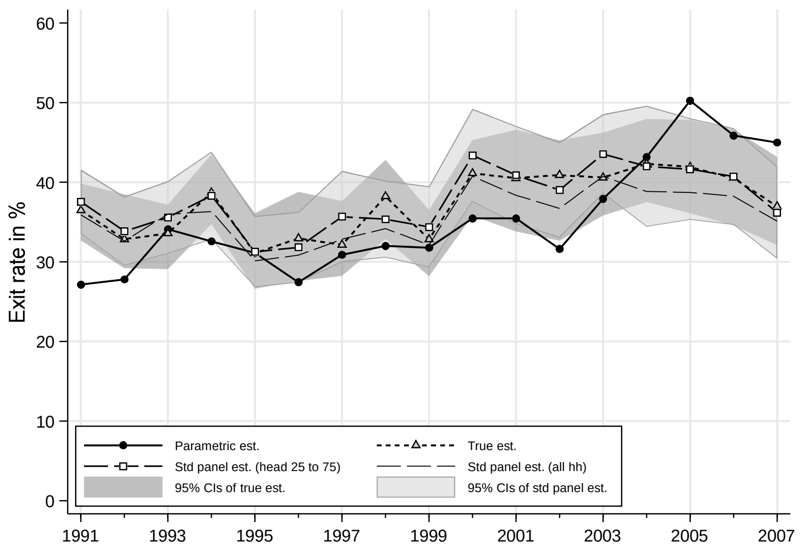
Exit rate = Prob(non-poor in year 2 | poor in year 1)



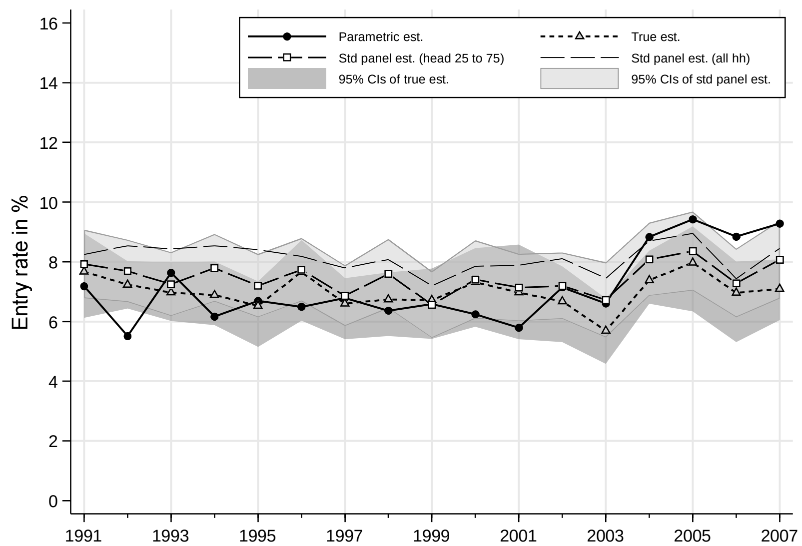
Entry rate = Prob(poor in year 2 | non-poor in year 1)



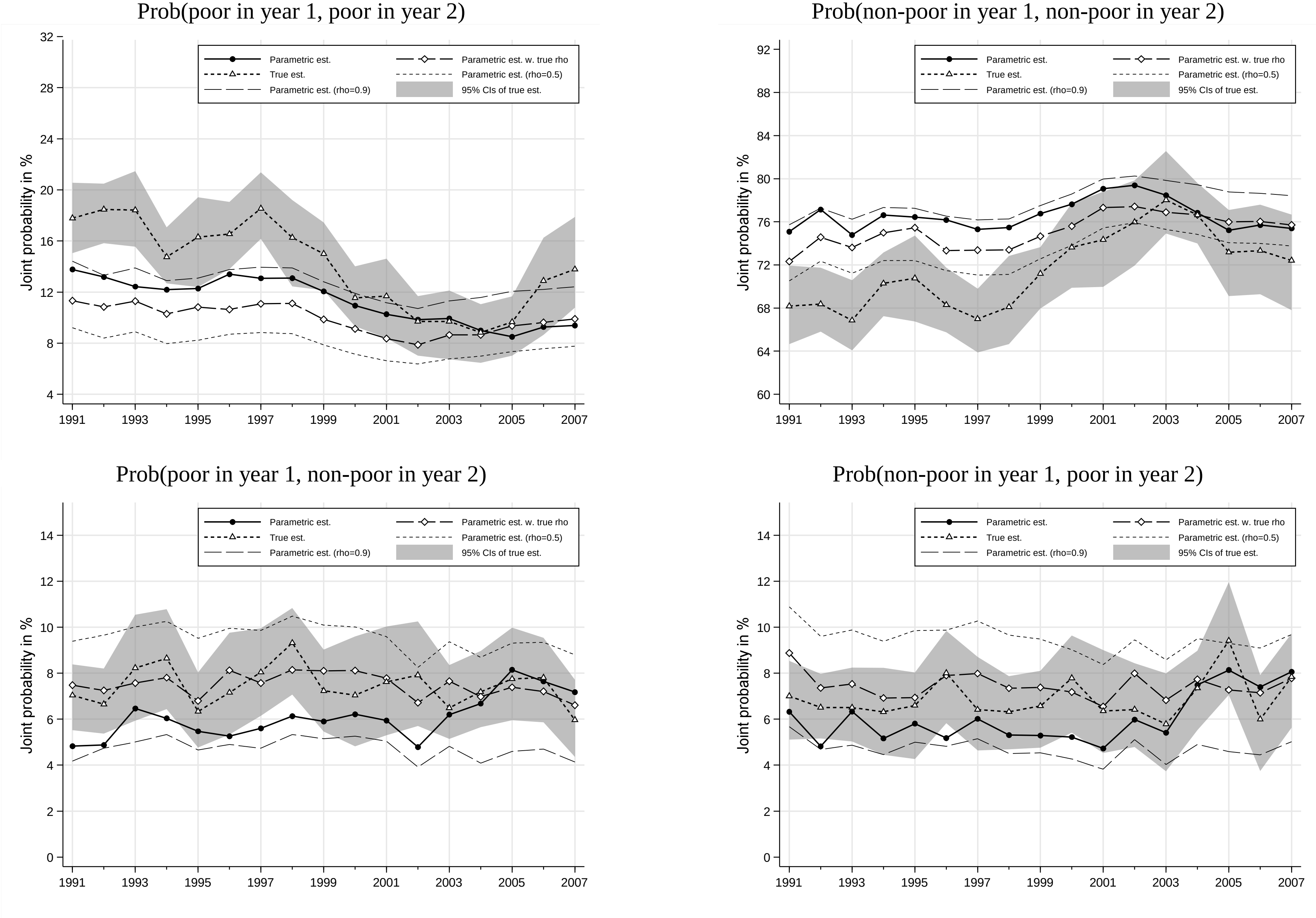
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

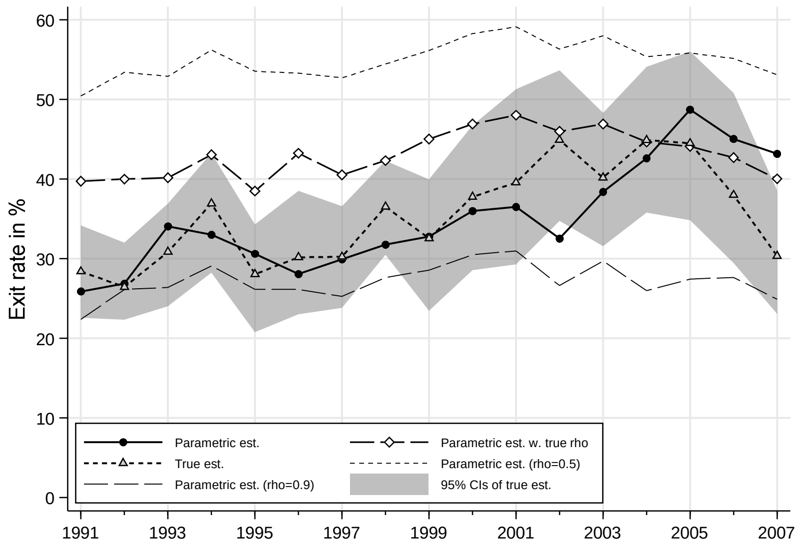


6. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

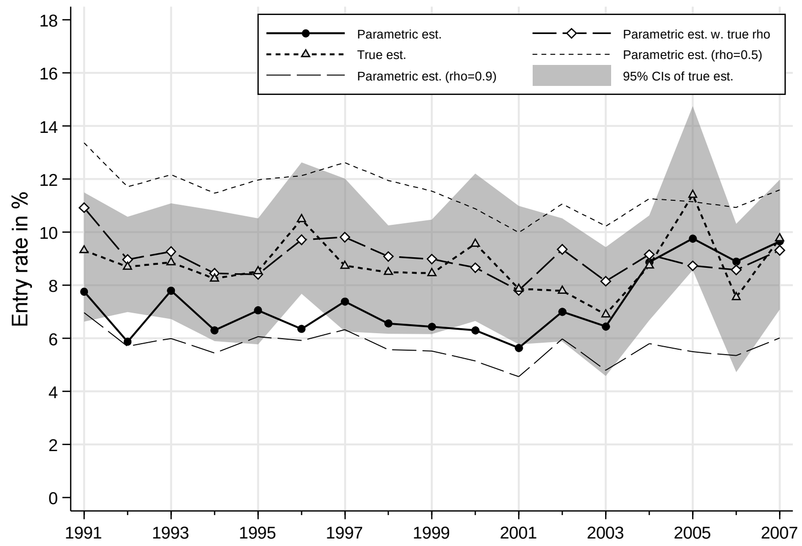


6. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

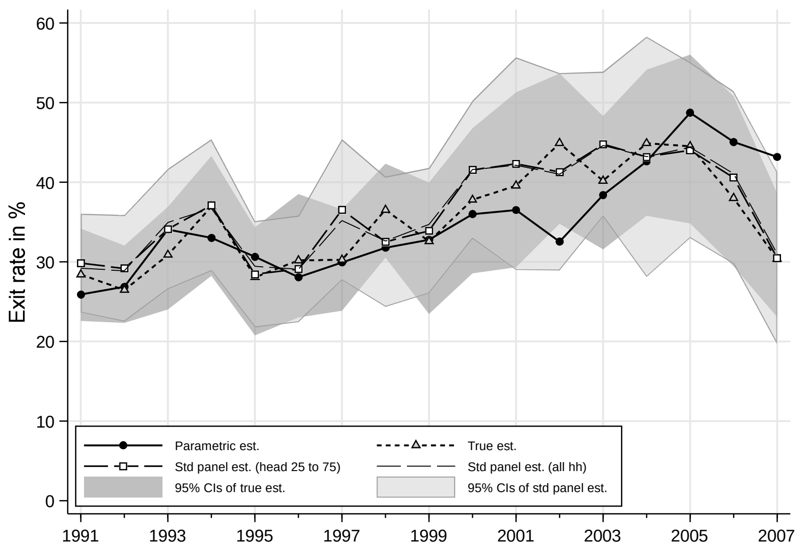
Exit rate = Prob(non-poor in year 2 | poor in year 1)



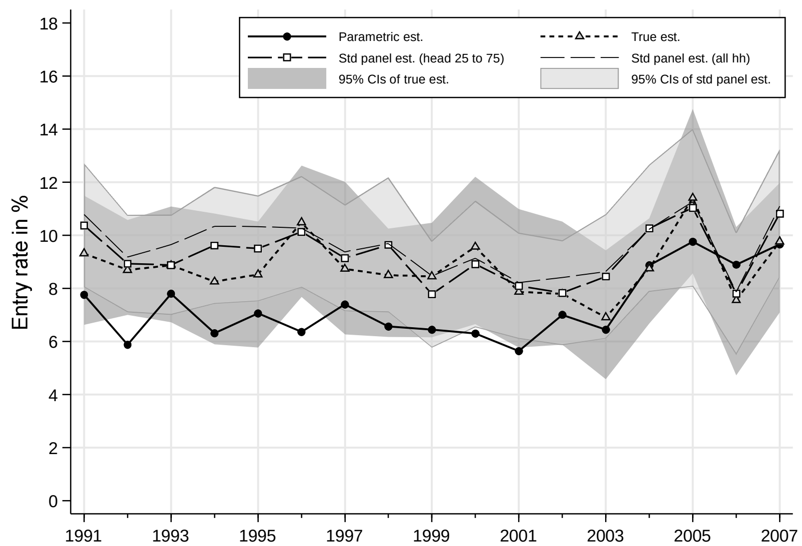
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

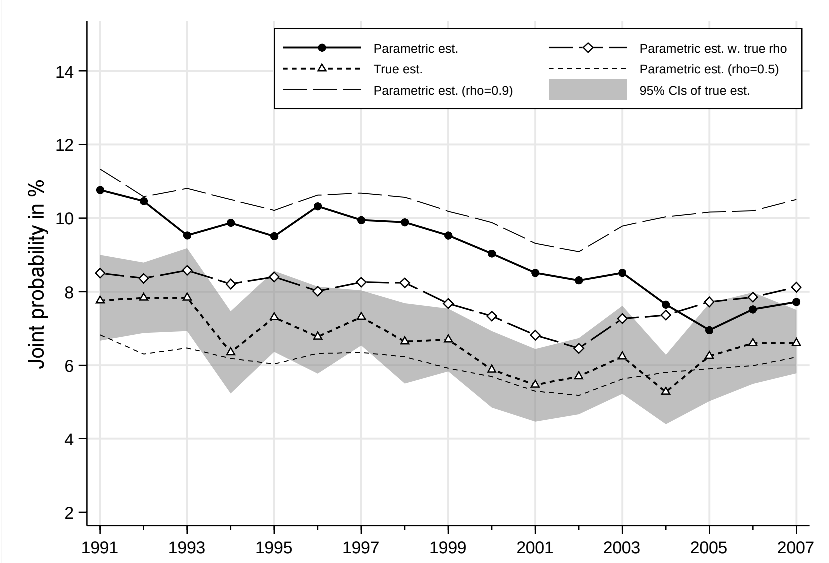


Entry rate = Prob(poor in year 2 | non-poor in year 1)

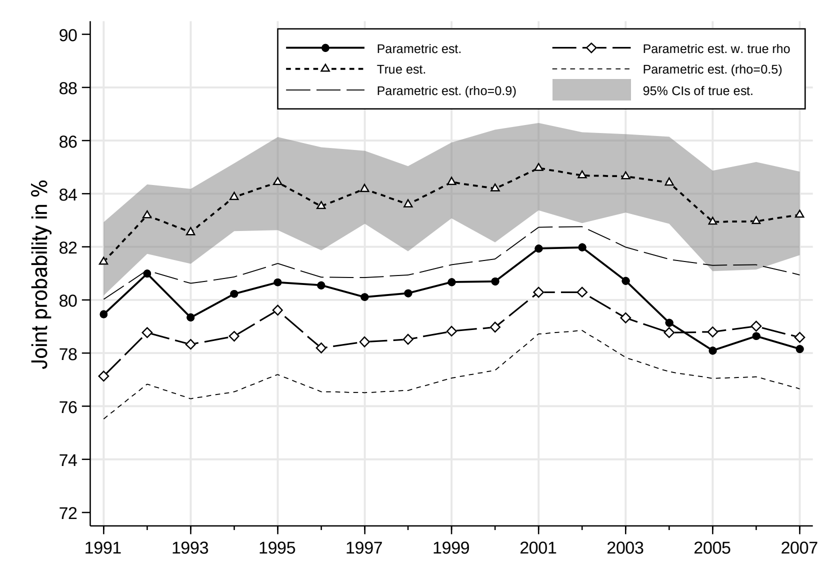


7. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

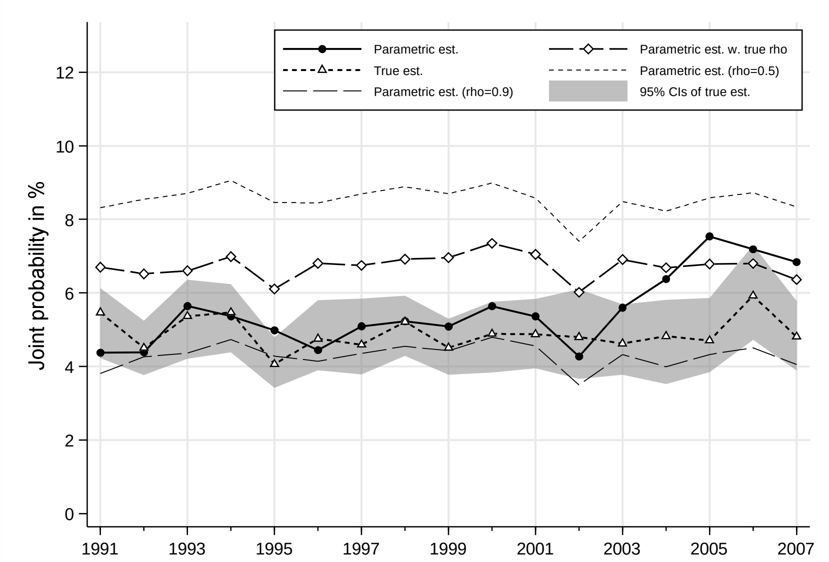
Prob(poor in year 1, poor in year 2)



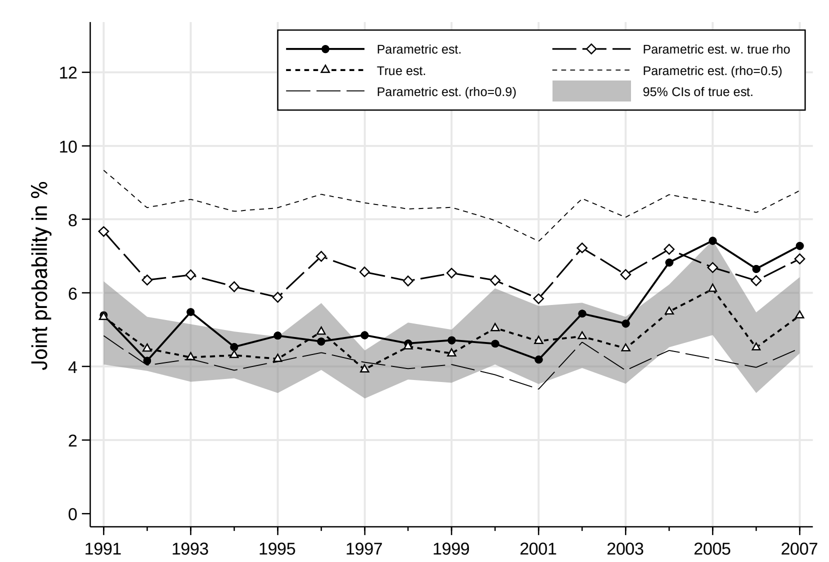
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

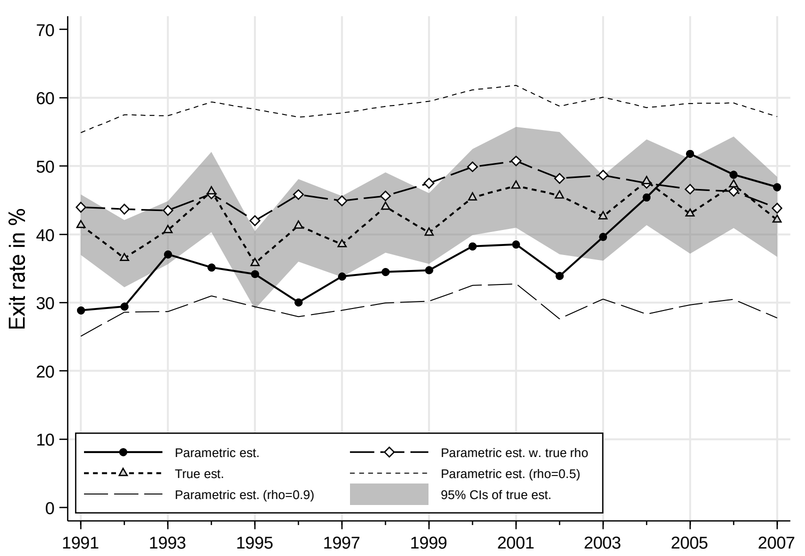


Prob(non-poor in year 1, poor in year 2)

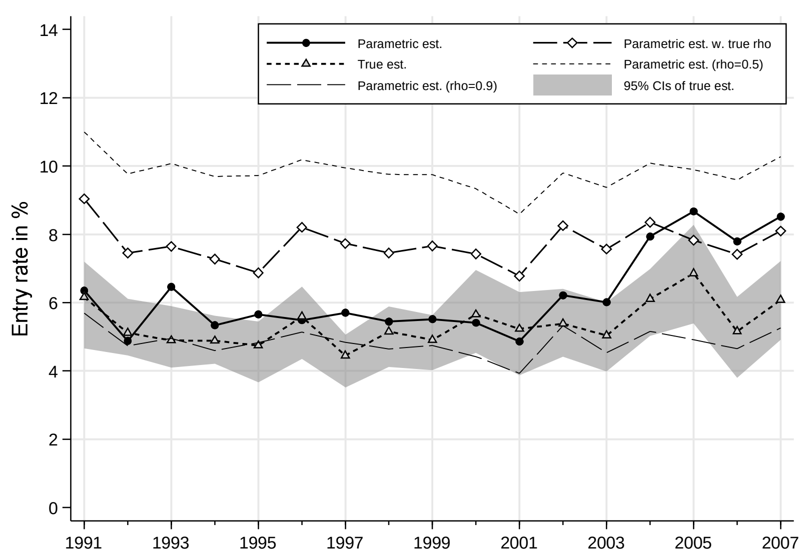


7. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

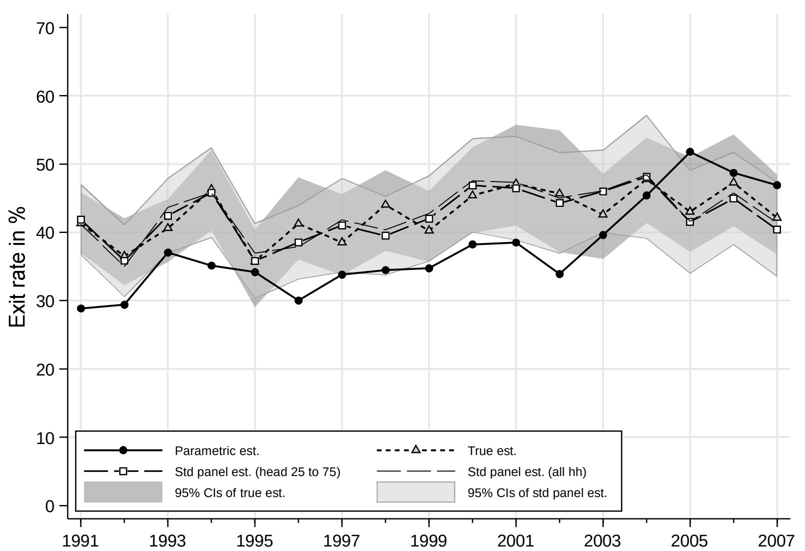
Exit rate = Prob(non-poor in year 2 | poor in year 1)



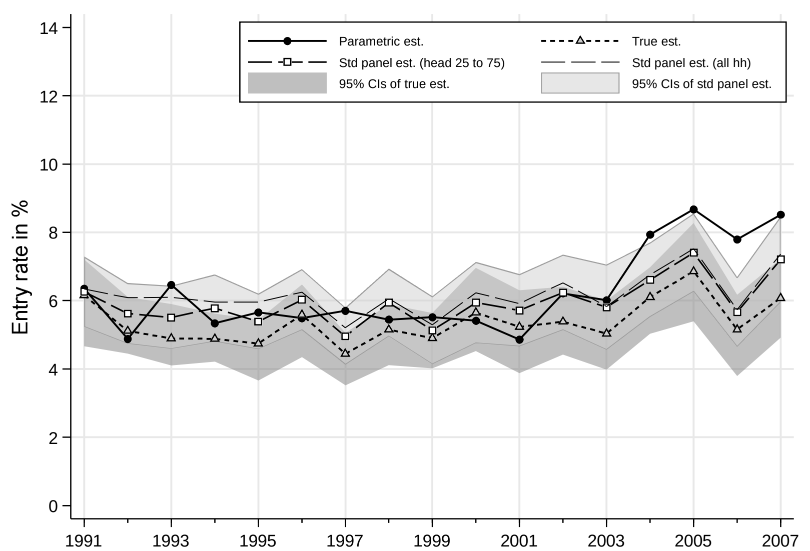
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

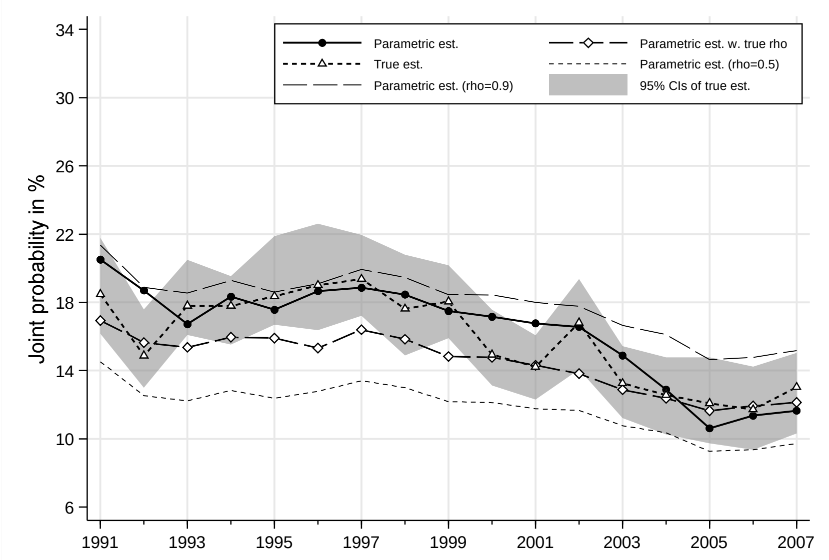


Entry rate = Prob(poor in year 2 | non-poor in year 1)

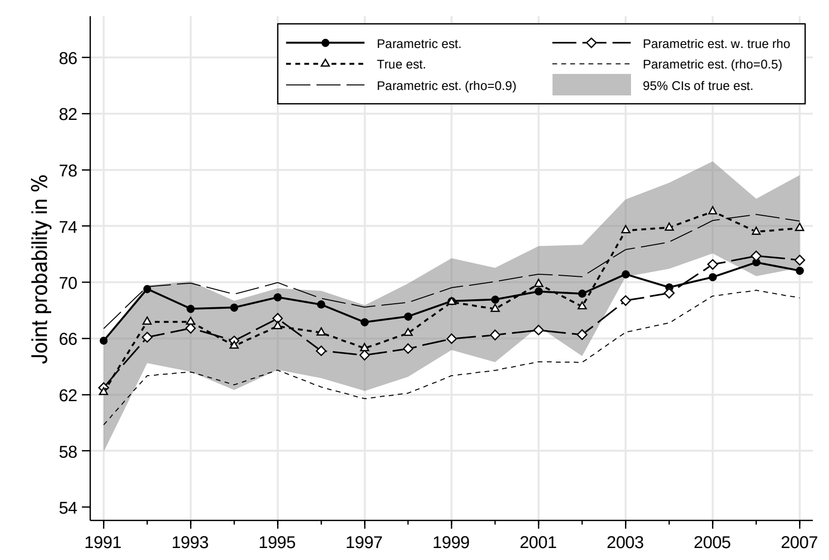


8. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 60+

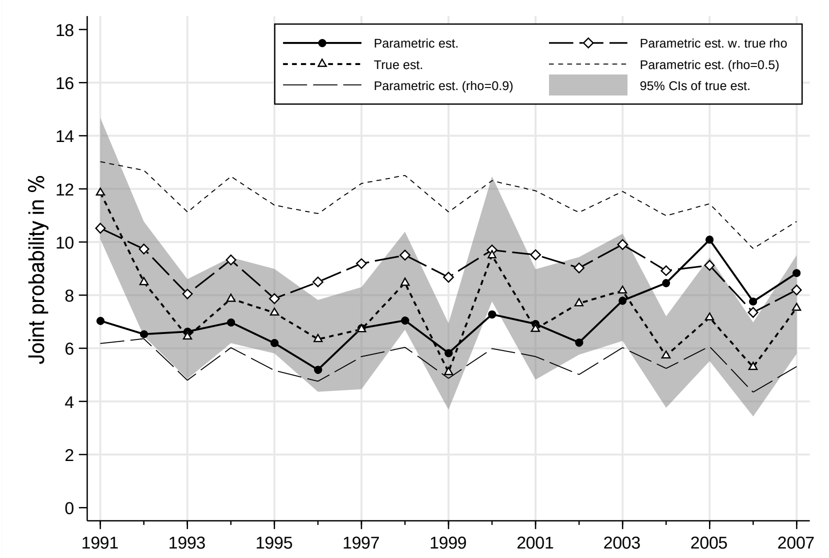
Prob(poor in year 1, poor in year 2)



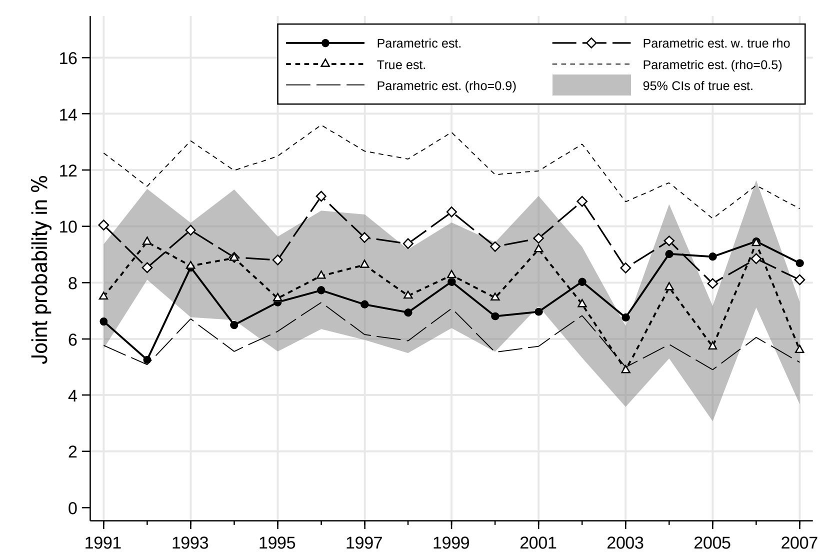
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

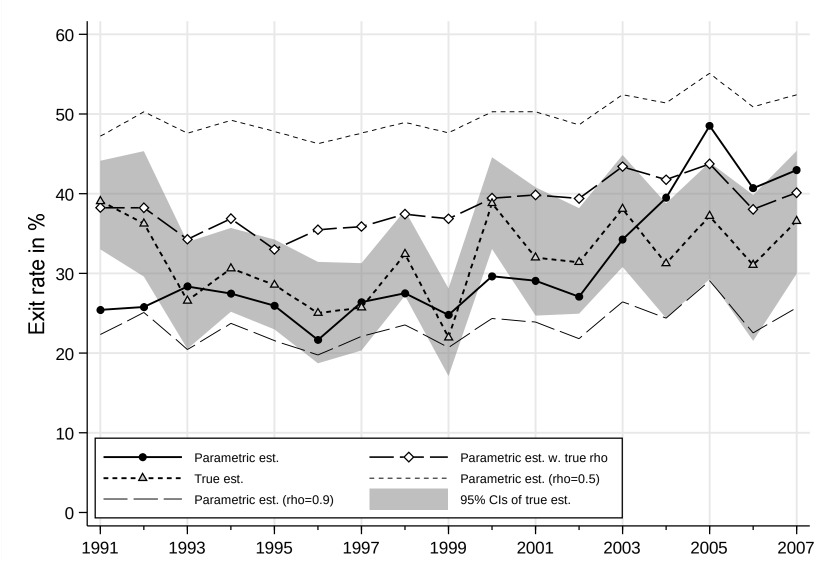


Prob(non-poor in year 1, poor in year 2)

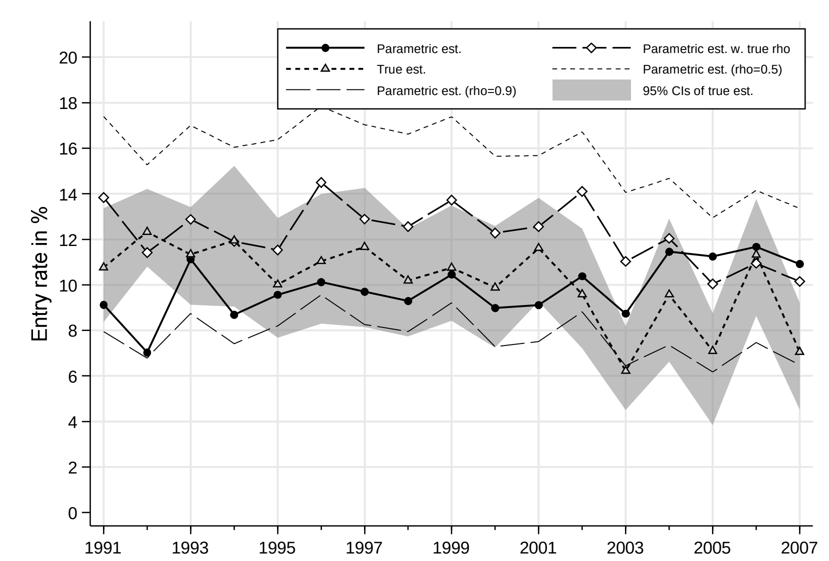


8. BHPS, head 25–75, poverty line 60% median, cohort definition YOB(5), individuals aged 60+

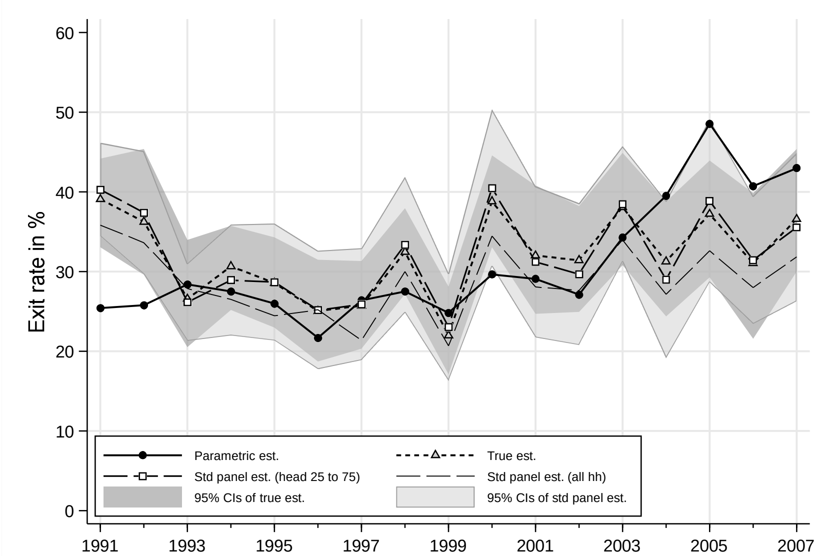
Exit rate = Prob(non-poor in year 2 | poor in year 1)



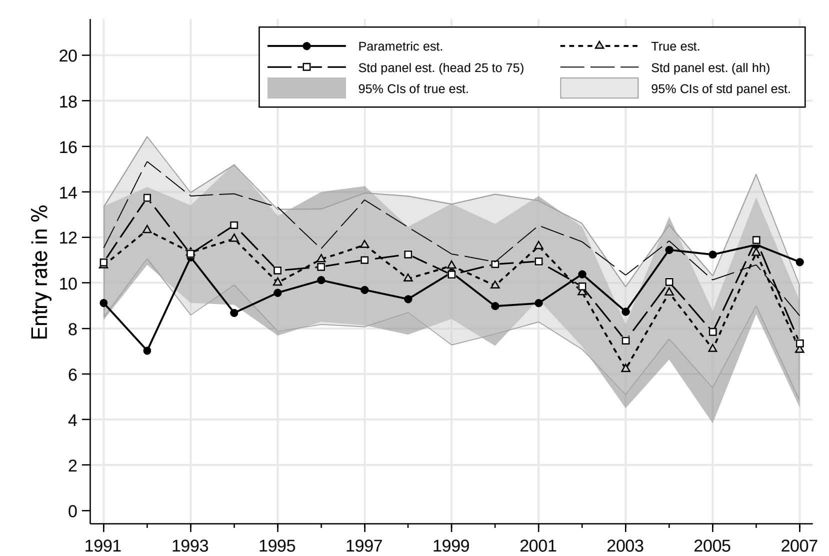
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

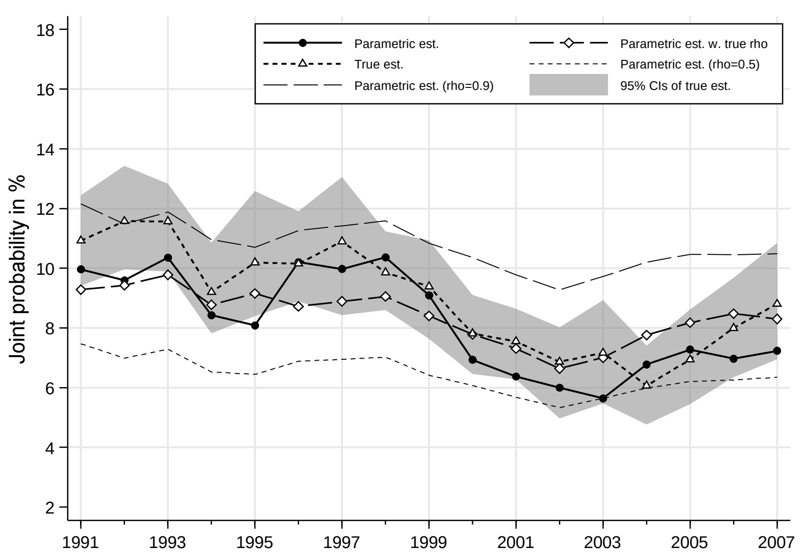


Entry rate = Prob(poor in year 2 | non-poor in year 1)

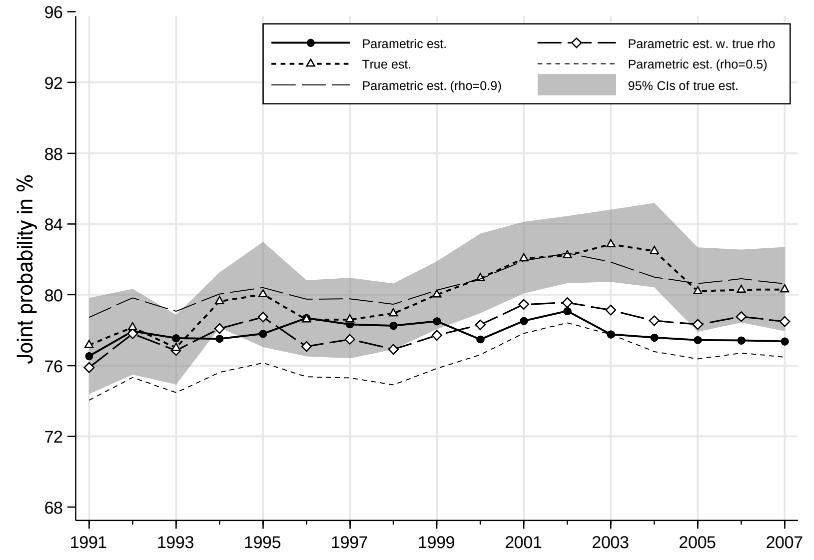


9. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), all individuals

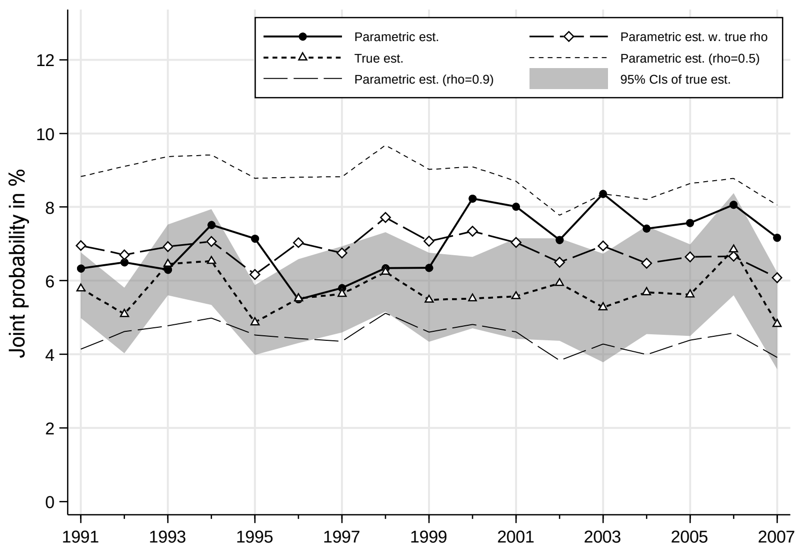
Prob(poor in year 1, poor in year 2)



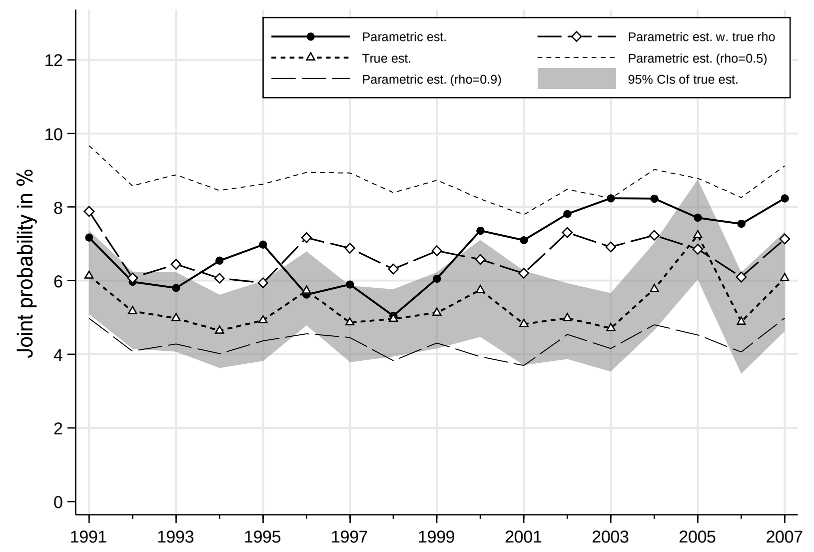
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

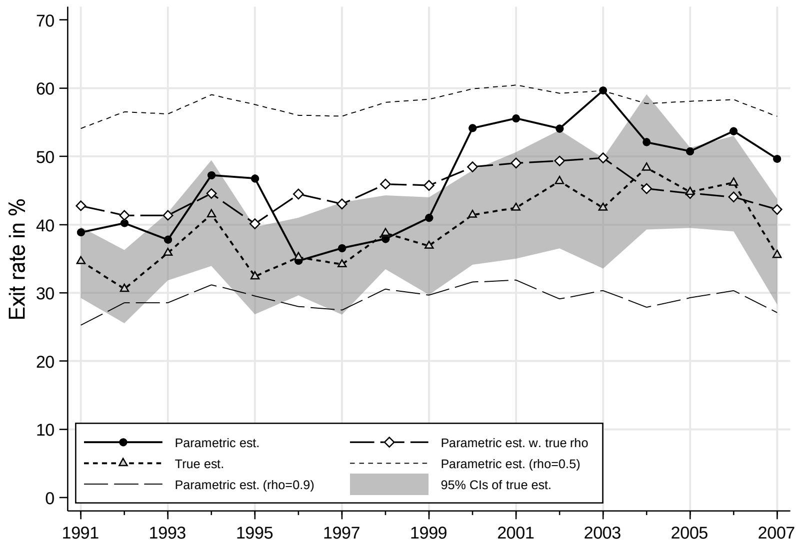


Prob(non-poor in year 1, poor in year 2)

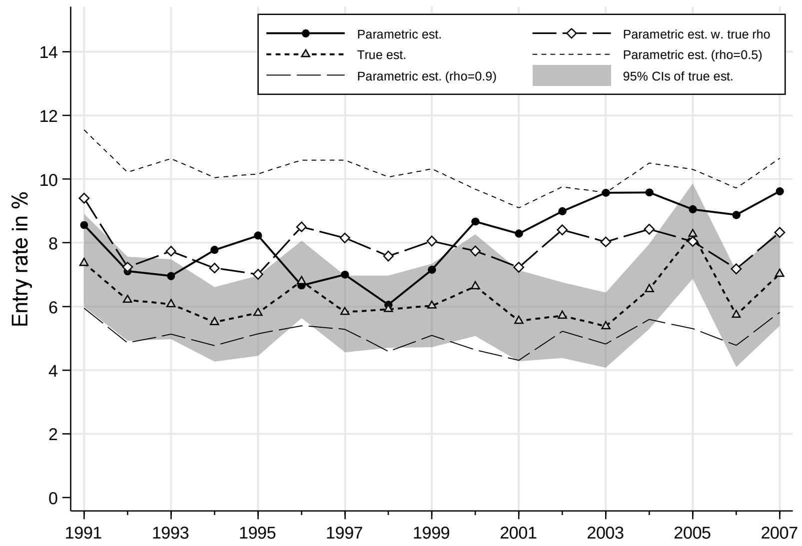


9. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), all individuals

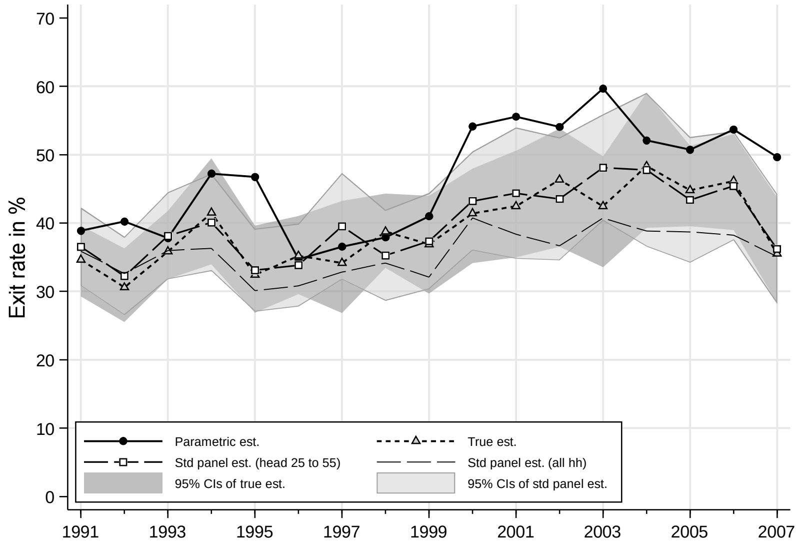
Exit rate = Prob(non-poor in year 2 | poor in year 1)



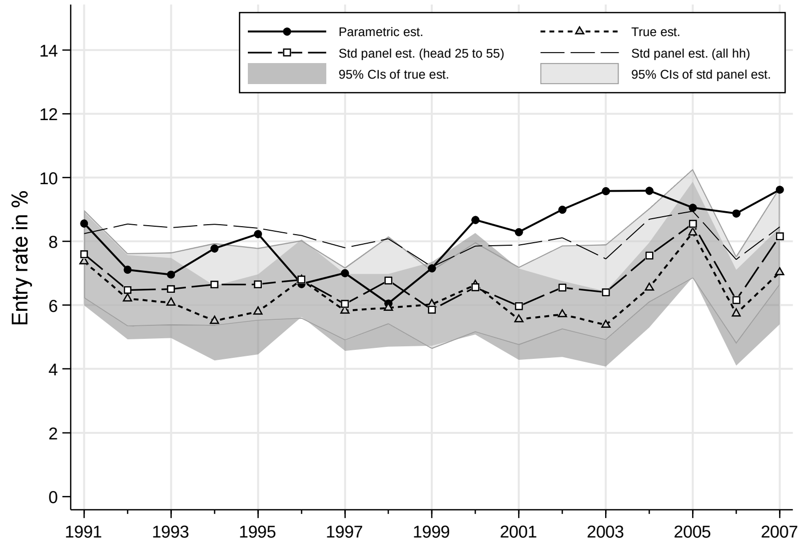
Entry rate = Prob(poor in year 2 | non-poor in year 1)



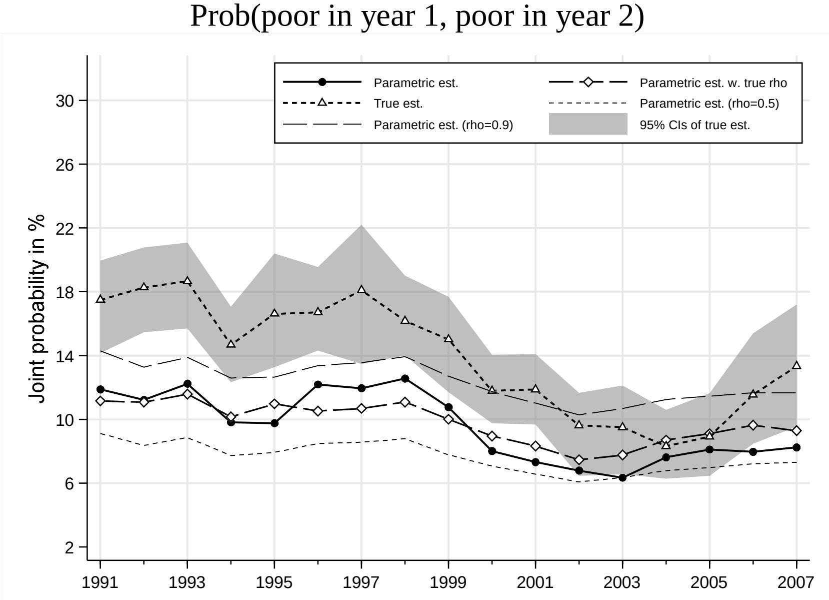
Exit rate = Prob(non-poor in year 2 | poor in year 1)

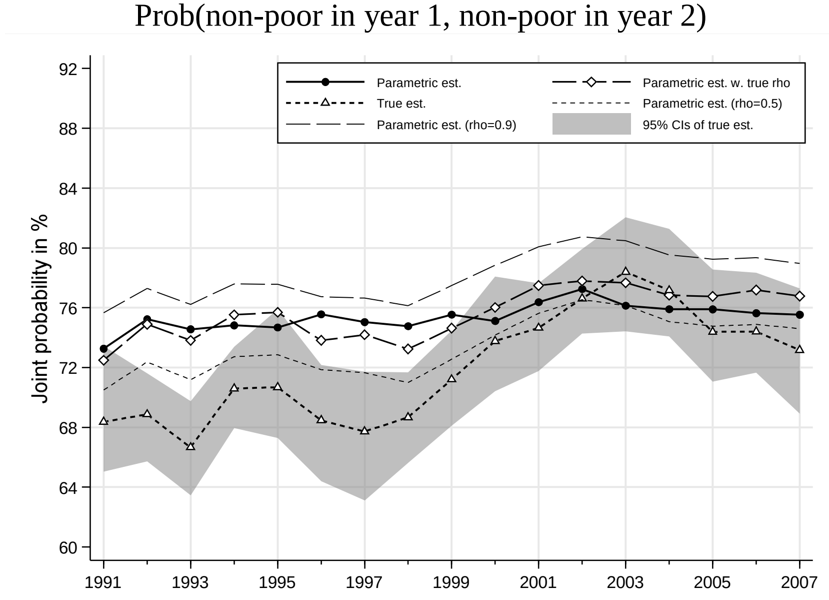


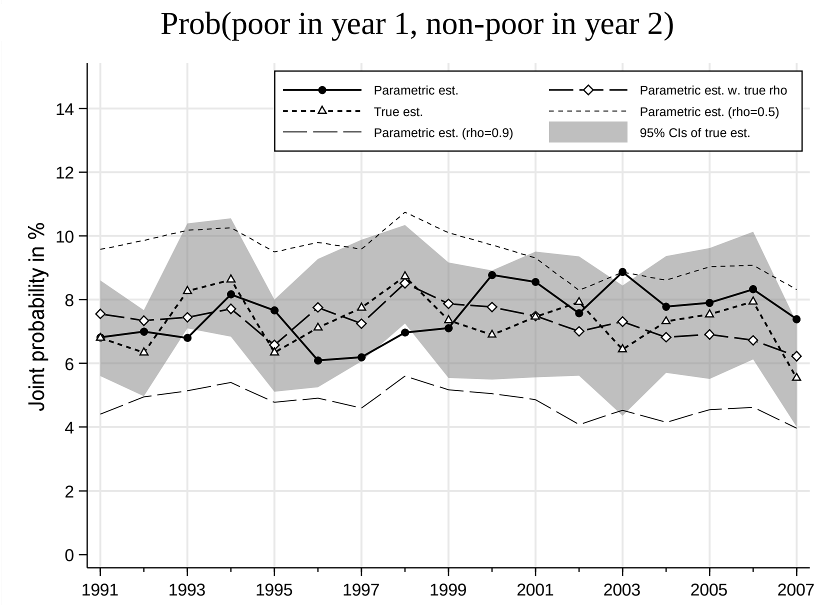
Entry rate = Prob(poor in year 2 | non-poor in year 1)

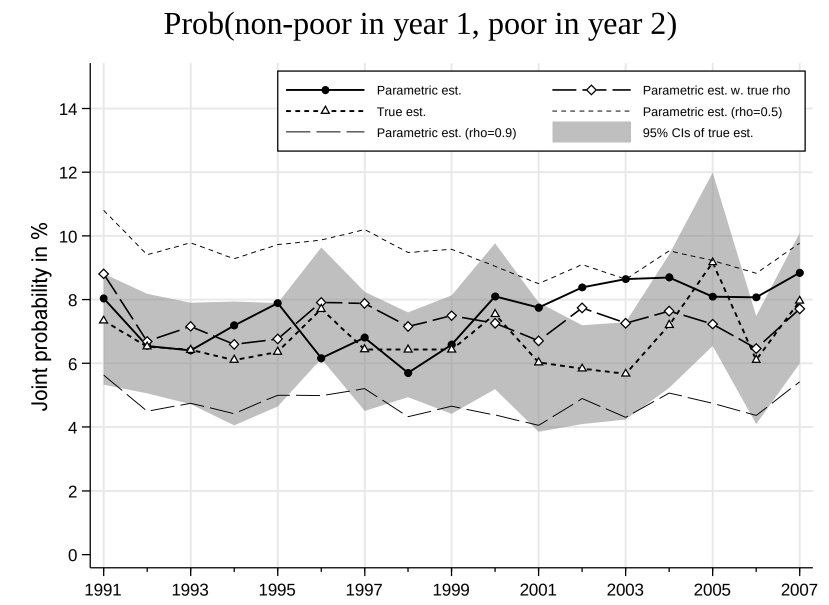


10. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 0–17



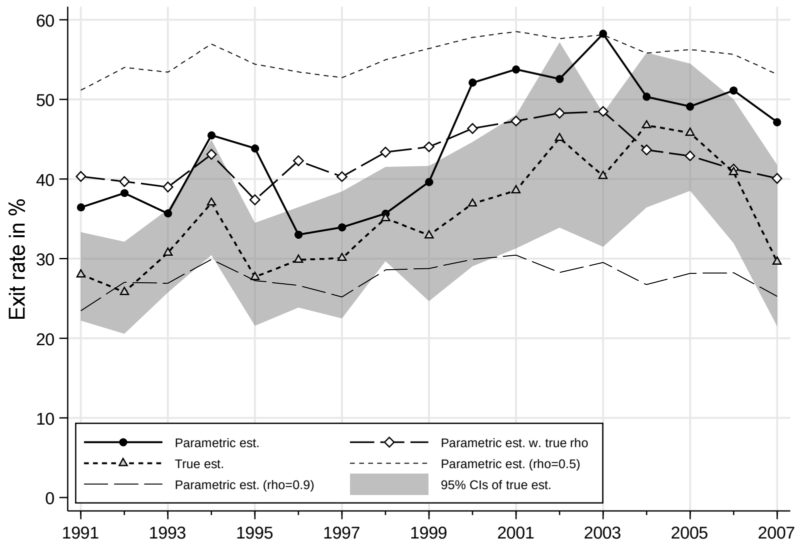




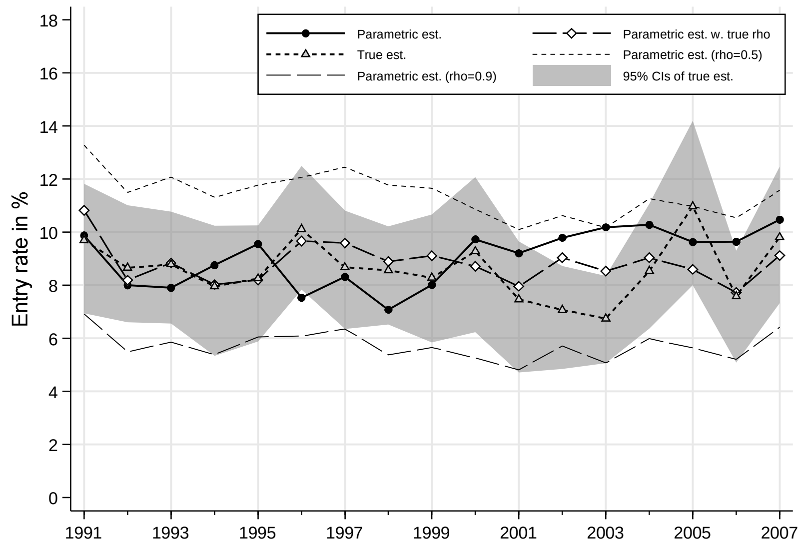


10. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 0–17

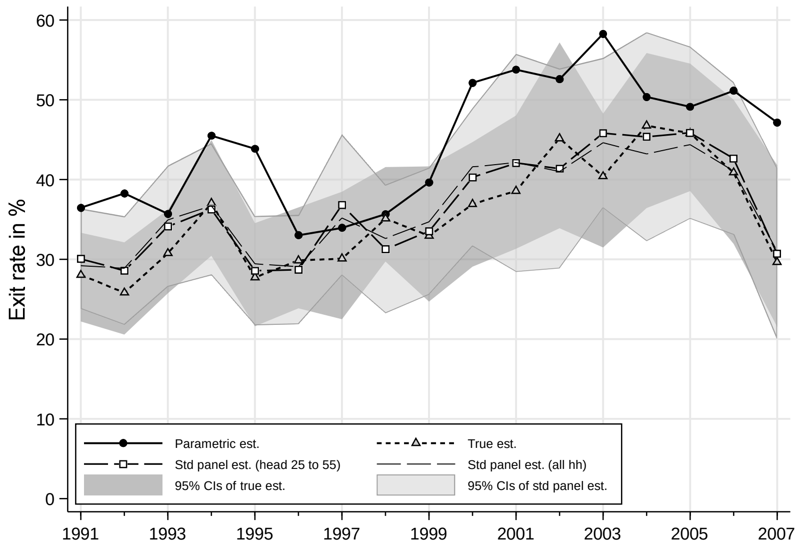
Exit rate = Prob(non-poor in year 2 | poor in year 1)



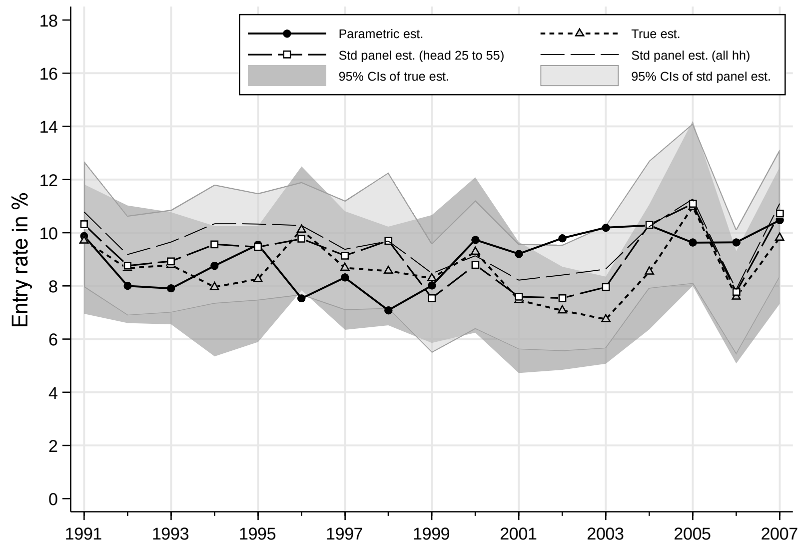
Entry rate = Prob(poor in year 2 | non-poor in year 1)



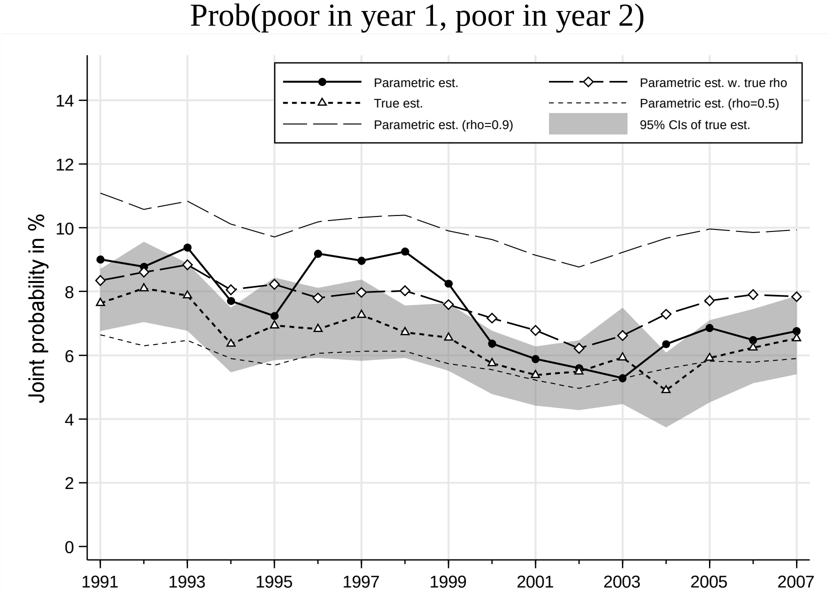
Exit rate = Prob(non-poor in year 2 | poor in year 1)

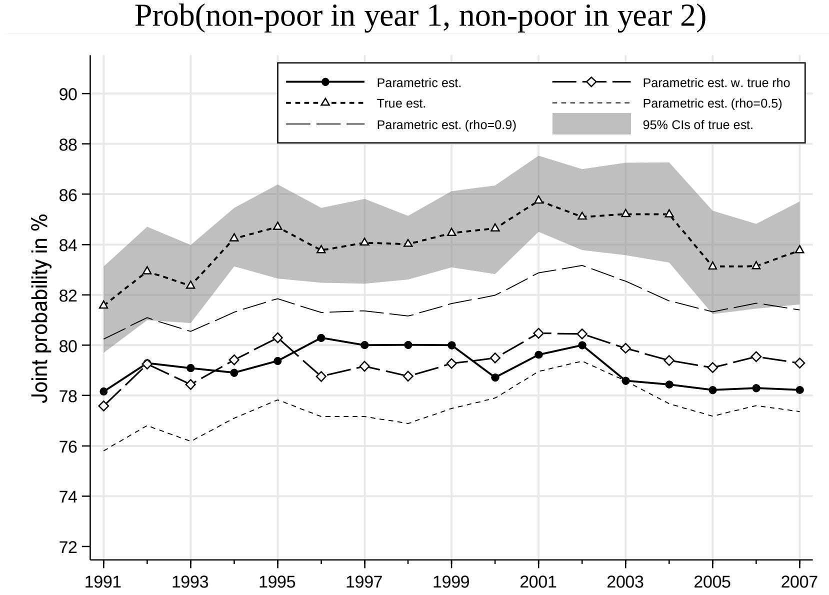


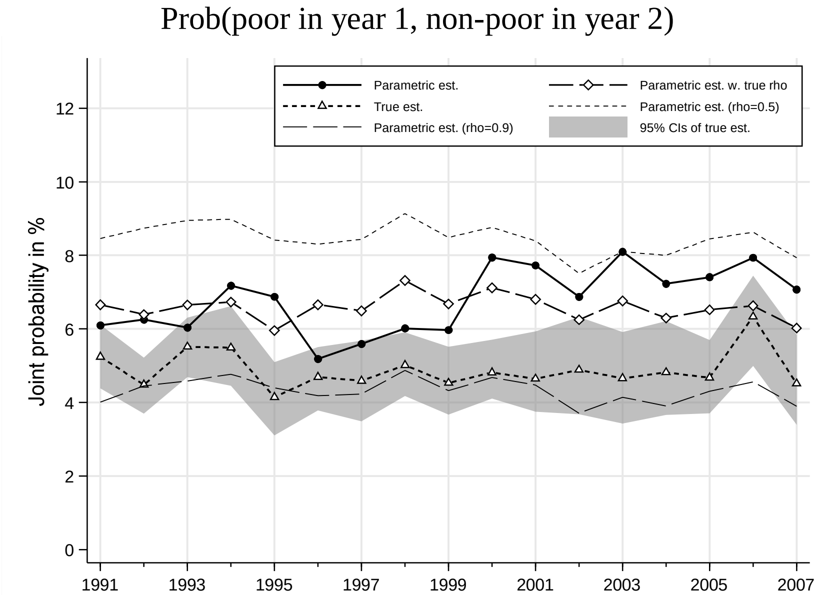
Entry rate = Prob(poor in year 2 | non-poor in year 1)

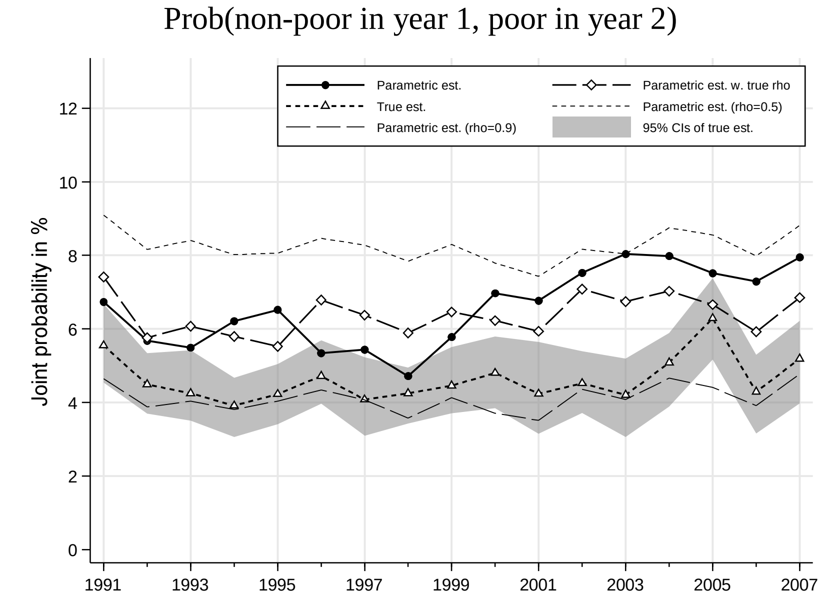


11. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 18–59



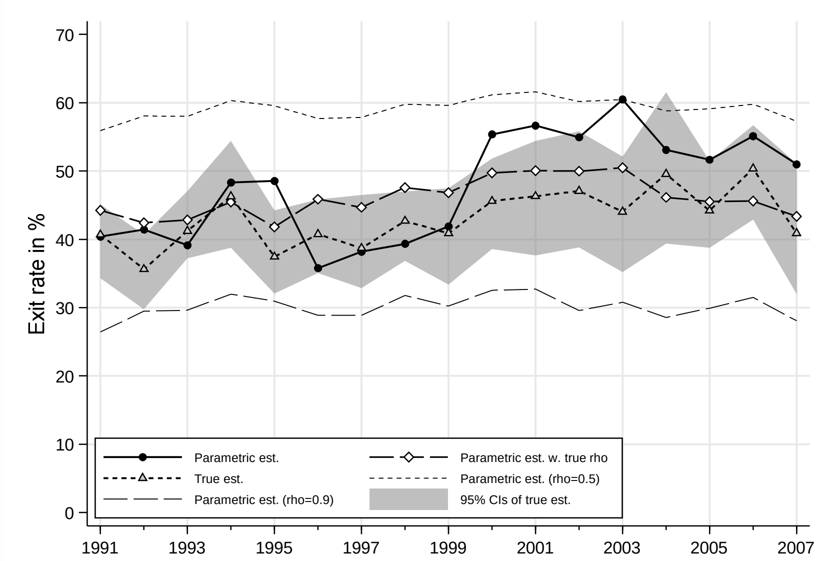




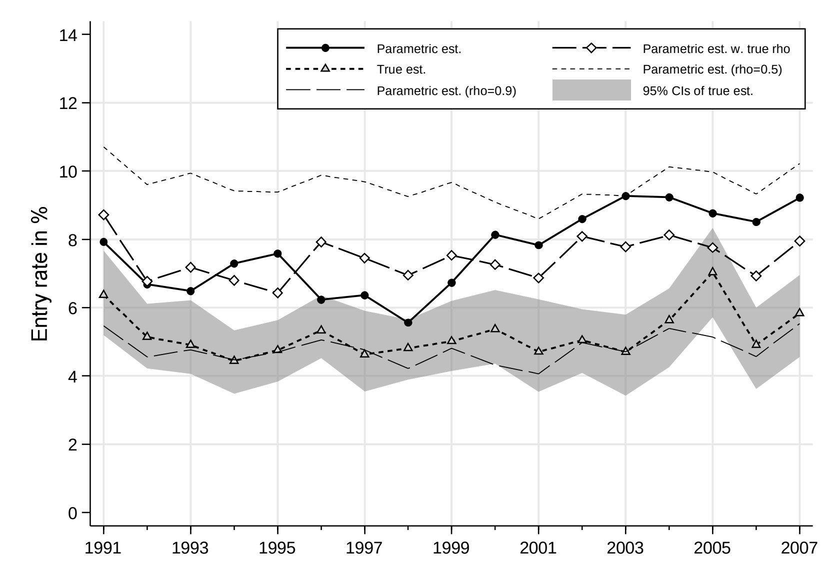


11. BHPS, head 25–55, poverty line 60% median, cohort definition SEX*YOB(5), individuals aged 18–59

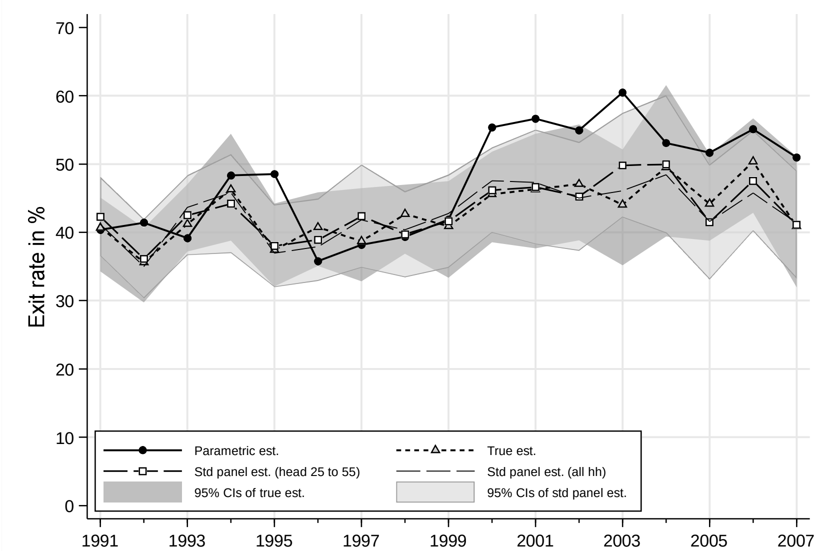
Exit rate = Prob(non-poor in year 2 | poor in year 1)



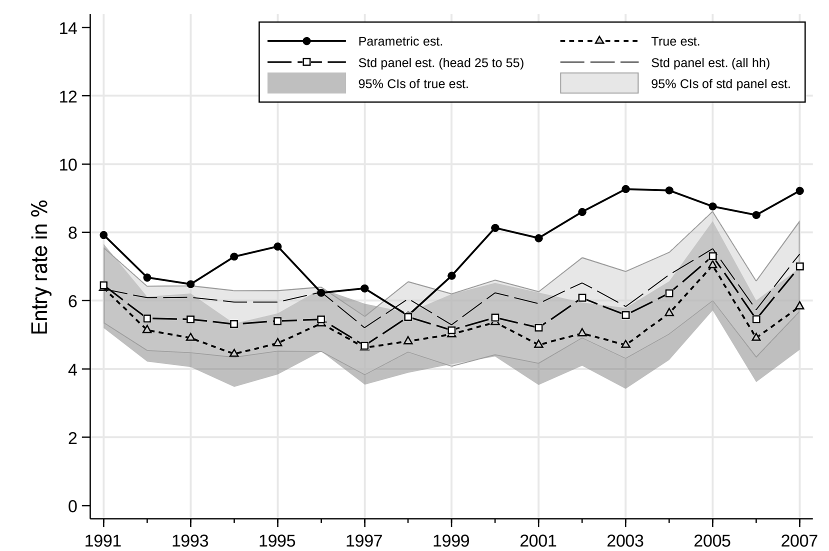
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

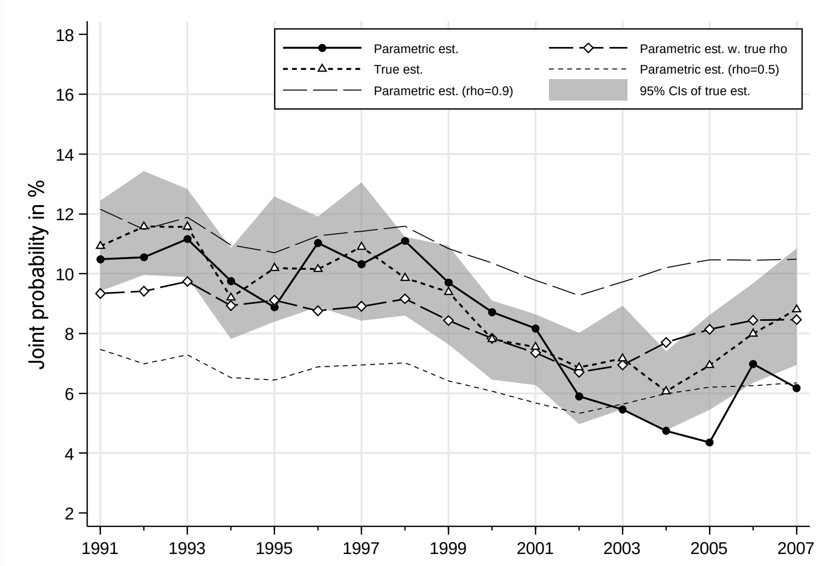


Entry rate = Prob(poor in year 2 | non-poor in year 1)

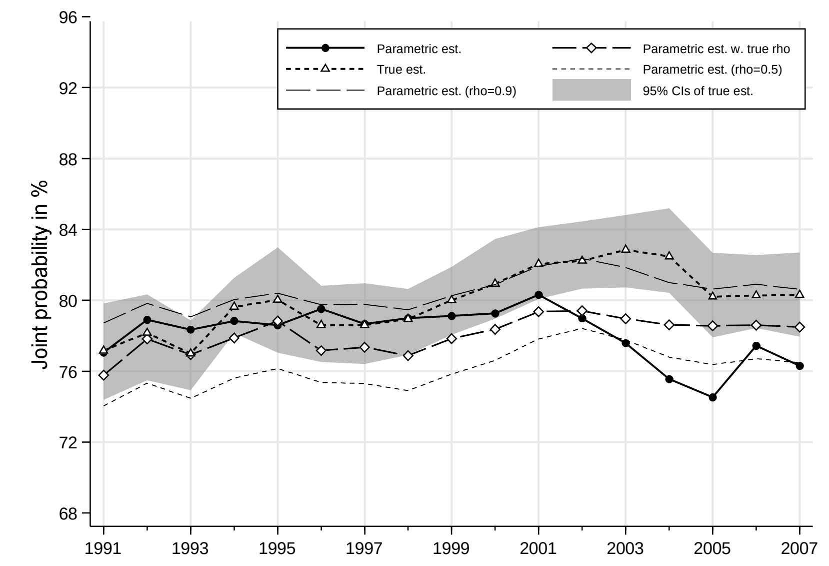


12. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), all individuals

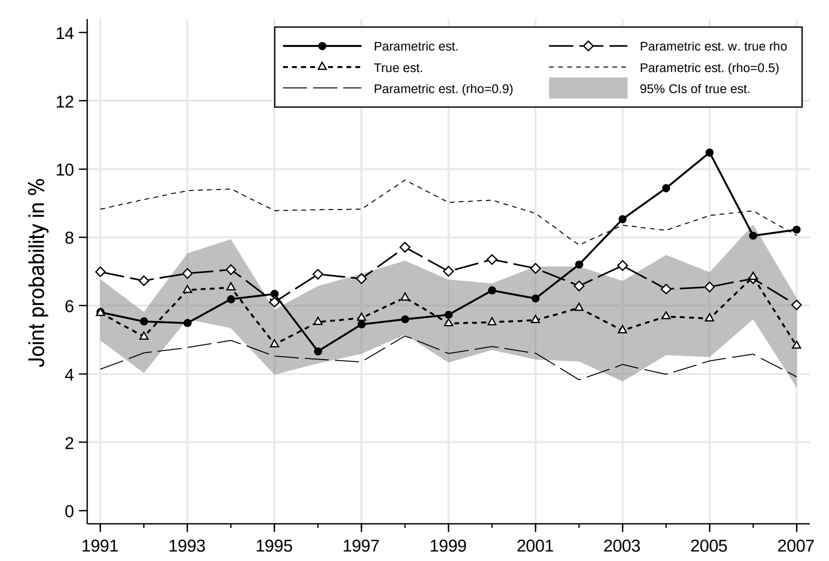
Prob(poor in year 1, poor in year 2)



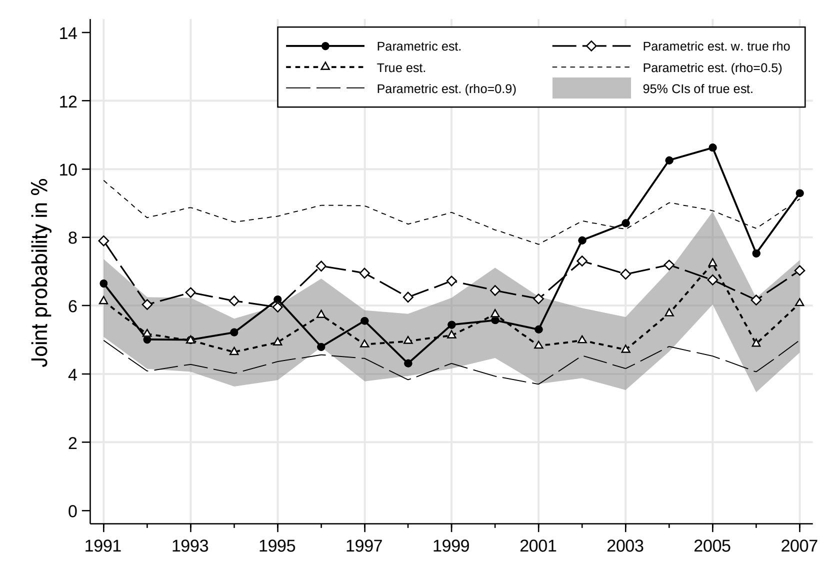
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

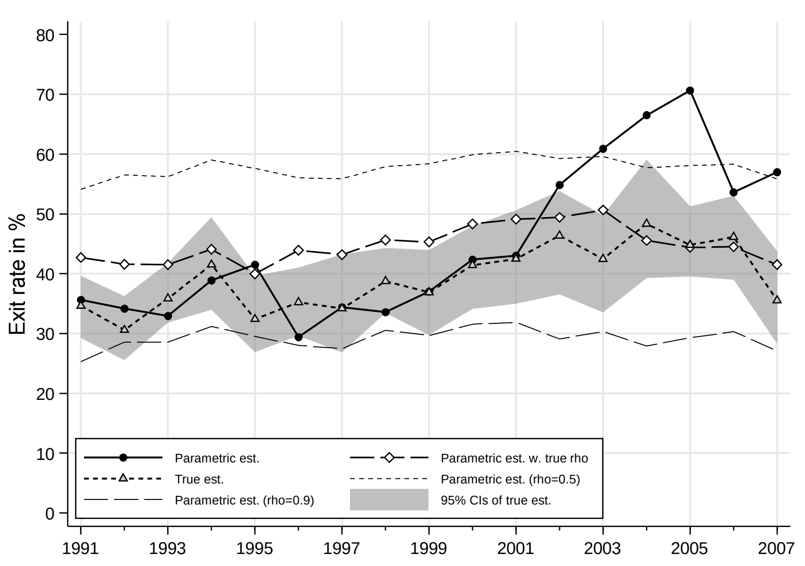


Prob(non-poor in year 1, poor in year 2)

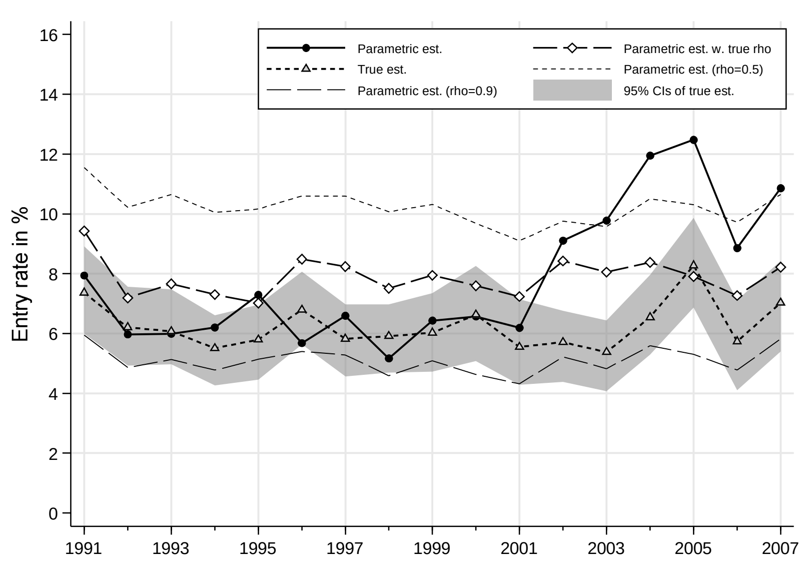


12. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), all individuals

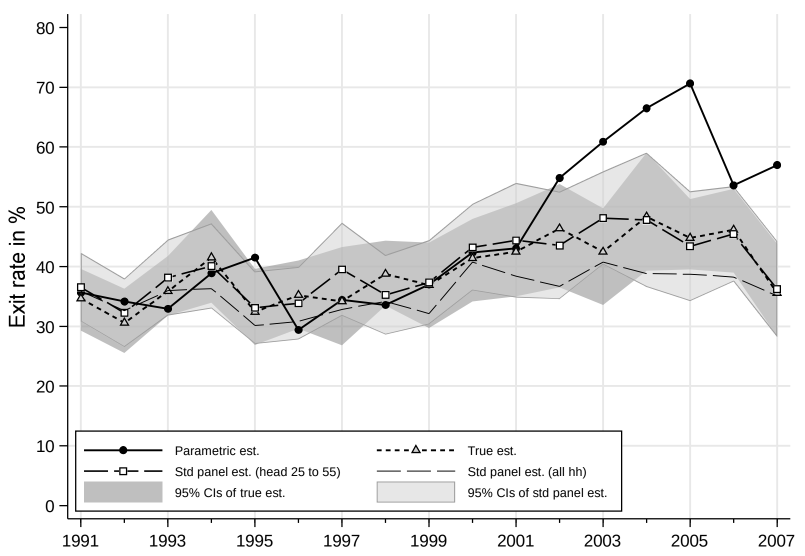
Exit rate = Prob(non-poor in year 2 | poor in year 1)



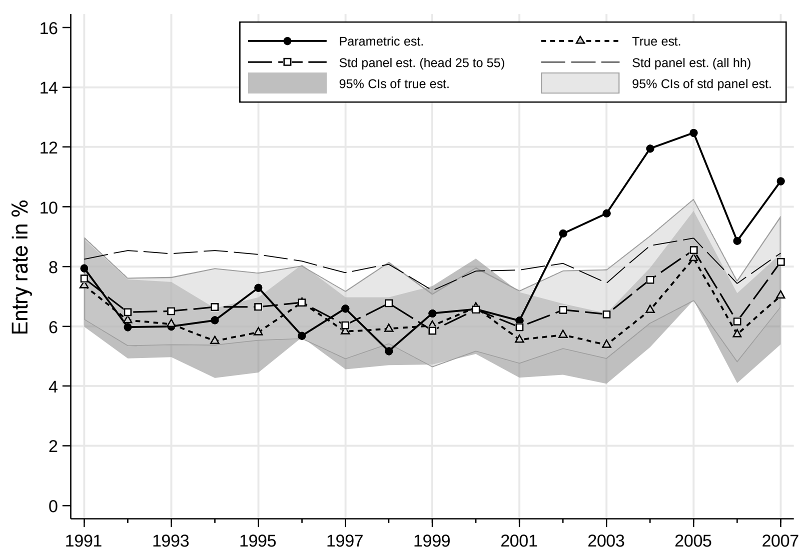
Entry rate = Prob(poor in year 2 | non-poor in year 1)



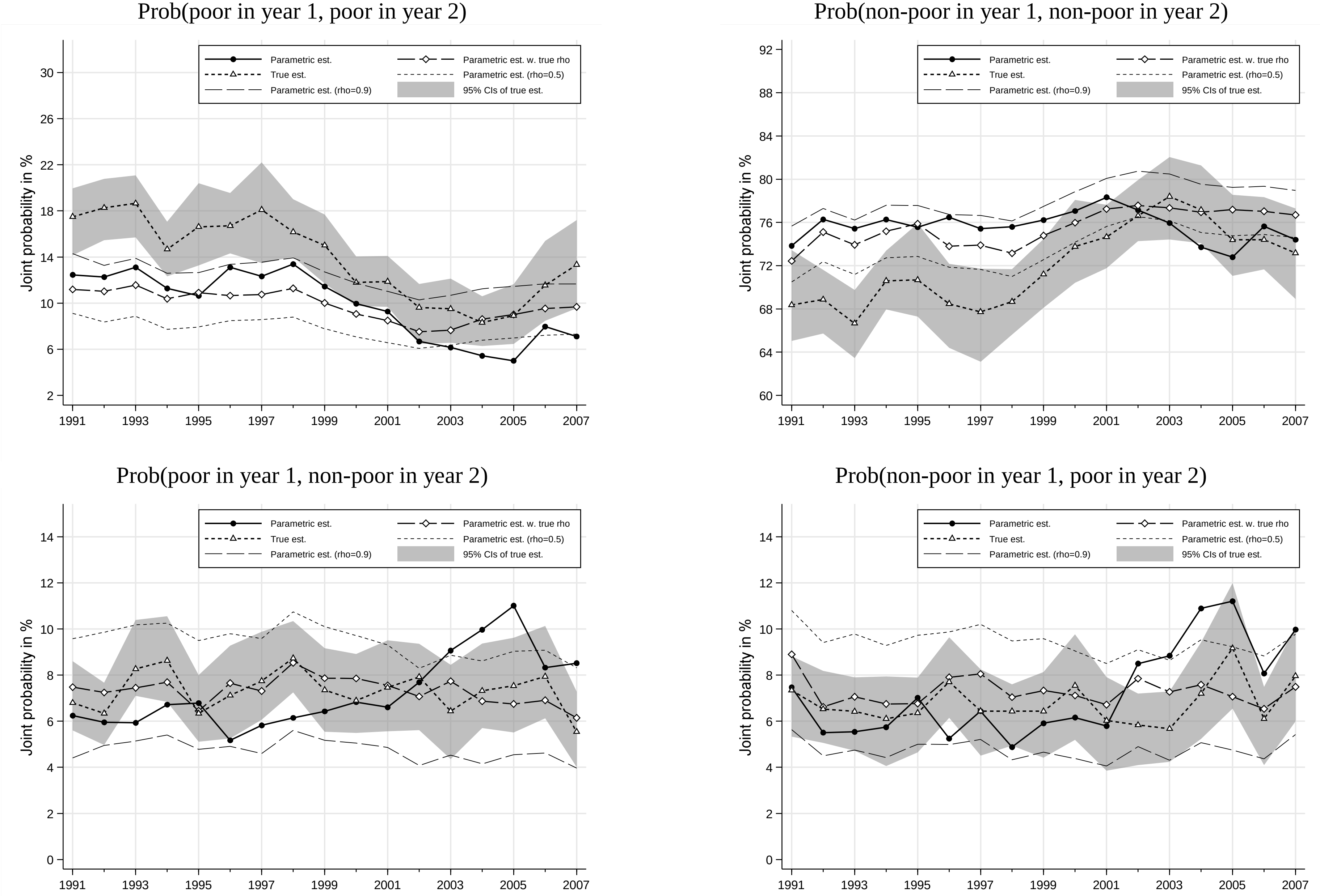
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

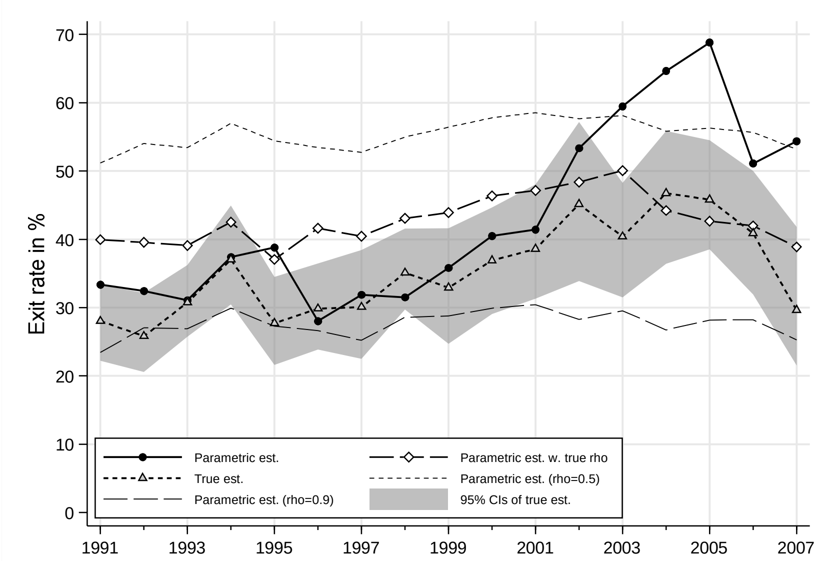


13. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

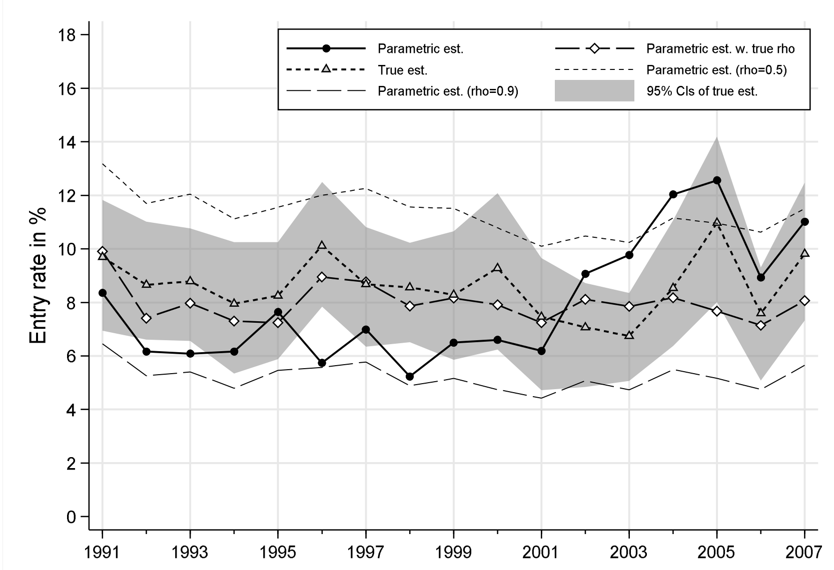


13. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 0–17

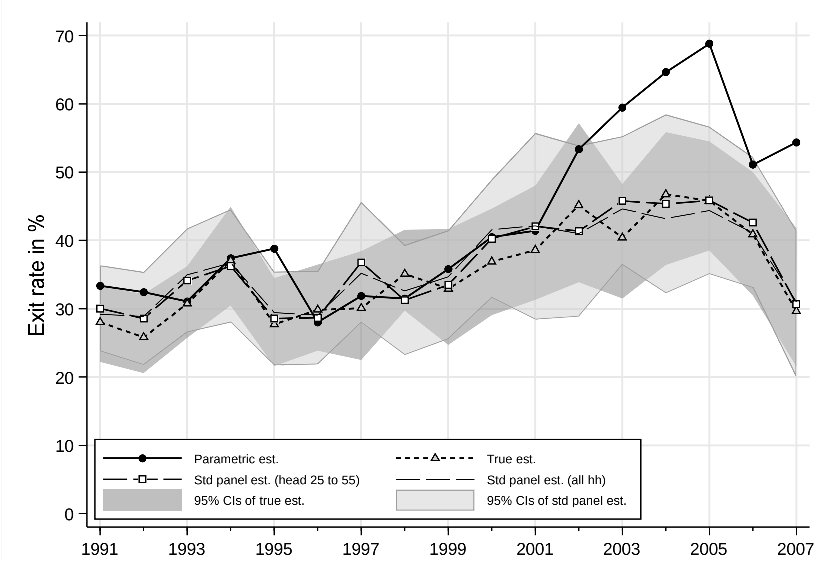
Exit rate = Prob(non-poor in year 2 | poor in year 1)



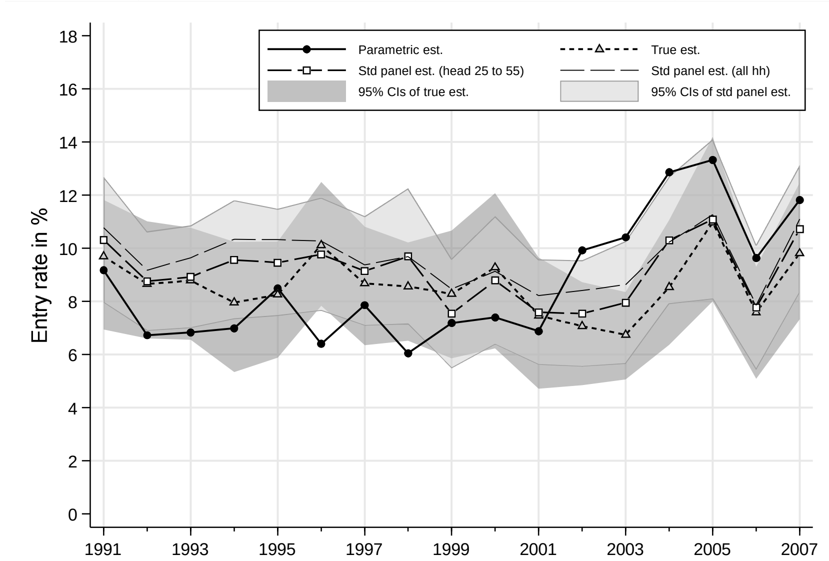
Entry rate = Prob(poor in year 2 | non-poor in year 1)



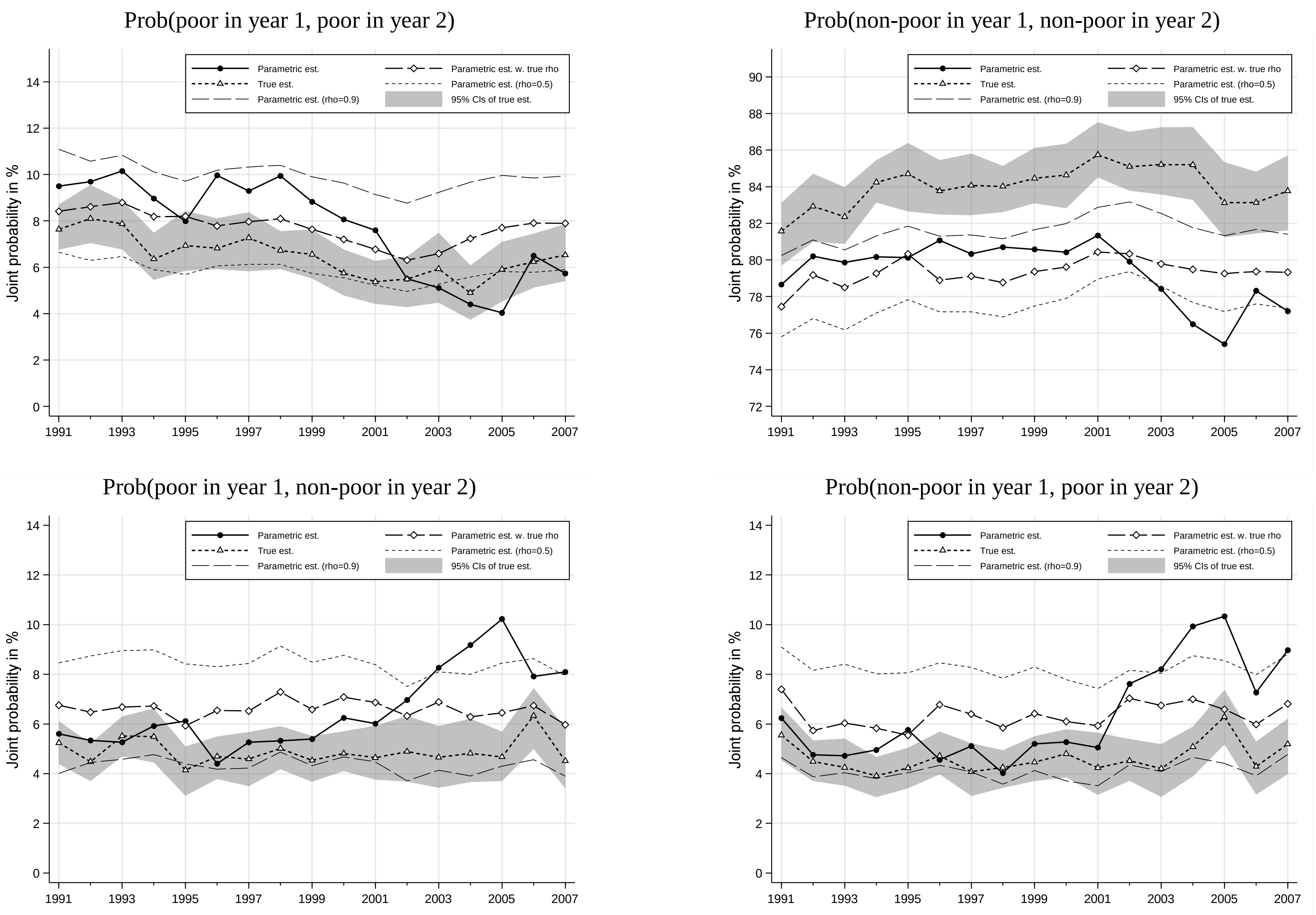
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

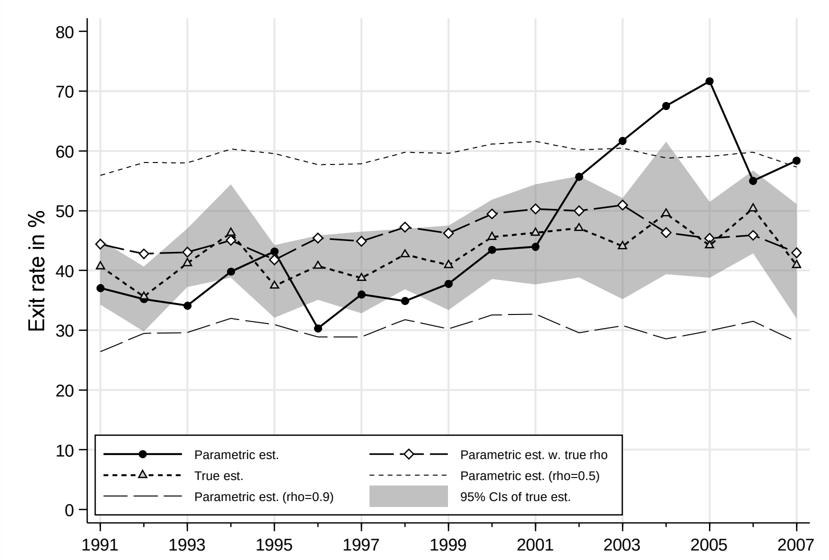


14. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

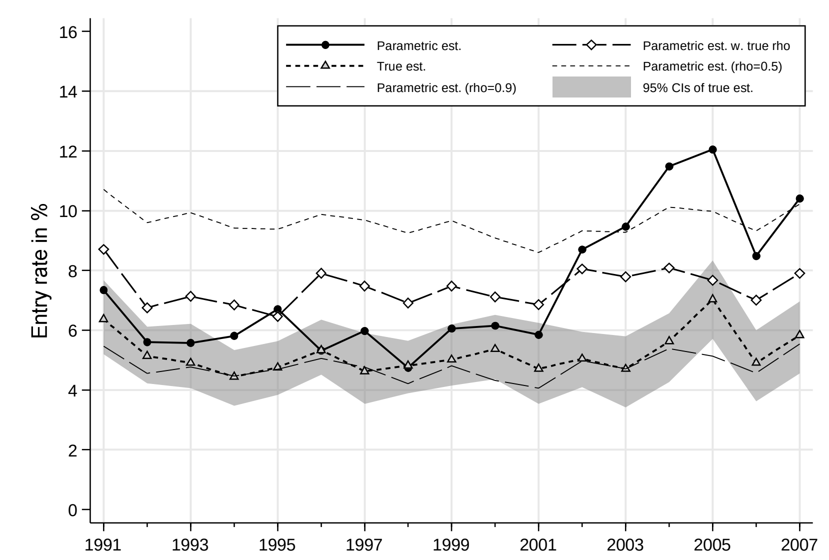

Prob(poor in year 1, poor in year 2)
Prob(non-poor in year 1, non-poor in year 2)
Prob(poor in year 1, non-poor in year 2)
Prob(non-poor in year 1, poor in year 2)
Parametric est.
Parametric est. w. true rho
True est.
Parametric est. (rho=0.5)
Parametric est. (rho=0.9)
95% CIs of true est.
Joint probability in %

14. BHPS, head 25–55, poverty line 60% median, cohort definition YOB(5), individuals aged 18–59

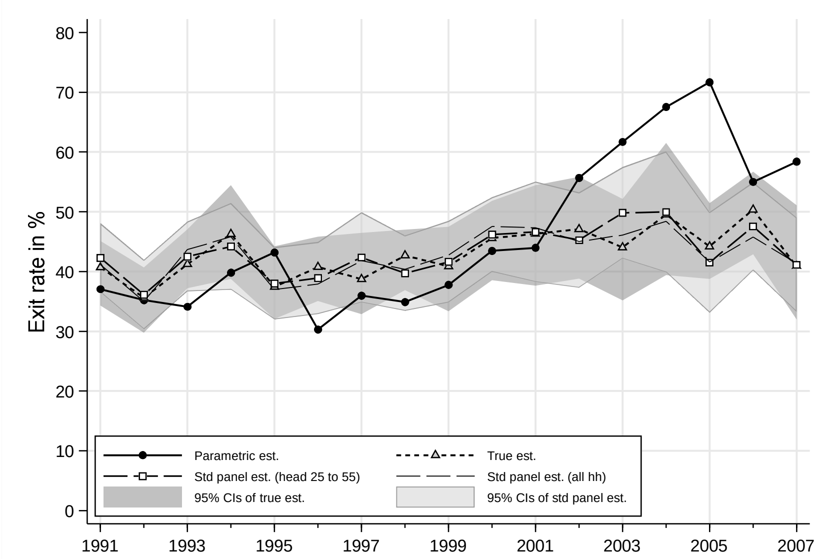
Exit rate = Prob(non-poor in year 2 | poor in year 1)



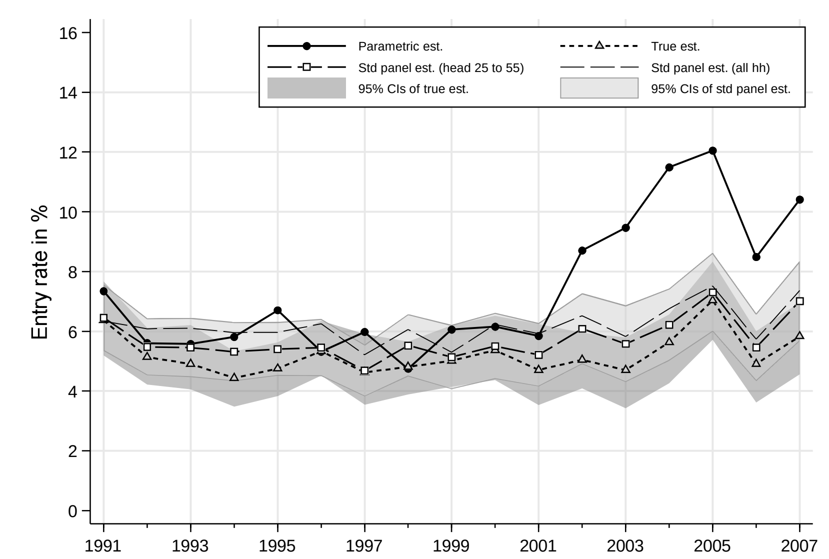
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

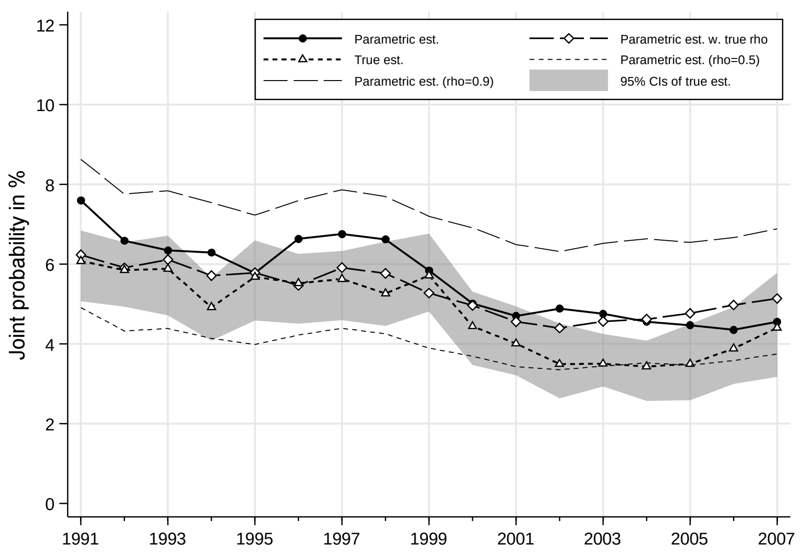


Entry rate = Prob(poor in year 2 | non-poor in year 1)

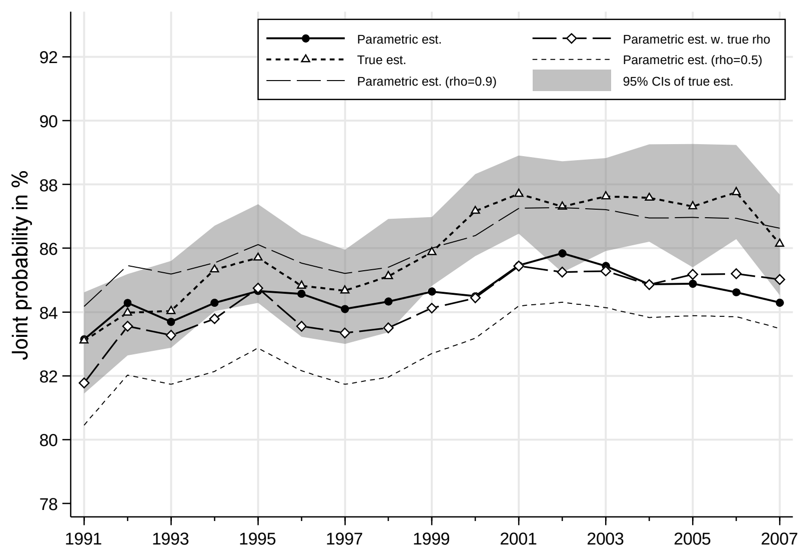


15. BHPS, head 25–75, **poverty line 50% median**, cohort definition SEX*YOB(5), all individuals

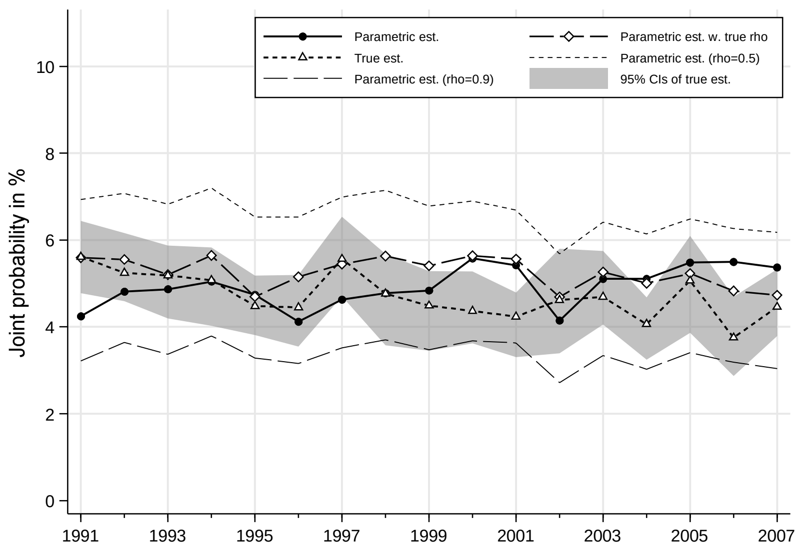
Prob(poor in year 1, poor in year 2)



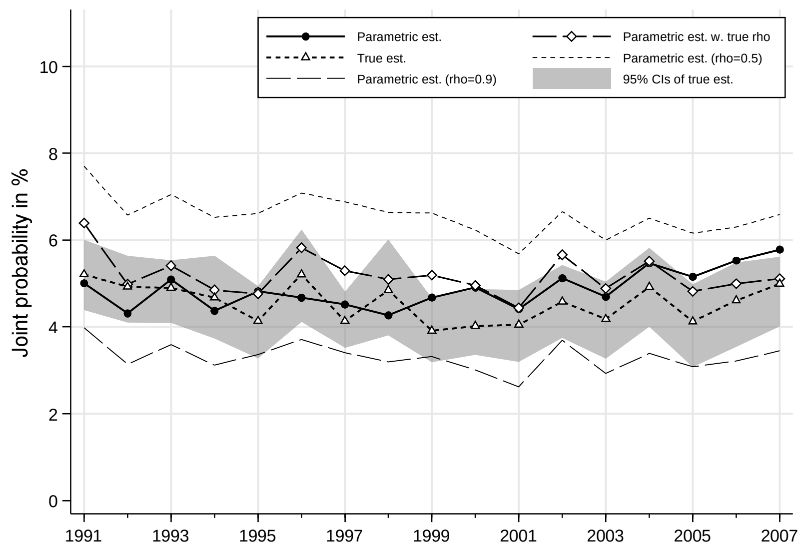
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

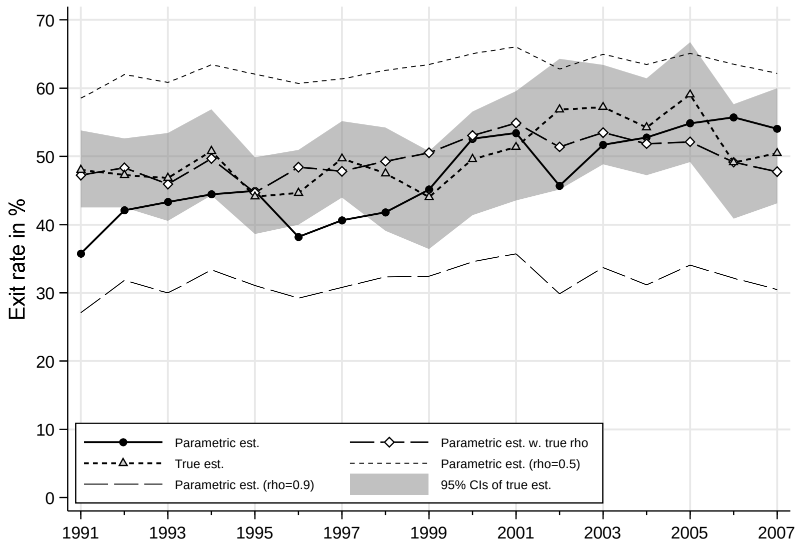


Prob(non-poor in year 1, poor in year 2)

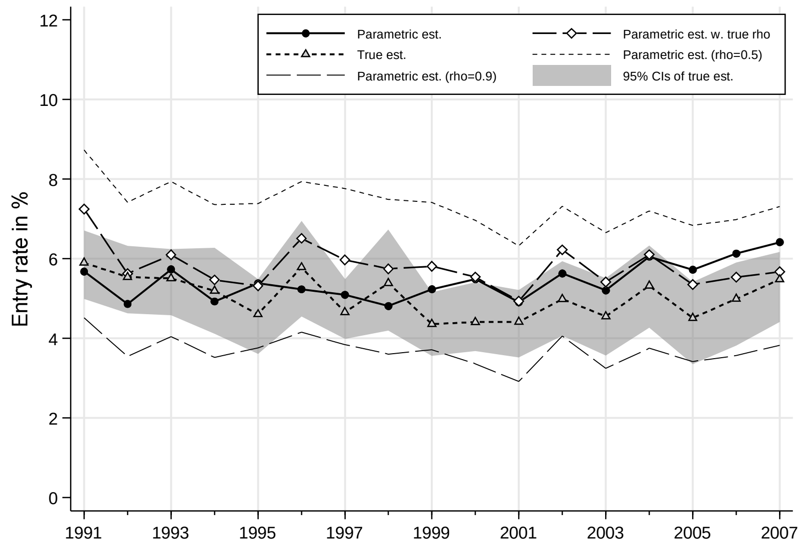


15. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), all individuals

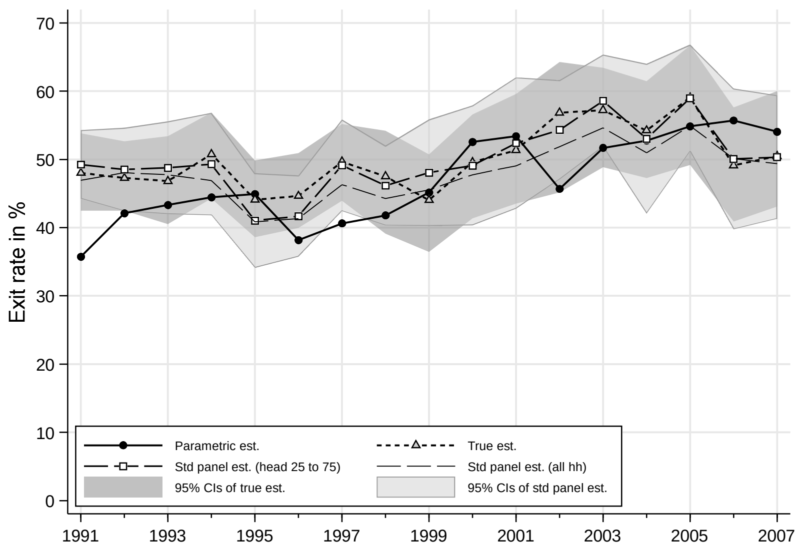
Exit rate = Prob(non-poor in year 2 | poor in year 1)



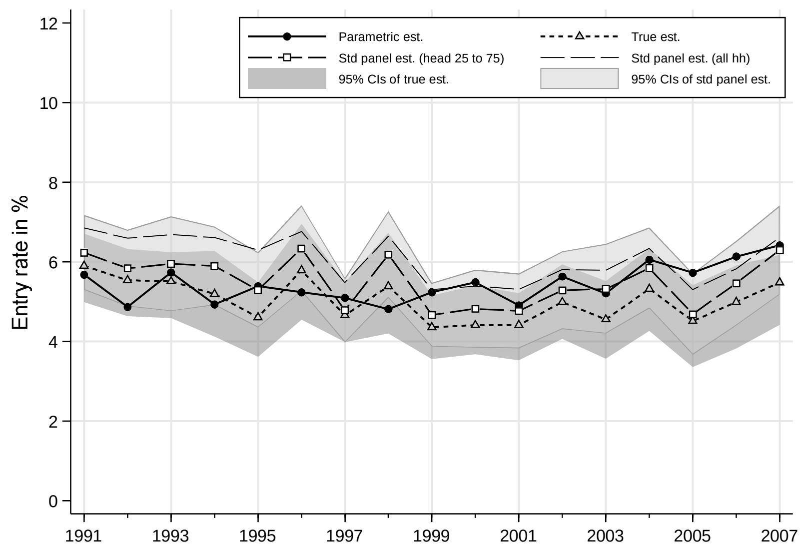
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

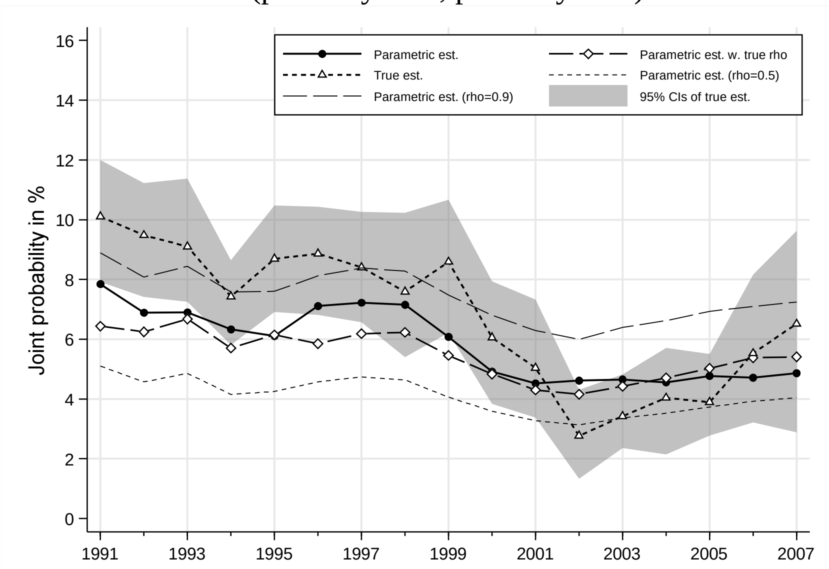


Entry rate = Prob(poor in year 2 | non-poor in year 1)

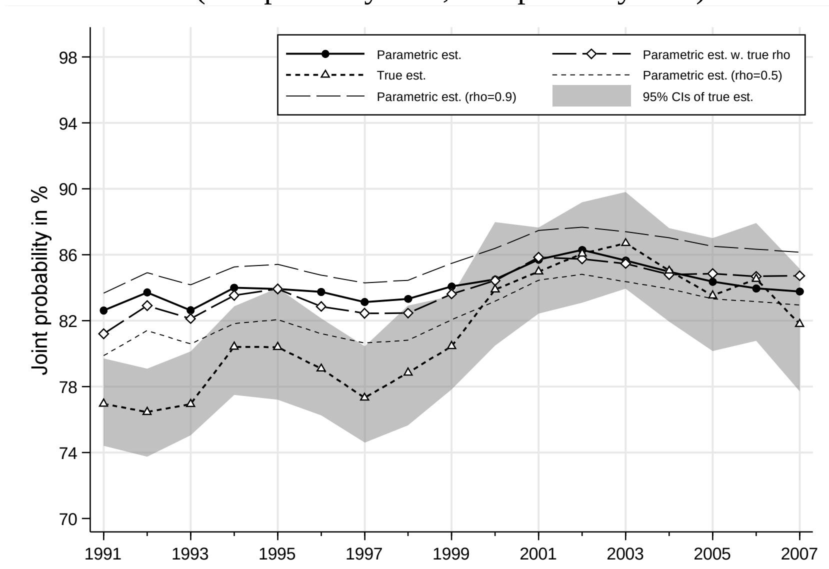


16. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 0–17

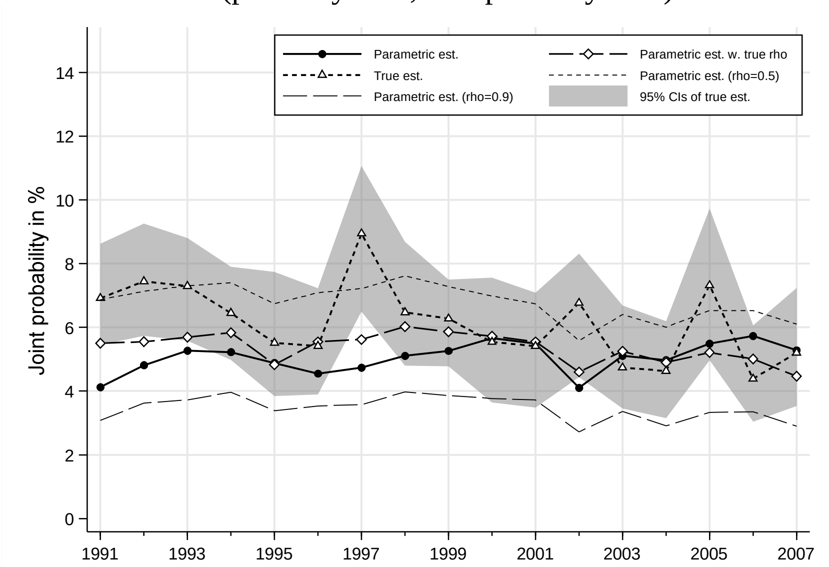
Prob(poor in year 1, poor in year 2)



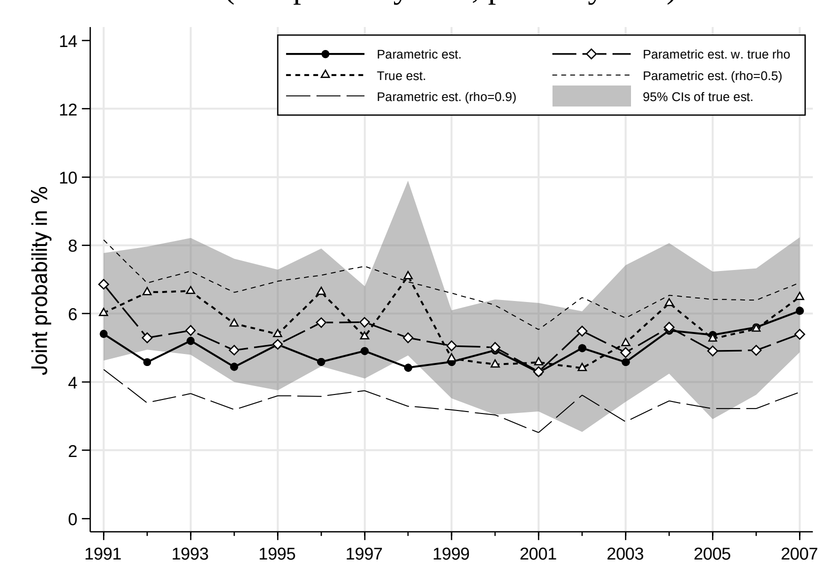
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

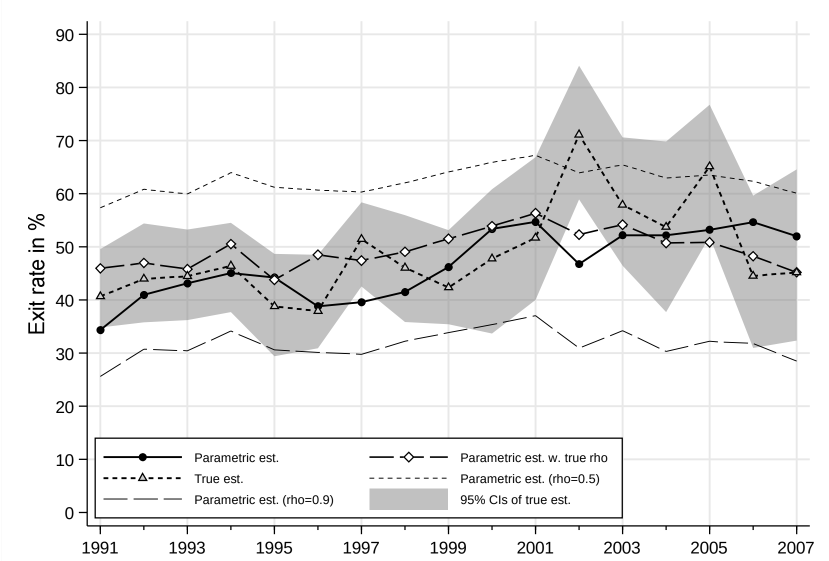


Prob(non-poor in year 1, poor in year 2)

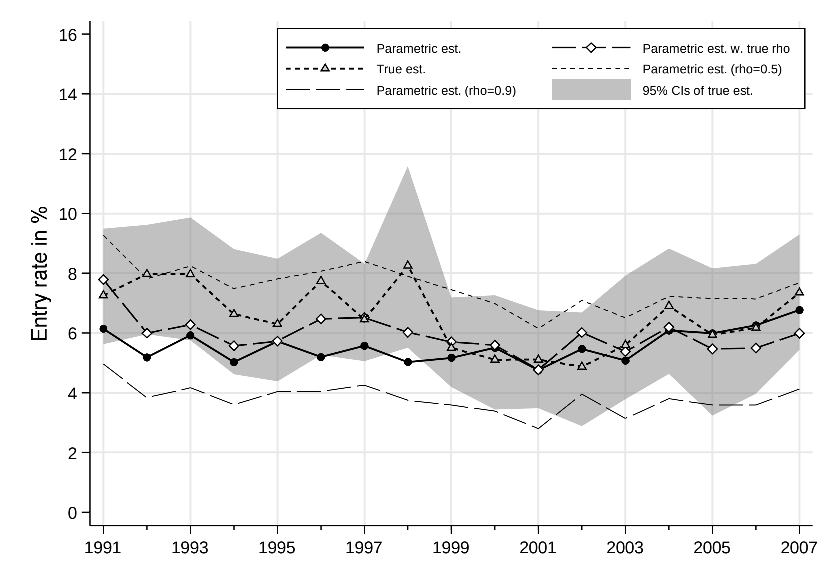


16. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 0–17

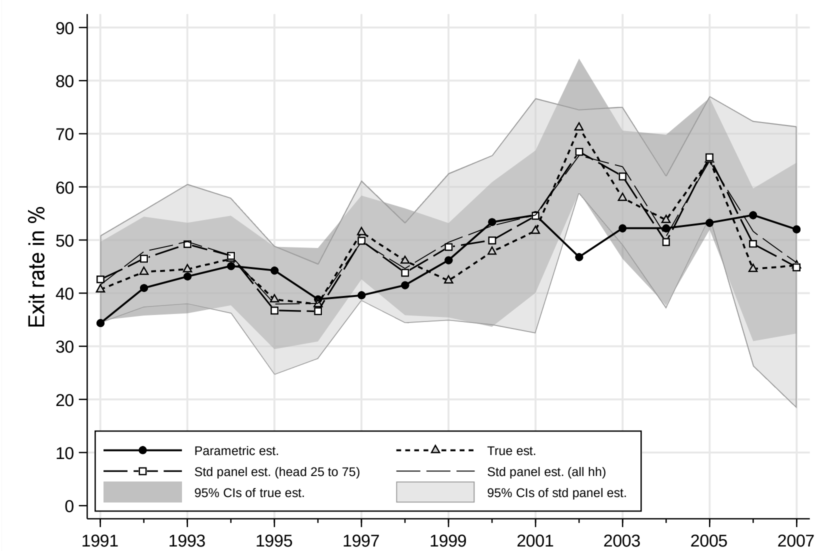
Exit rate = Prob(non-poor in year 2 | poor in year 1)



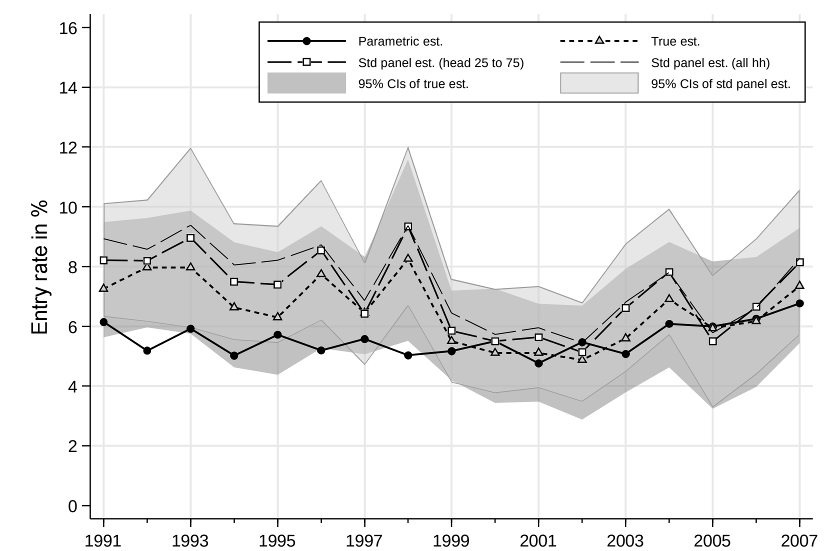
Entry rate = Prob(poor in year 2 | non-poor in year 1)



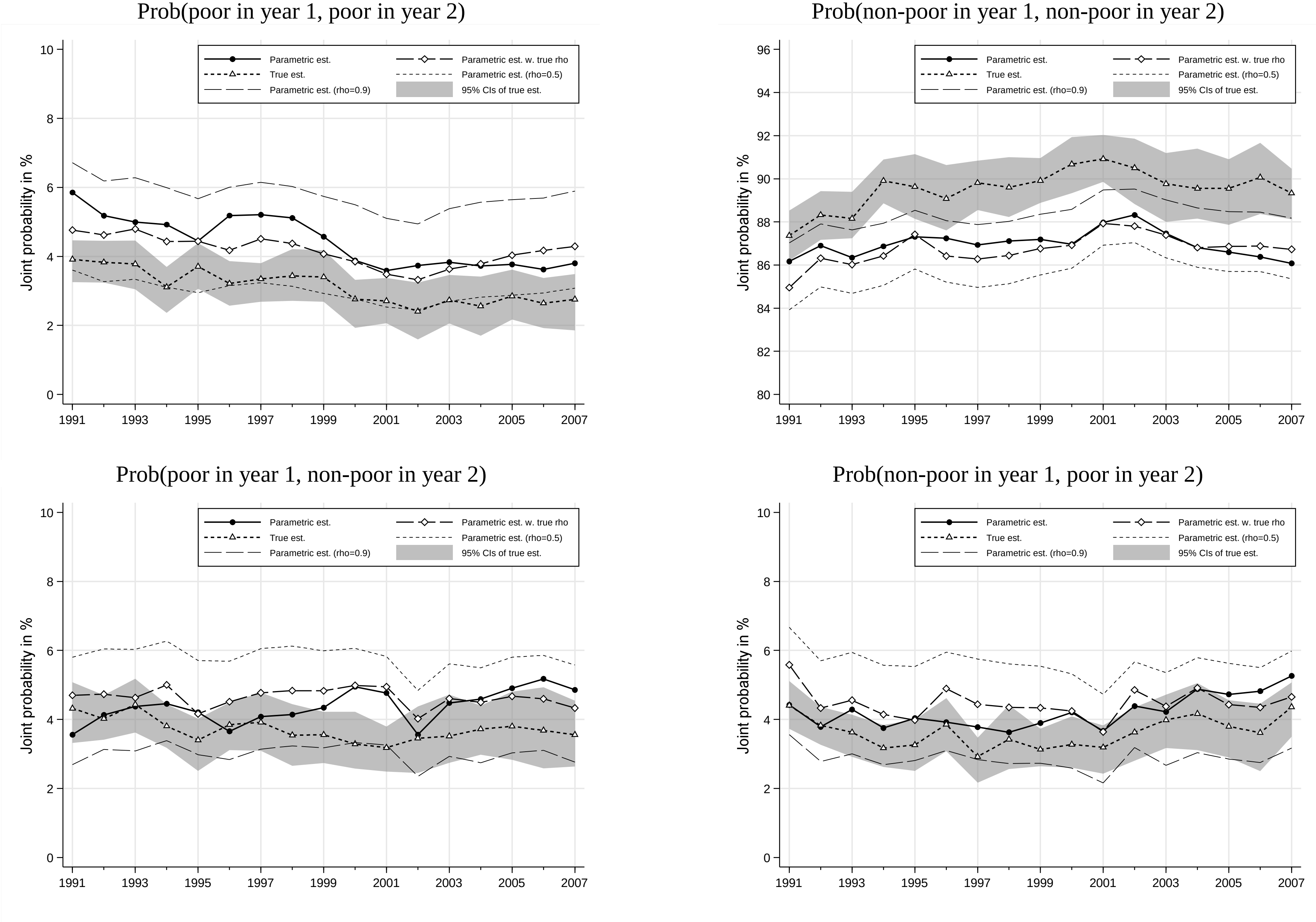
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

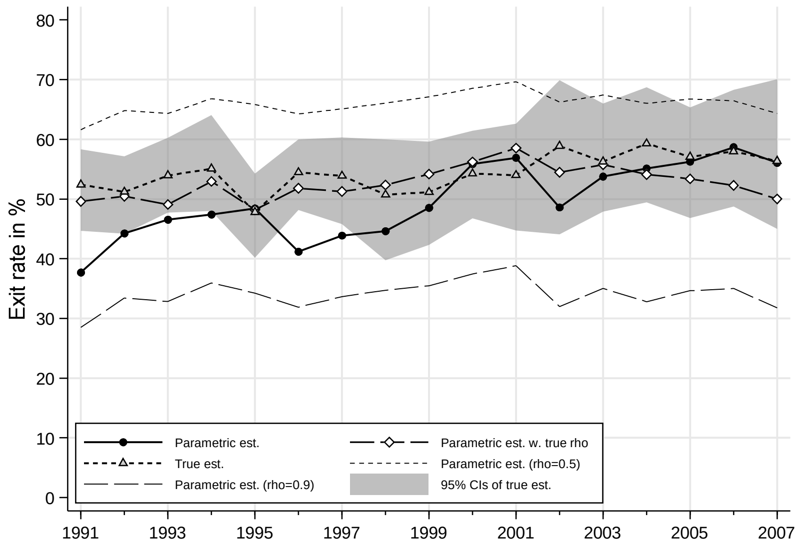


17. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 18–59

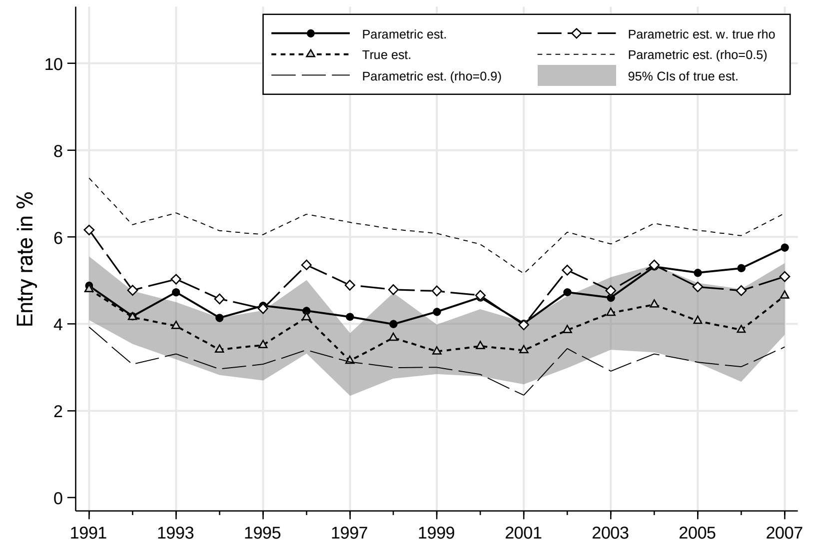


17. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 18–59

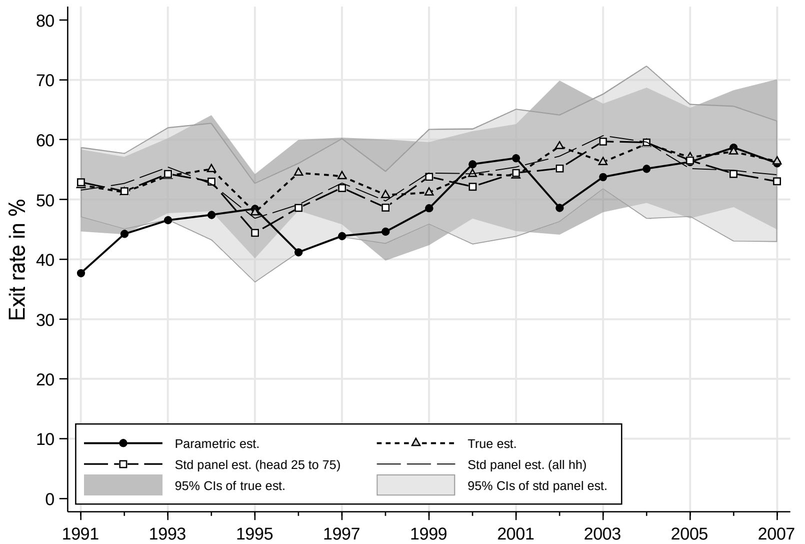
Exit rate = Prob(non-poor in year 2 | poor in year 1)



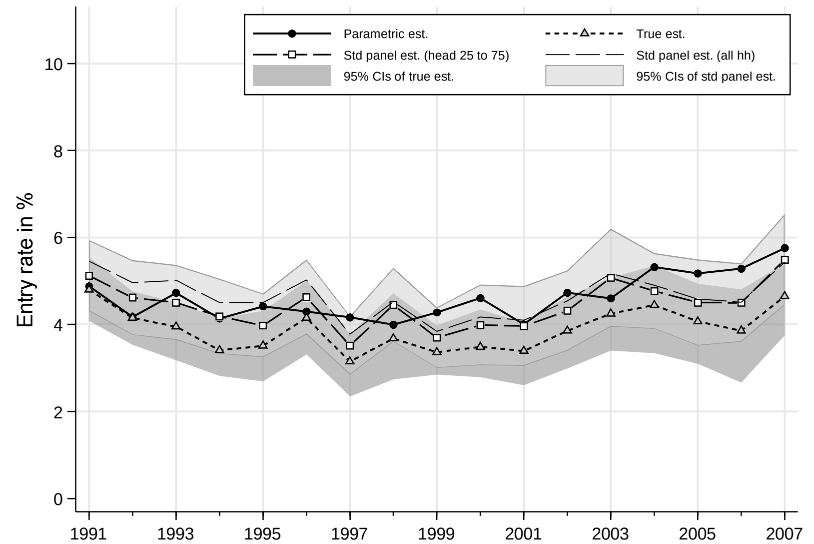
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

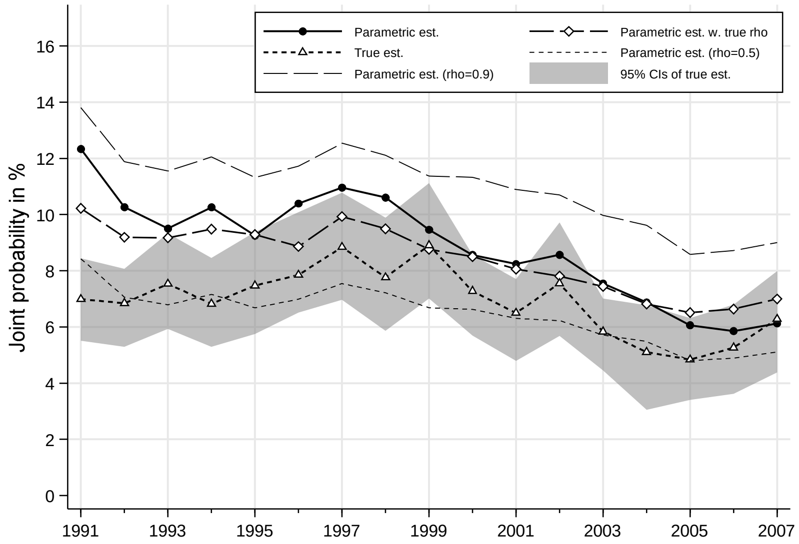


Entry rate = Prob(poor in year 2 | non-poor in year 1)

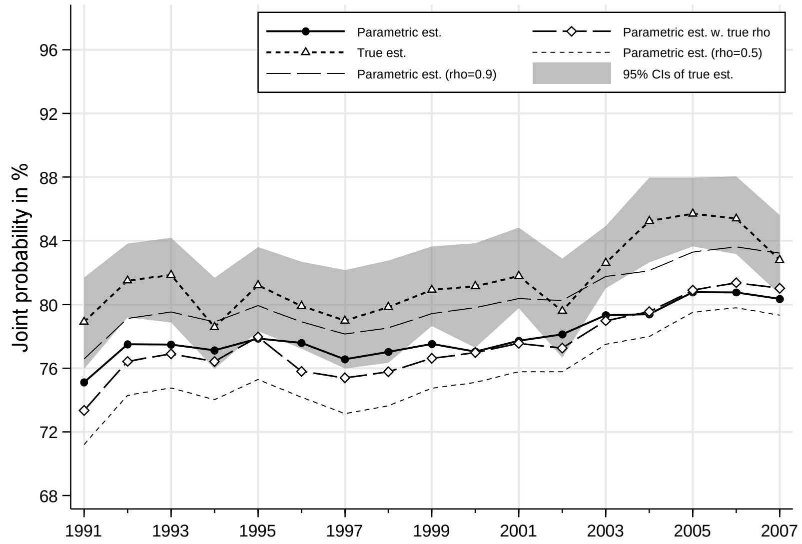


18. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 60+

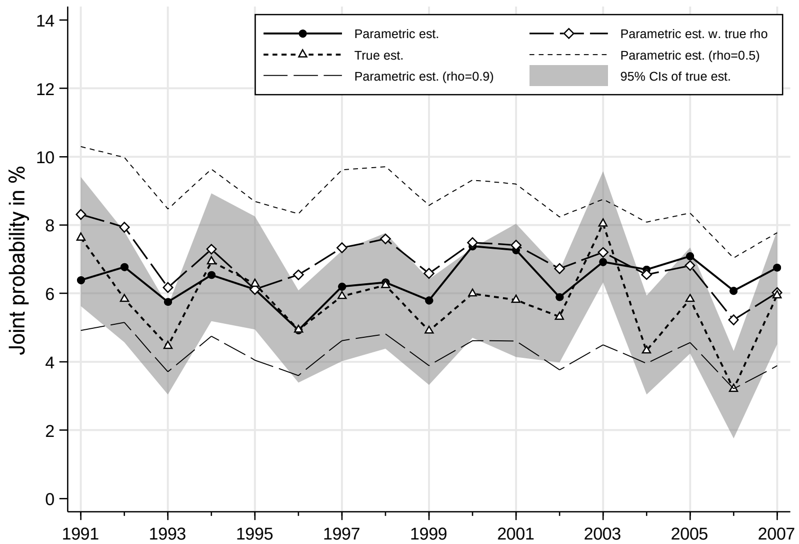
Prob(poor in year 1, poor in year 2)



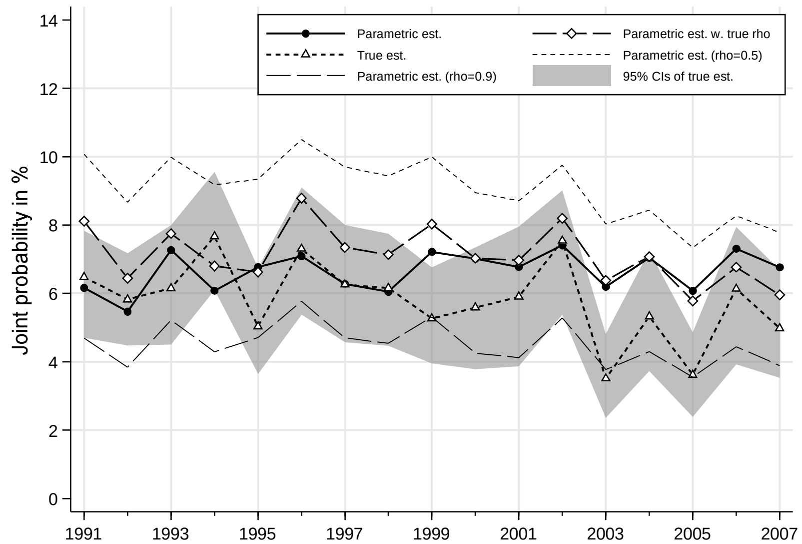
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

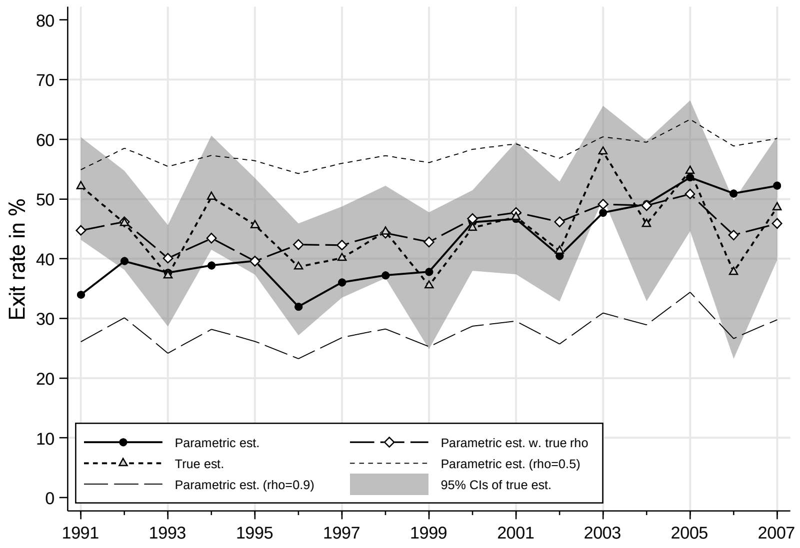


Prob(non-poor in year 1, poor in year 2)

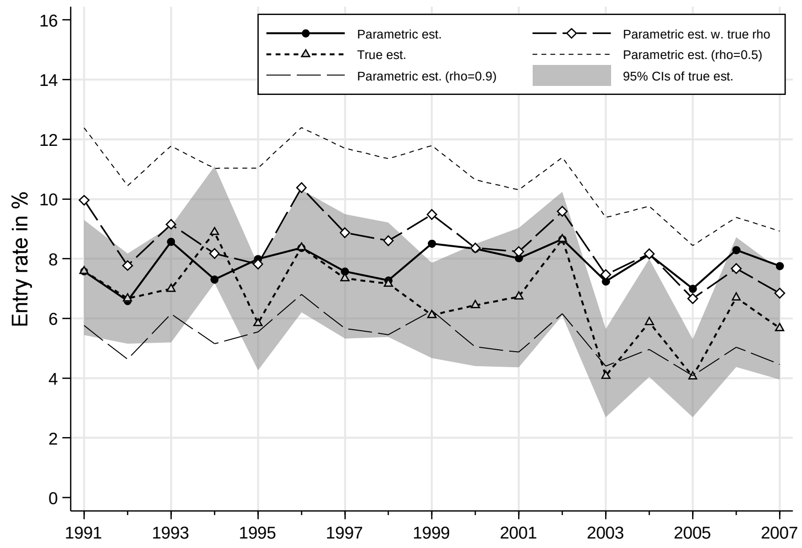


18. BHPS, head 25–75, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 60+

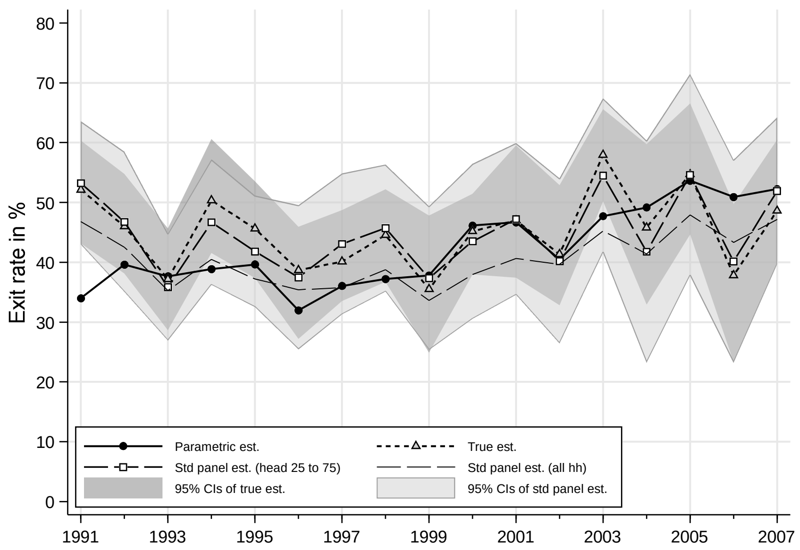
Exit rate = Prob(non-poor in year 2 | poor in year 1)



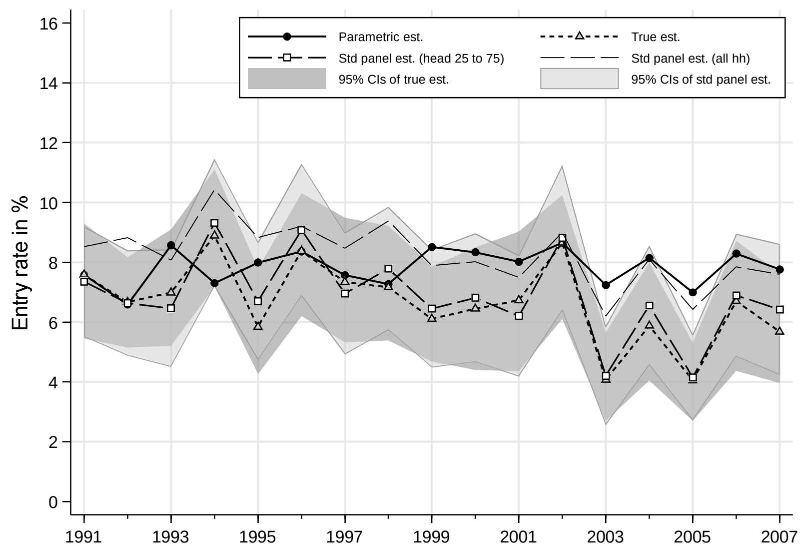
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

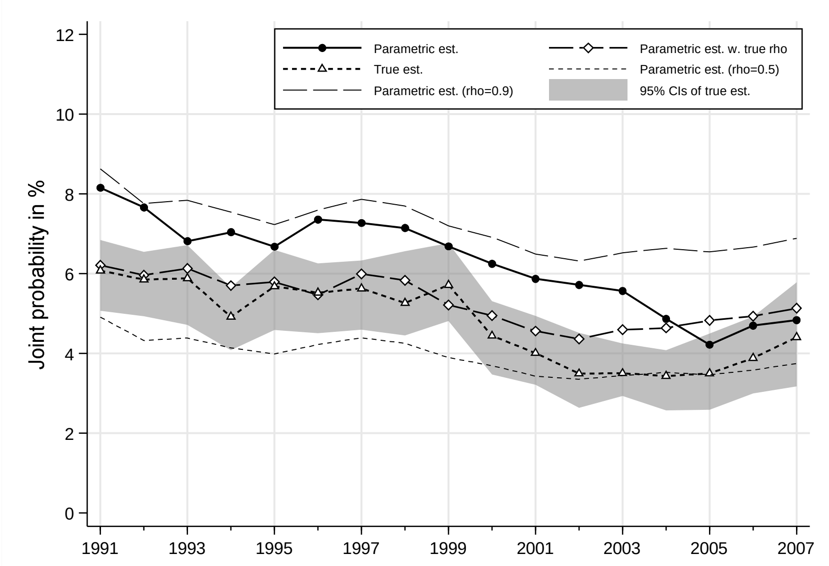


Entry rate = Prob(poor in year 2 | non-poor in year 1)

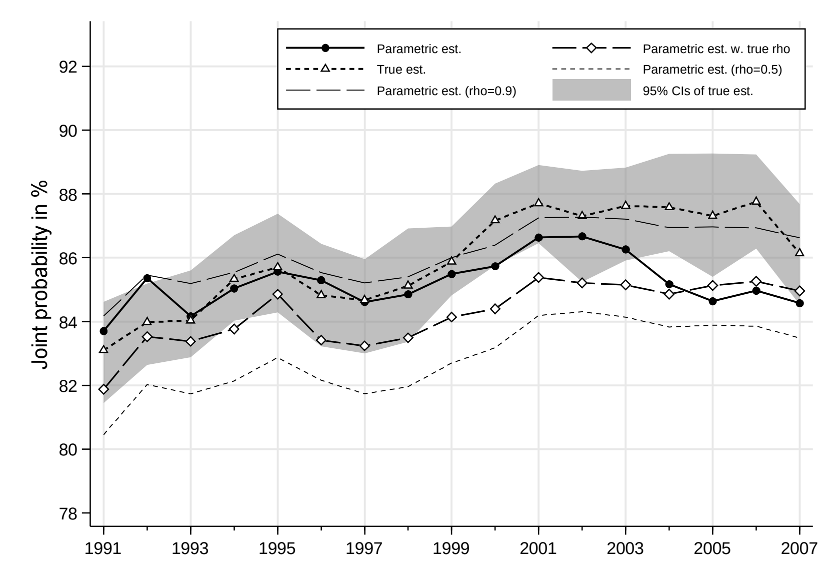


19. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), all individuals

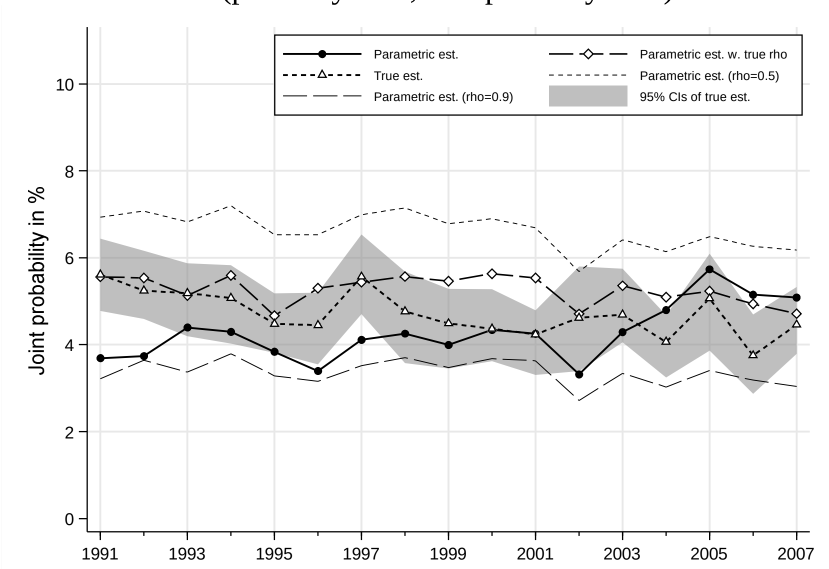
Prob(poor in year 1, poor in year 2)



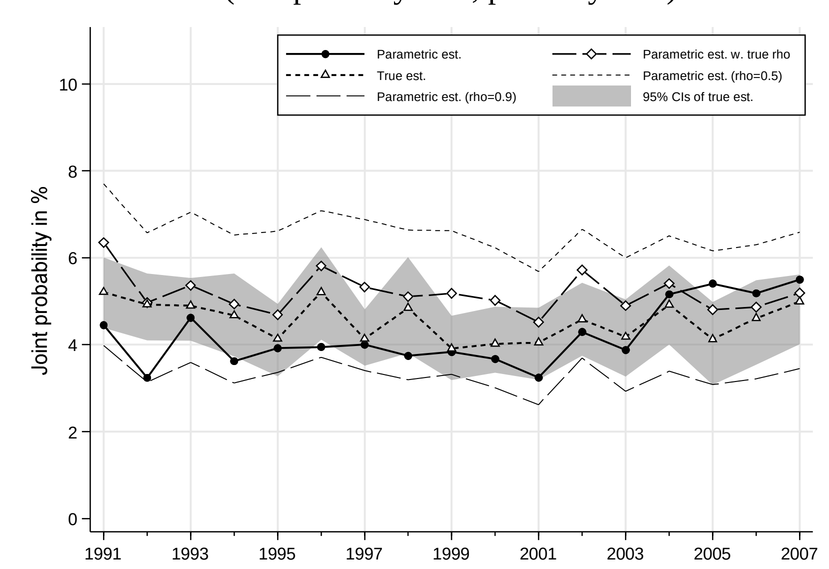
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

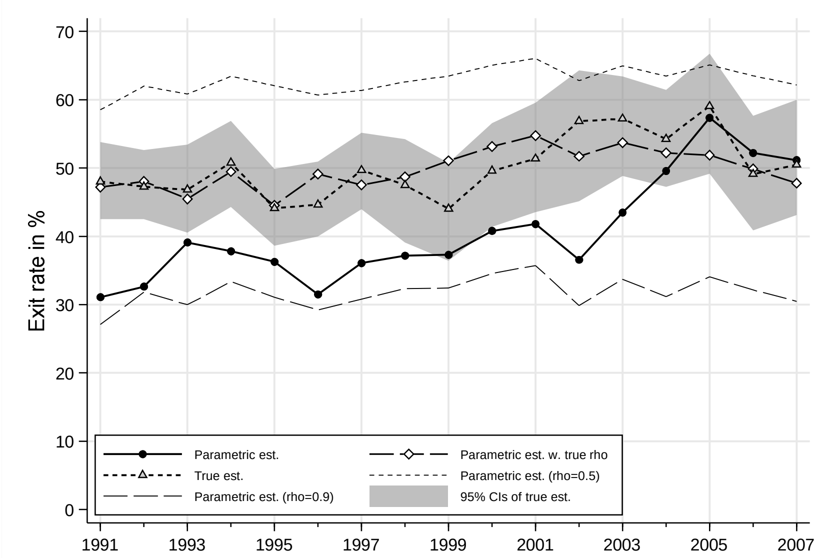


Prob(non-poor in year 1, poor in year 2)

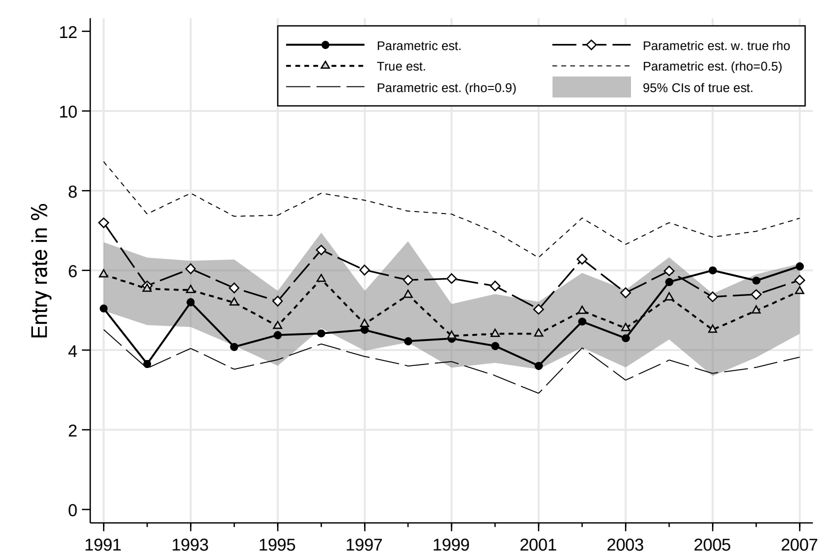


19. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), all individuals

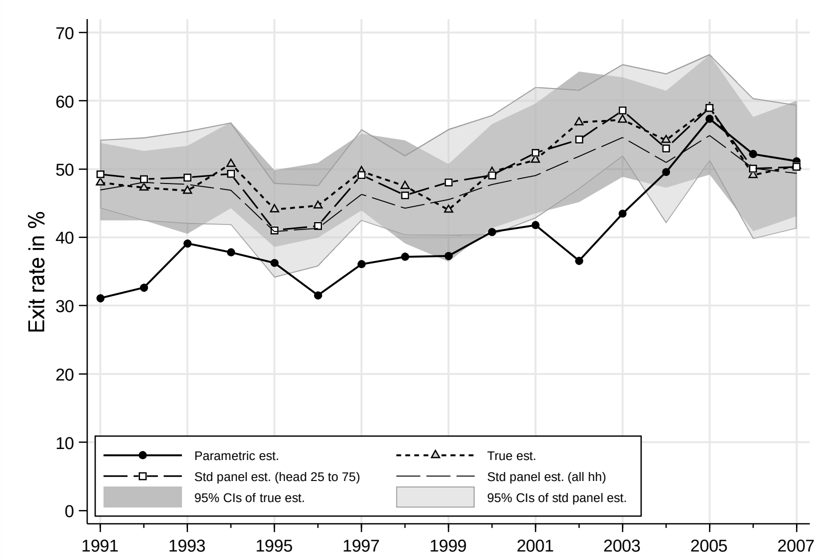
Exit rate = Prob(non-poor in year 2 | poor in year 1)



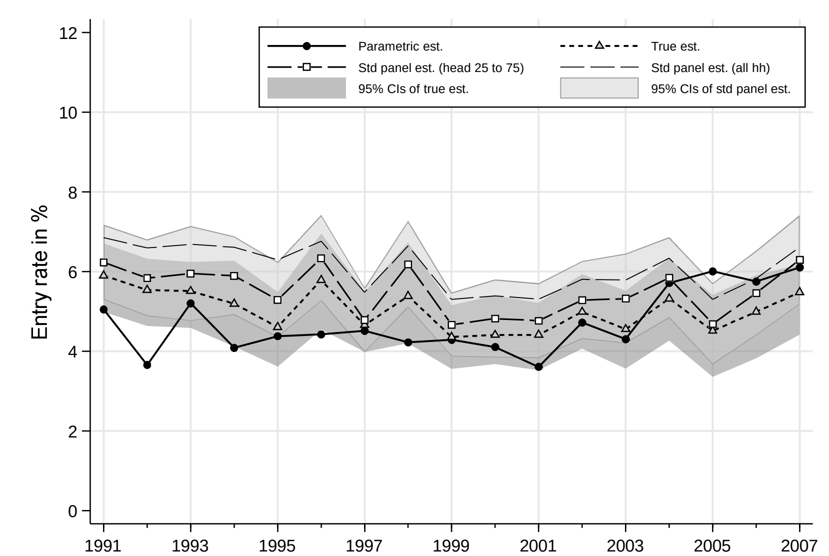
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

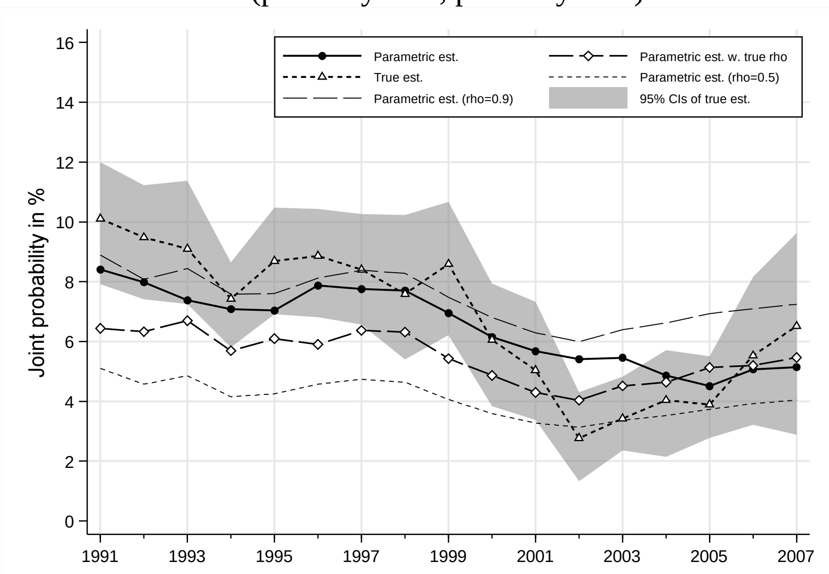


Entry rate = Prob(poor in year 2 | non-poor in year 1)

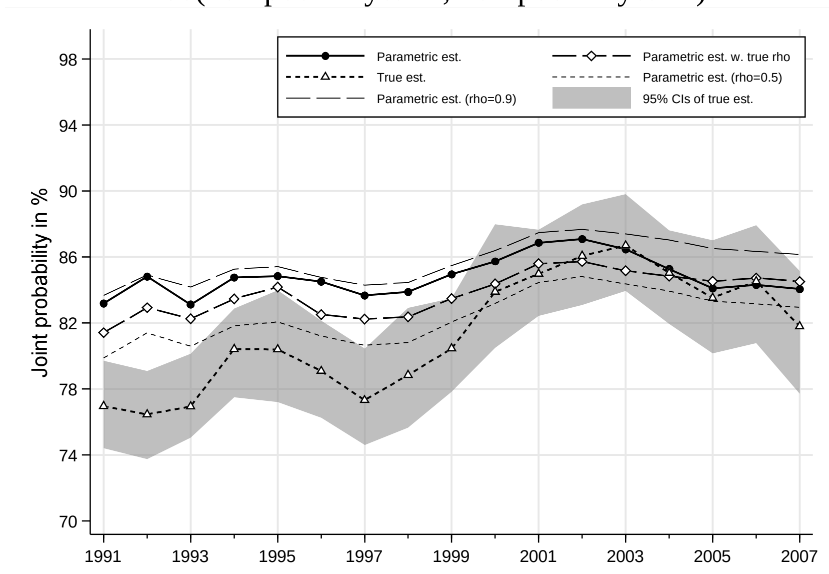


20. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

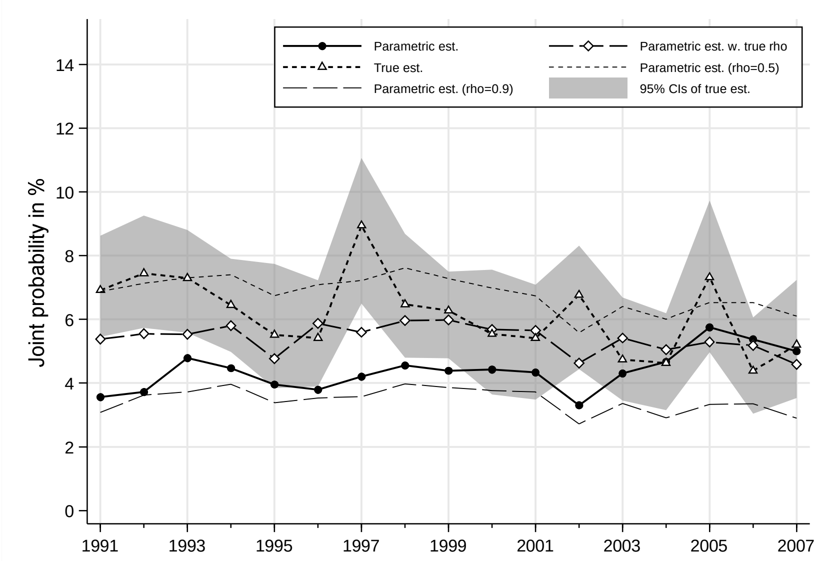
Prob(poor in year 1, poor in year 2)



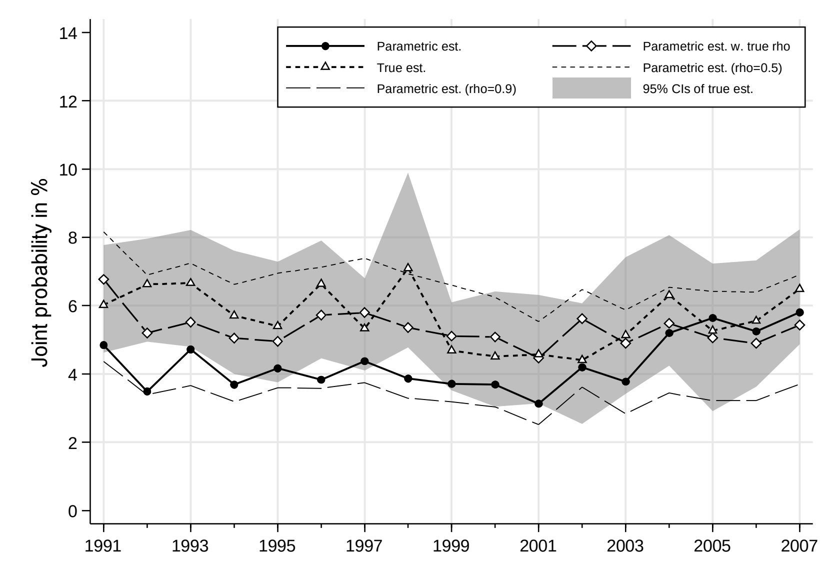
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

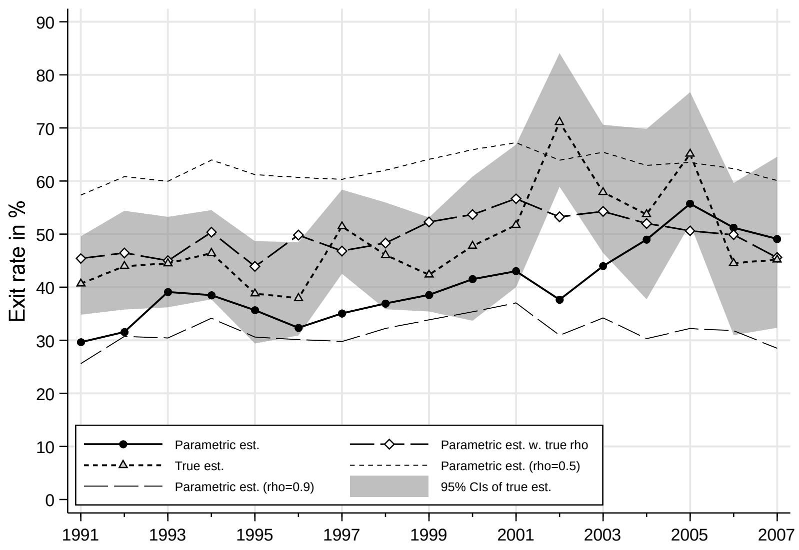


Prob(non-poor in year 1, poor in year 2)

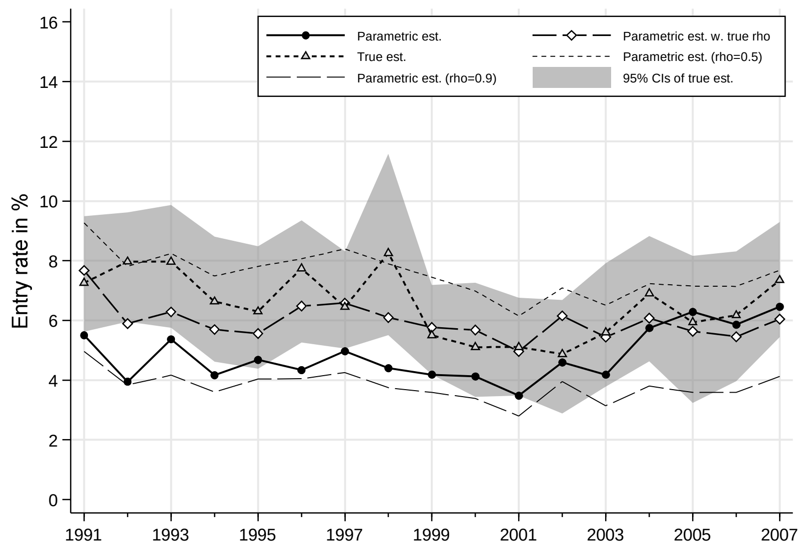


20. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

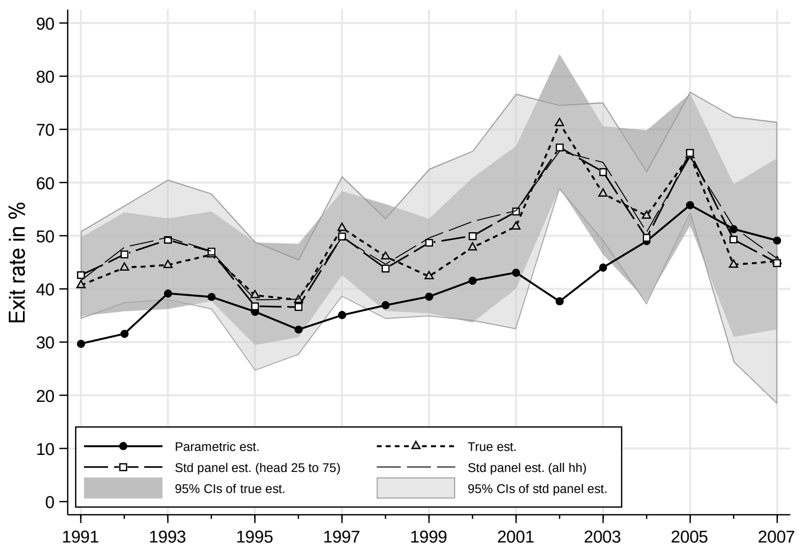
Exit rate = Prob(non-poor in year 2 | poor in year 1)



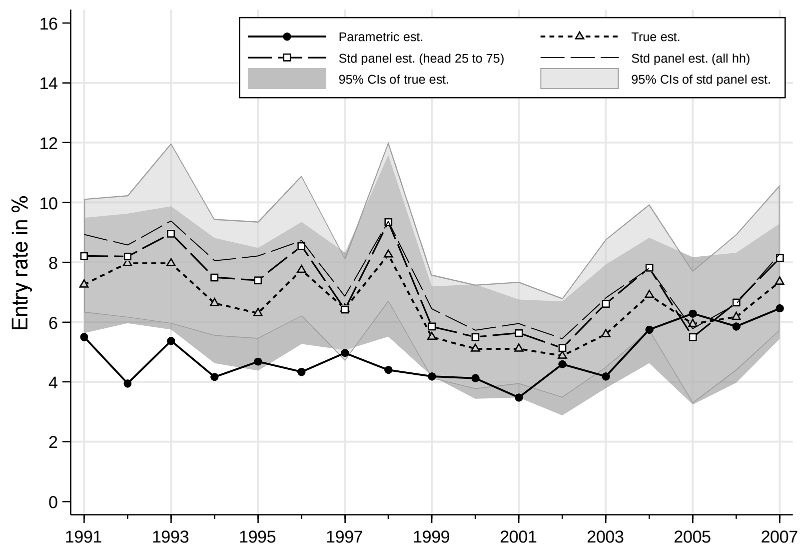
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

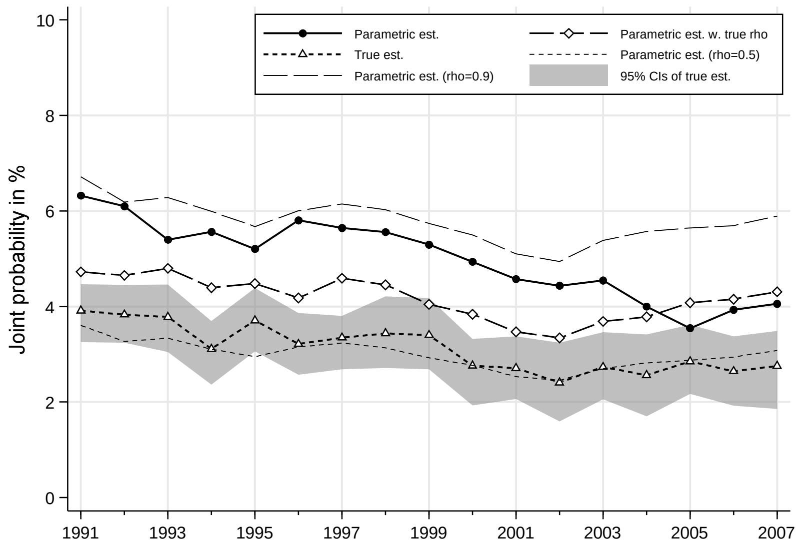


Entry rate = Prob(poor in year 2 | non-poor in year 1)

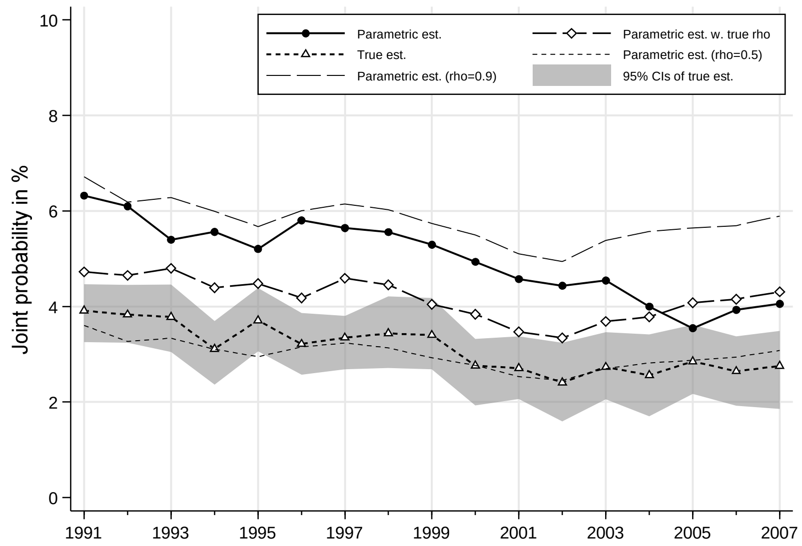


21. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

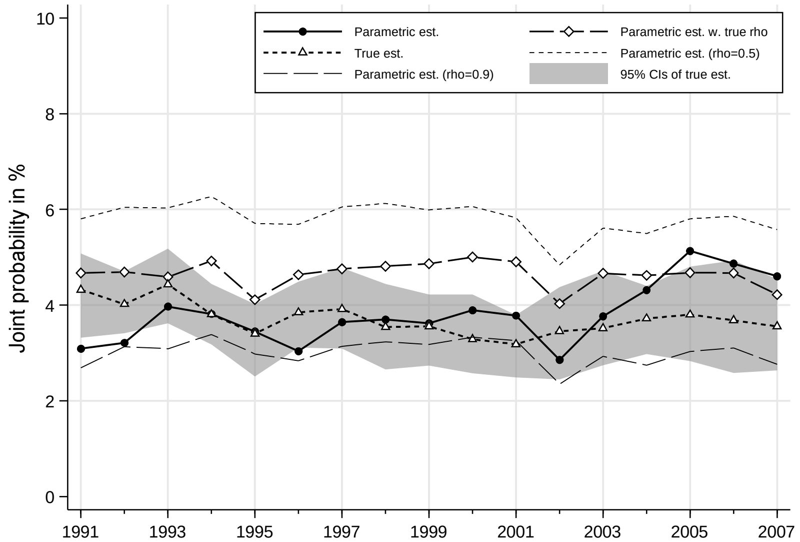
Prob(poor in year 1, poor in year 2)



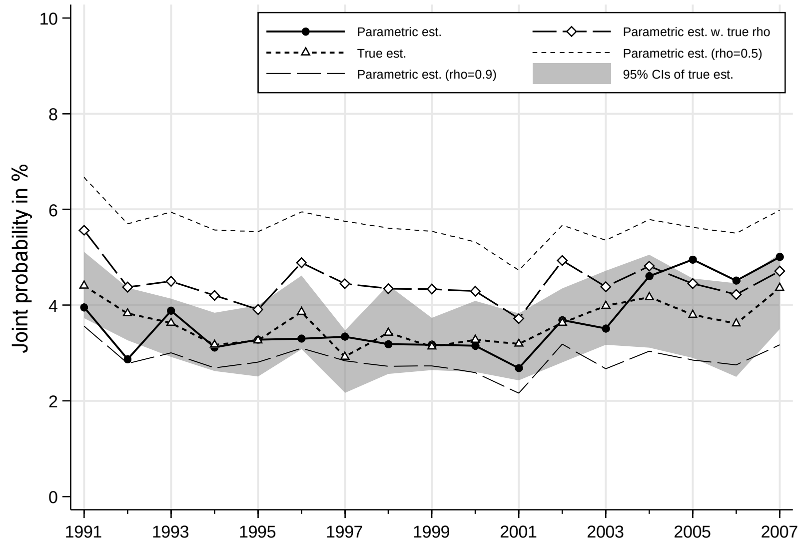
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

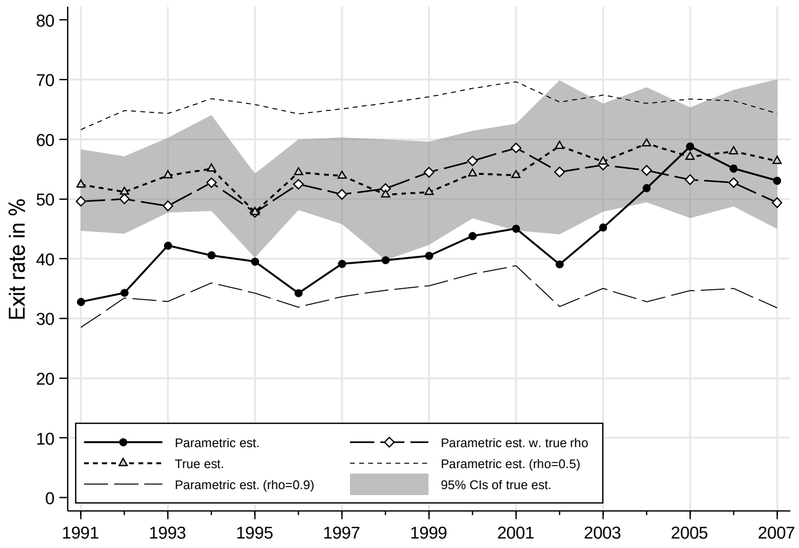


Prob(non-poor in year 1, poor in year 2)

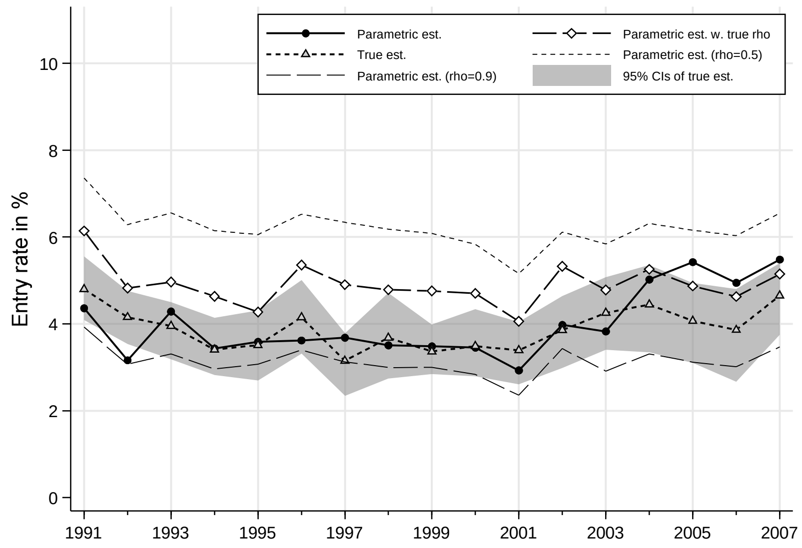


21. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

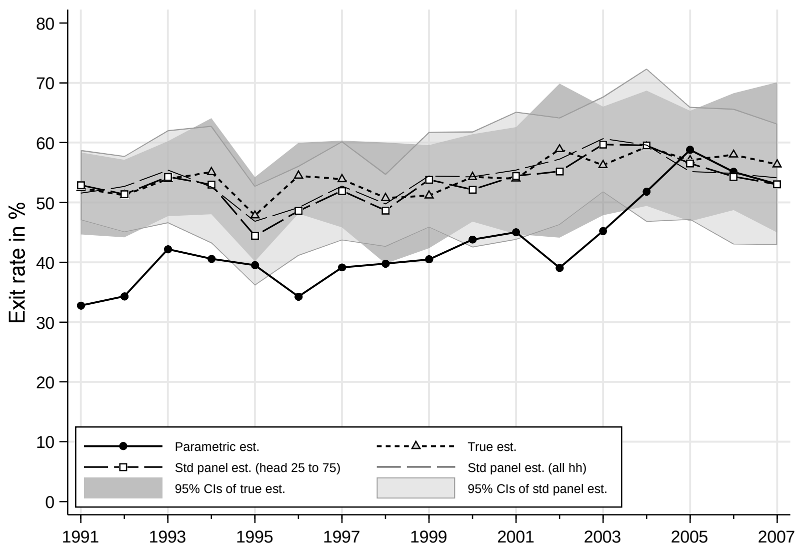
Exit rate = Prob(non-poor in year 2 | poor in year 1)



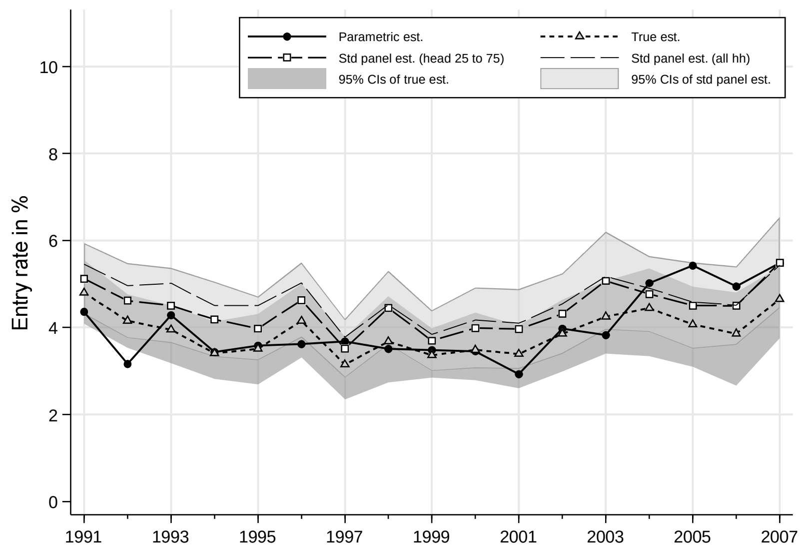
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

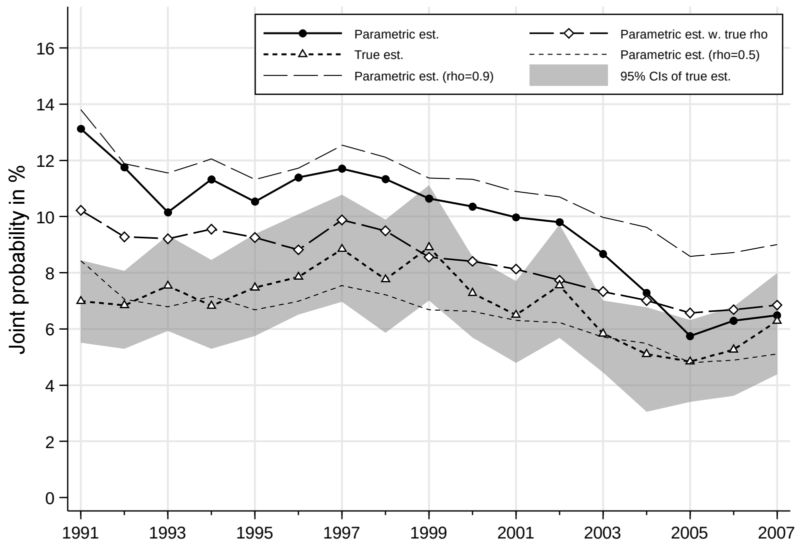


Entry rate = Prob(poor in year 2 | non-poor in year 1)

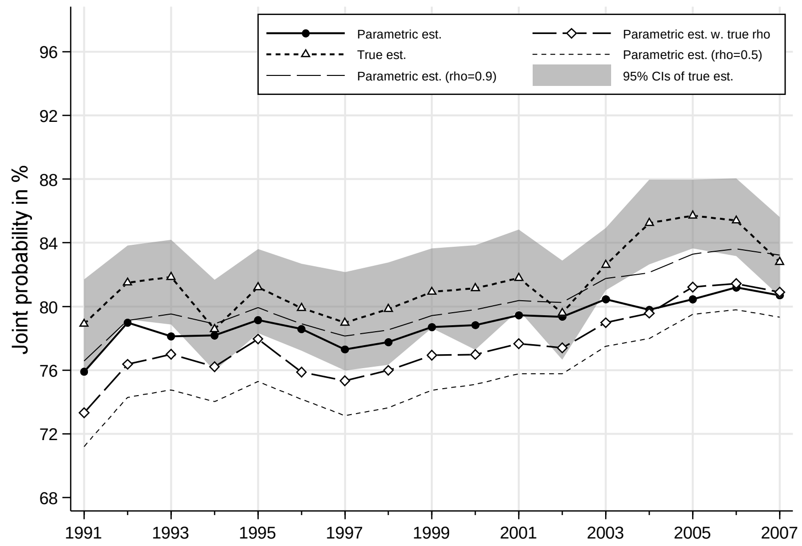


22. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 60+

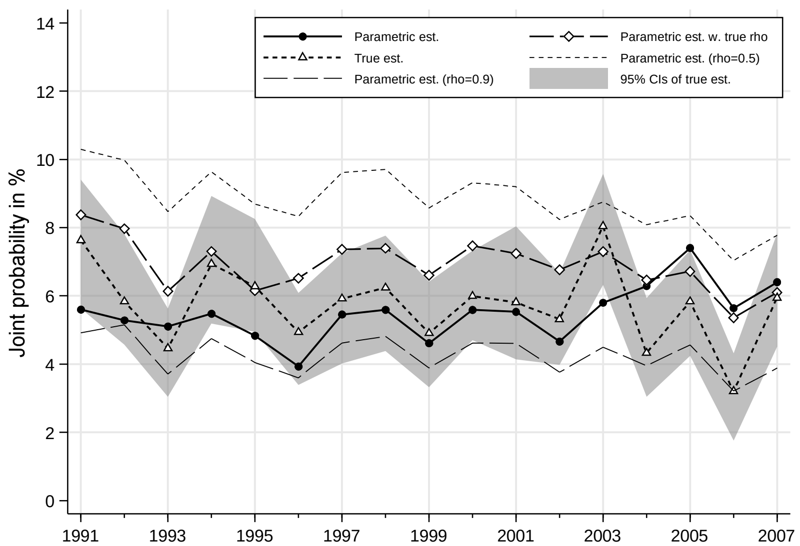
Prob(poor in year 1, poor in year 2)



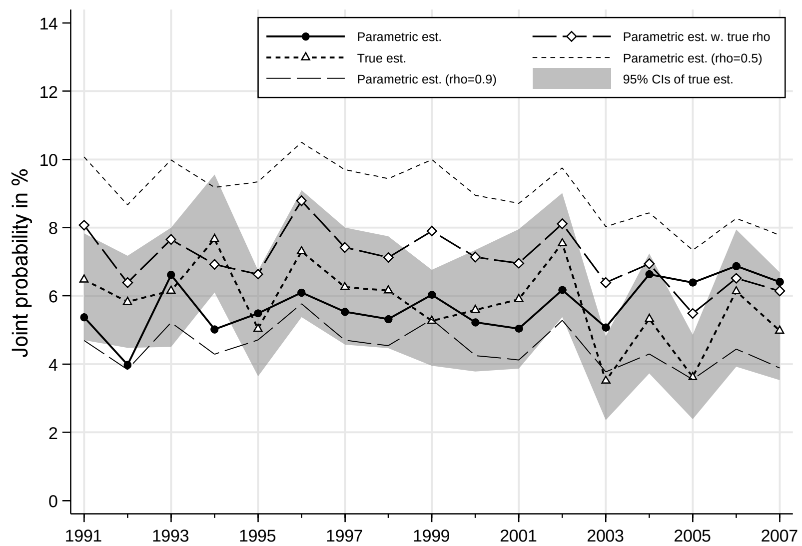
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

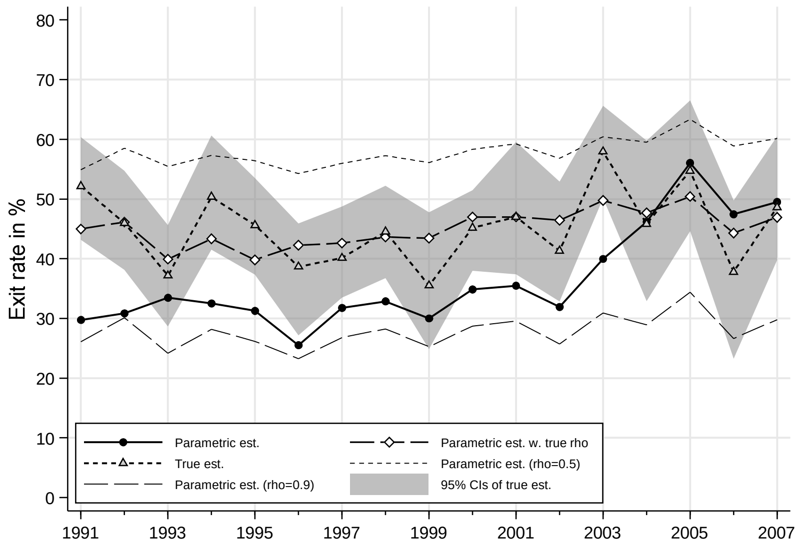


Prob(non-poor in year 1, poor in year 2)

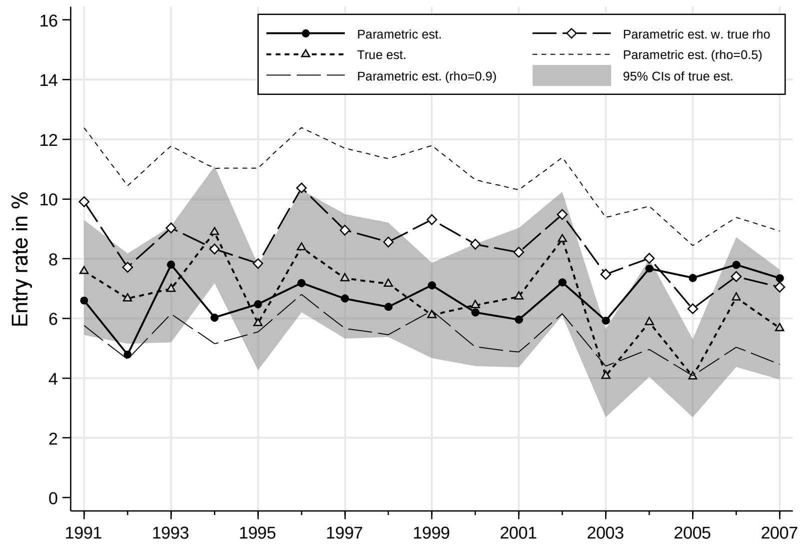


22. BHPS, head 25–75, poverty line 50% median, cohort definition YOB(5), individuals aged 60+

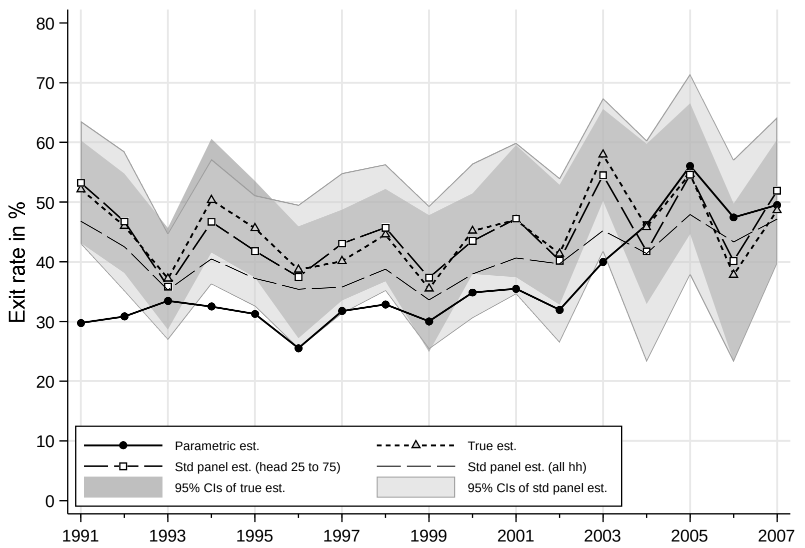
Exit rate = Prob(non-poor in year 2 | poor in year 1)



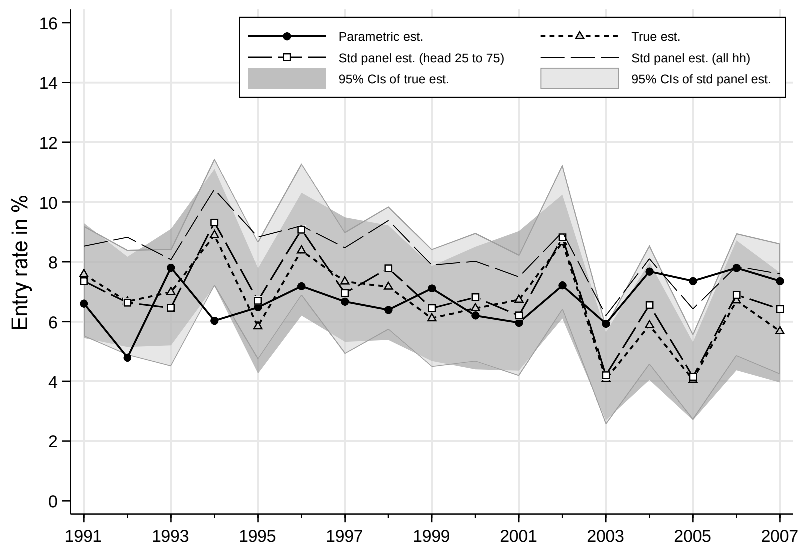
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

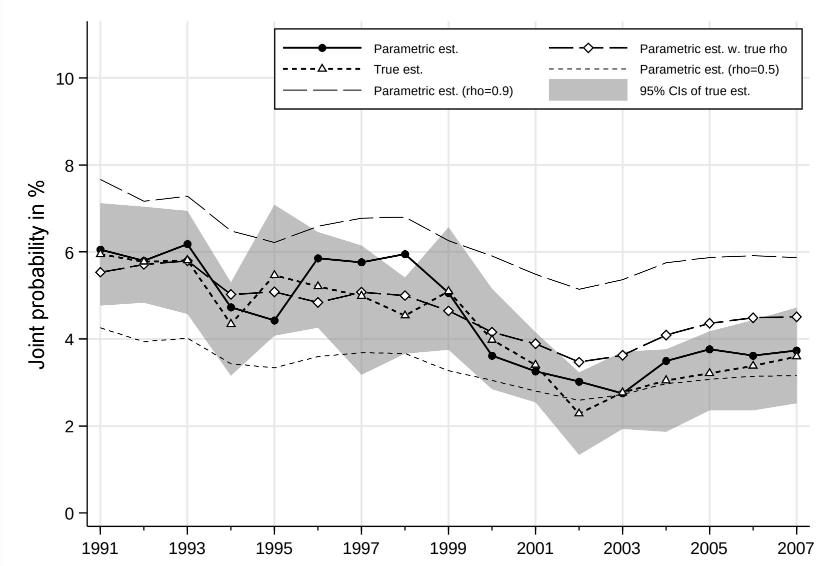


Entry rate = Prob(poor in year 2 | non-poor in year 1)

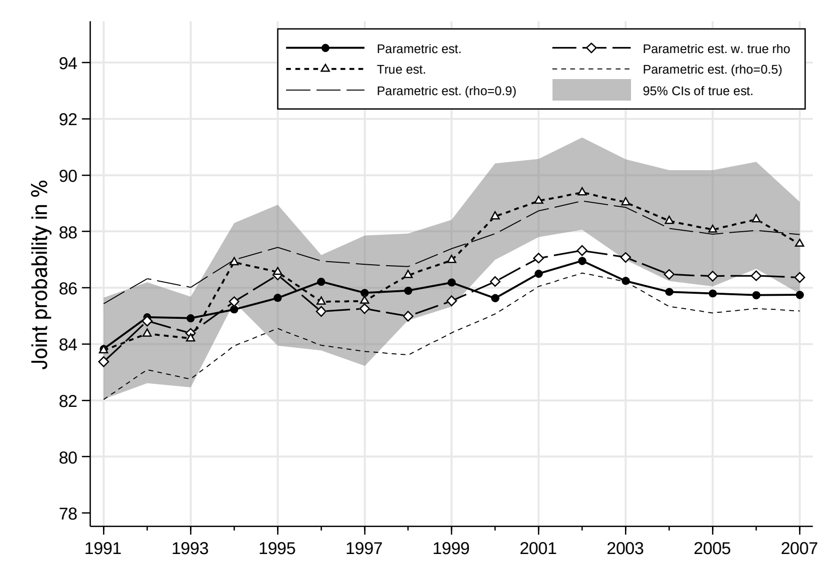


23. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), all individuals

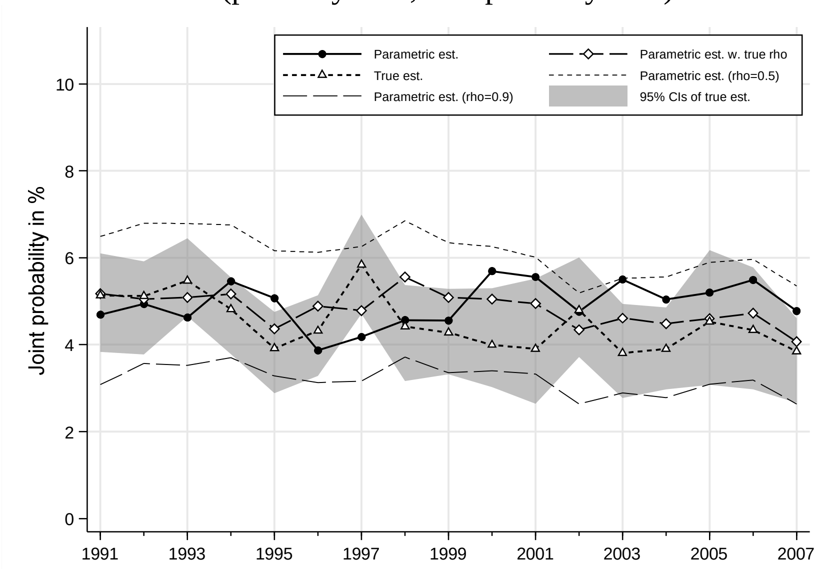
Prob(poor in year 1, poor in year 2)



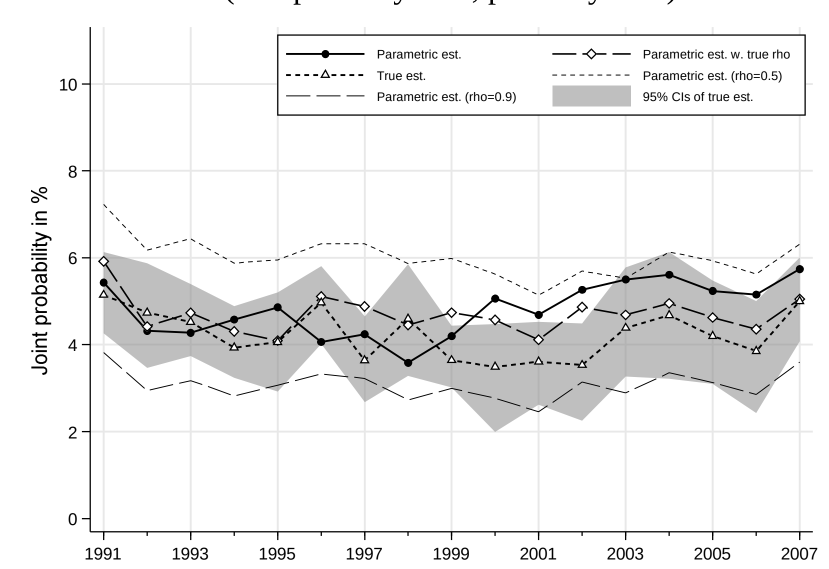
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

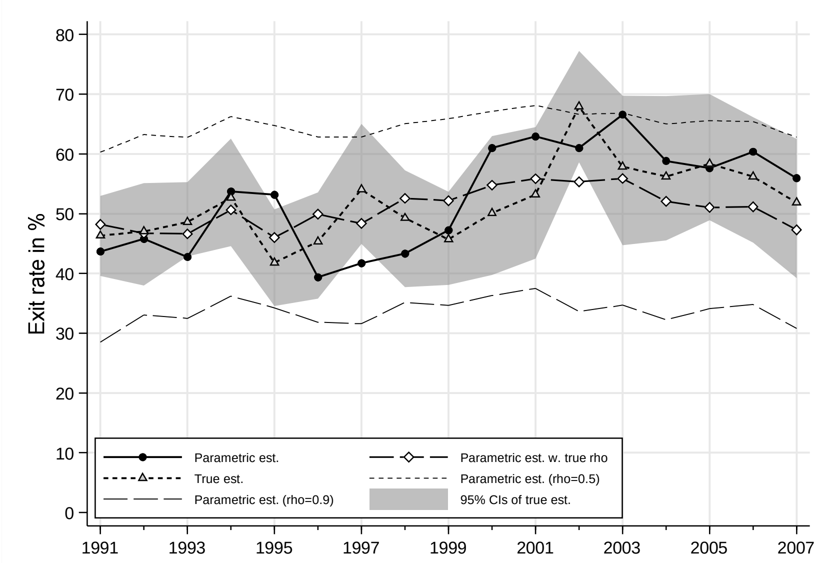


Prob(non-poor in year 1, poor in year 2)

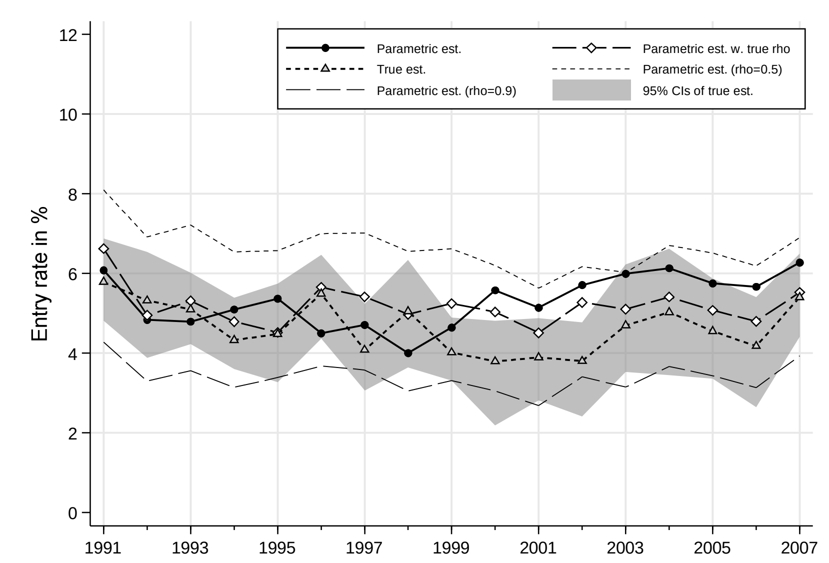


23. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), all individuals

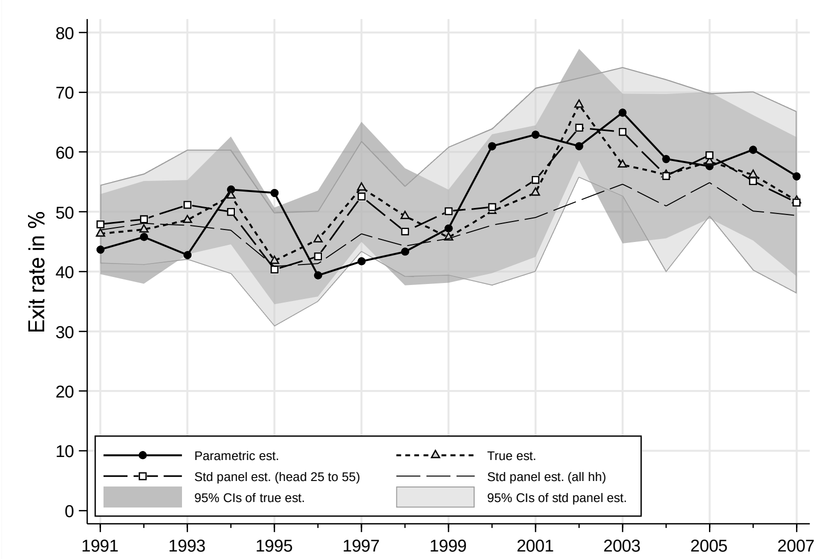
Exit rate = Prob(non-poor in year 2 | poor in year 1)



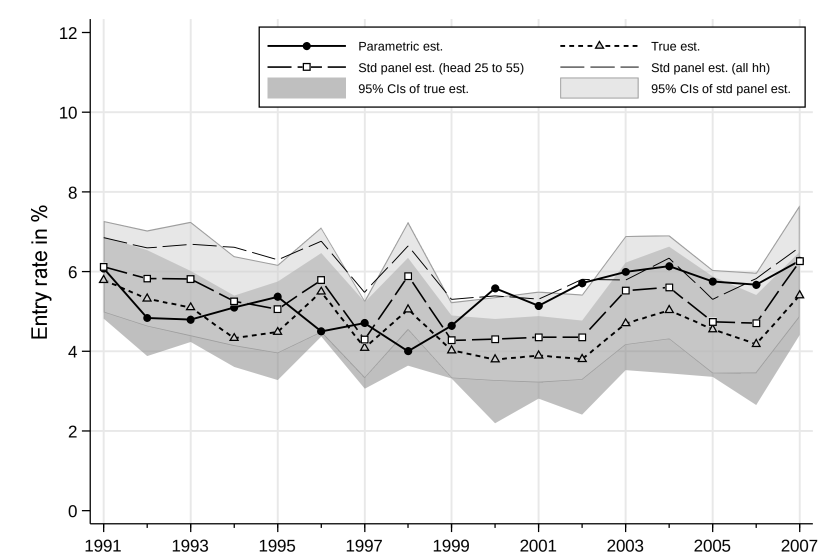
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

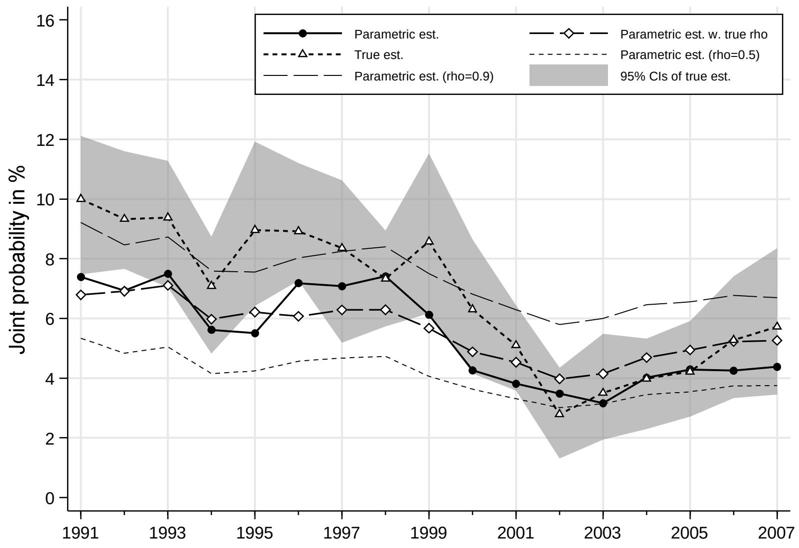


Entry rate = Prob(poor in year 2 | non-poor in year 1)

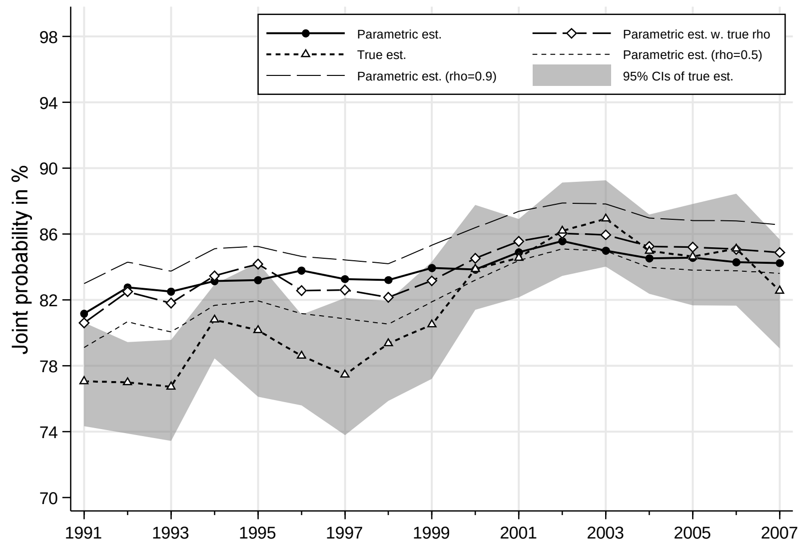


24. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 0–17

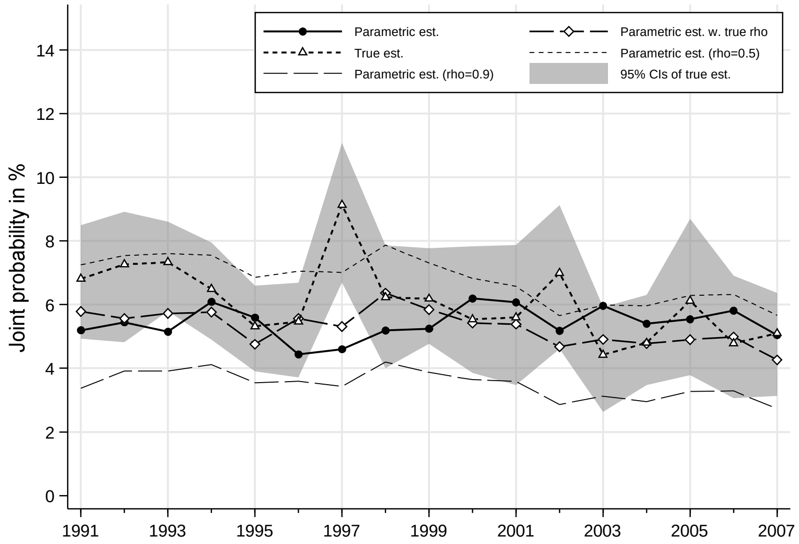
Prob(poor in year 1, poor in year 2)



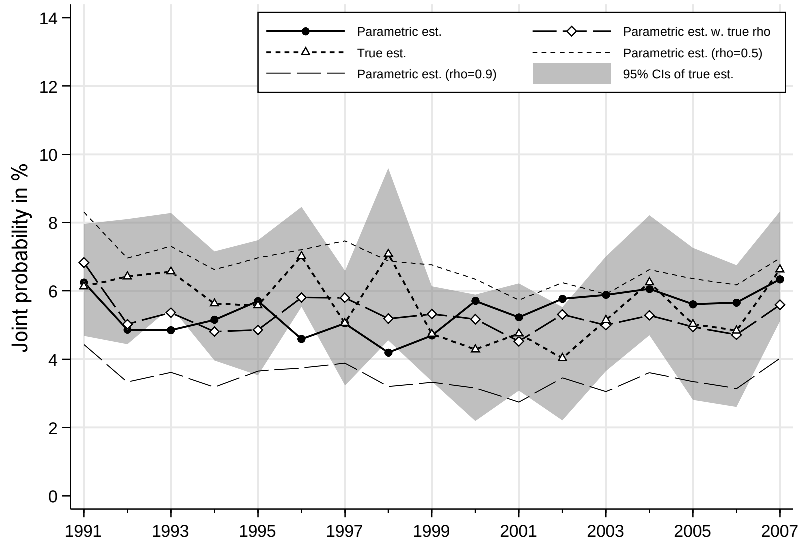
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

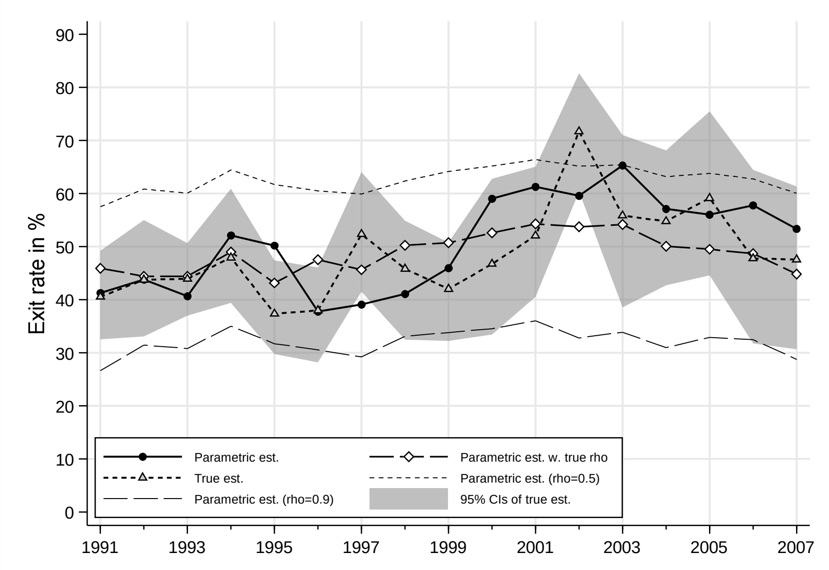


Prob(non-poor in year 1, poor in year 2)

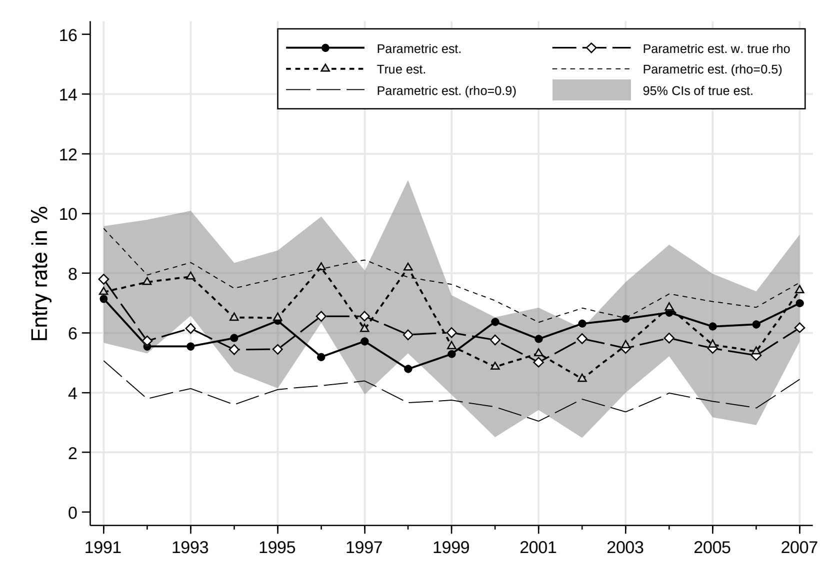


24. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 0–17

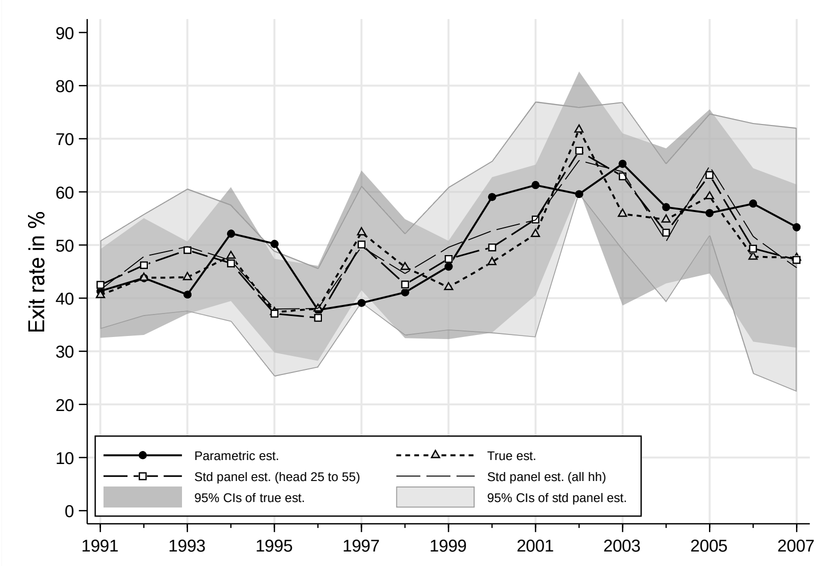
Exit rate = Prob(non-poor in year 2 | poor in year 1)



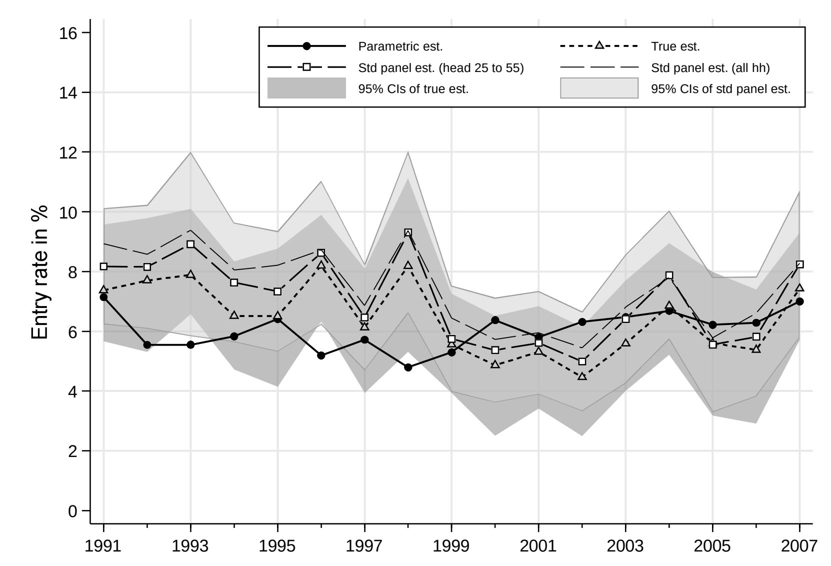
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

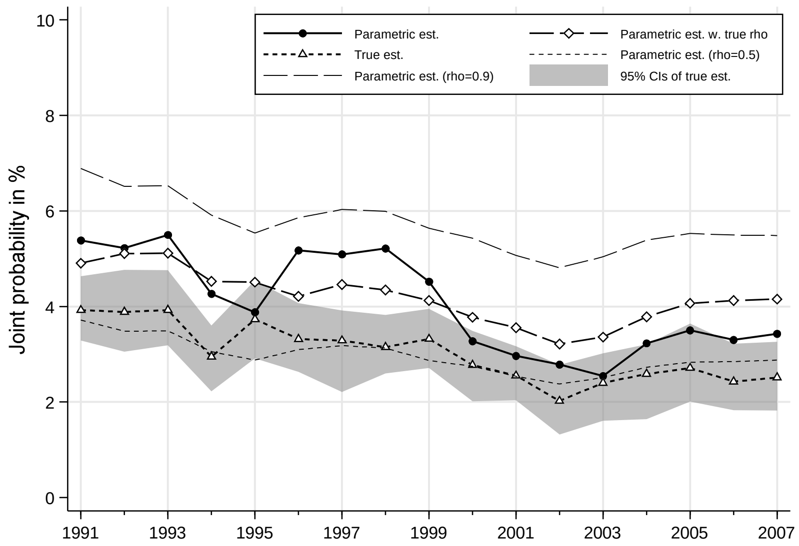


Entry rate = Prob(poor in year 2 | non-poor in year 1)

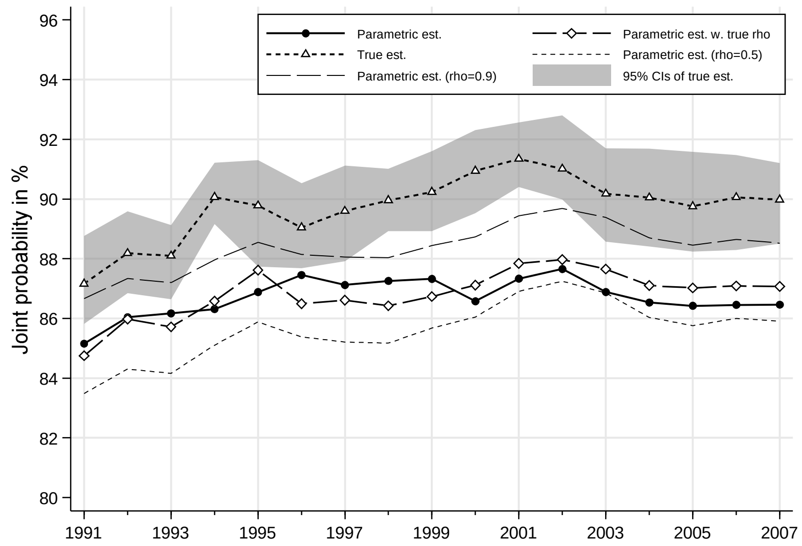


25. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 18–59

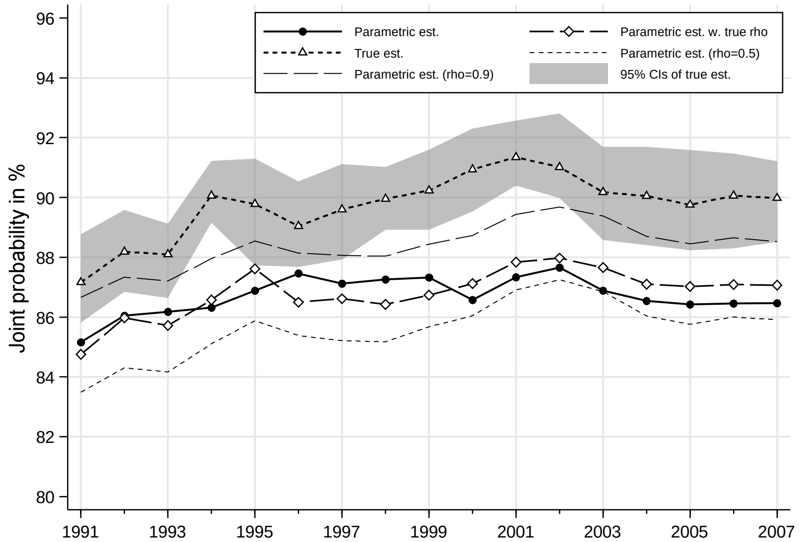
Prob(poor in year 1, poor in year 2)



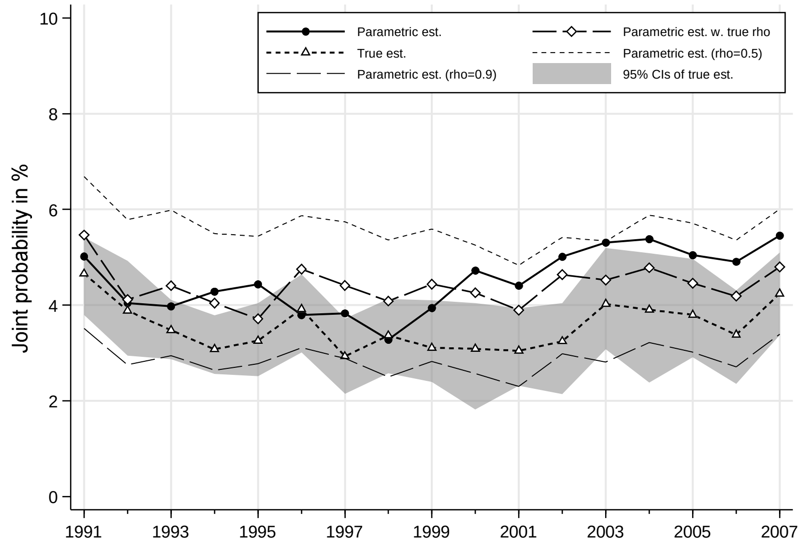
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

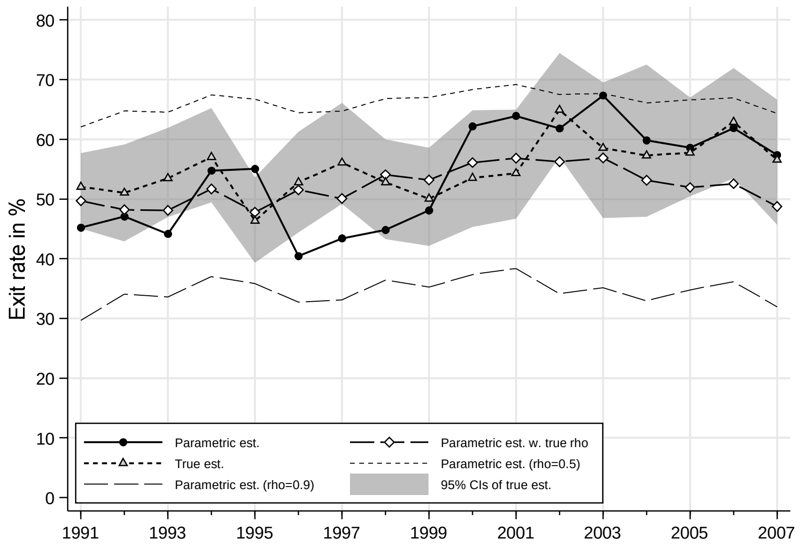


Prob(non-poor in year 1, poor in year 2)

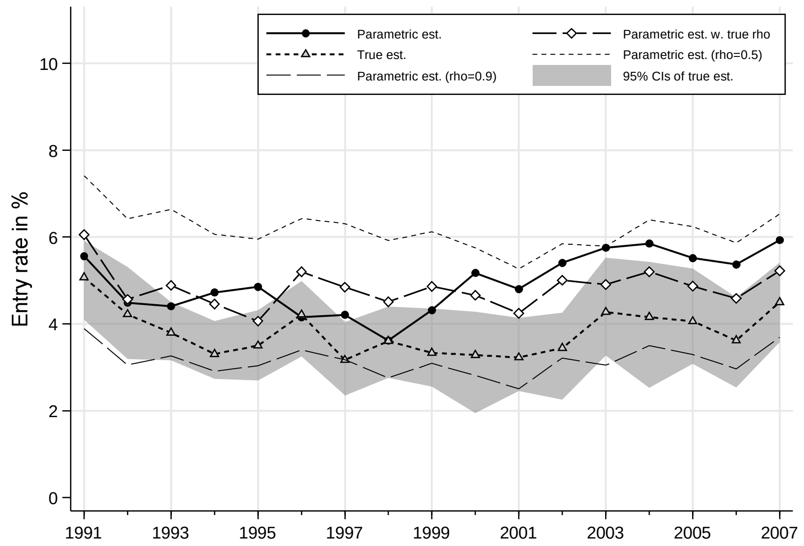


25. BHPS, head 25–55, poverty line 50% median, cohort definition SEX*YOB(5), individuals aged 18–59

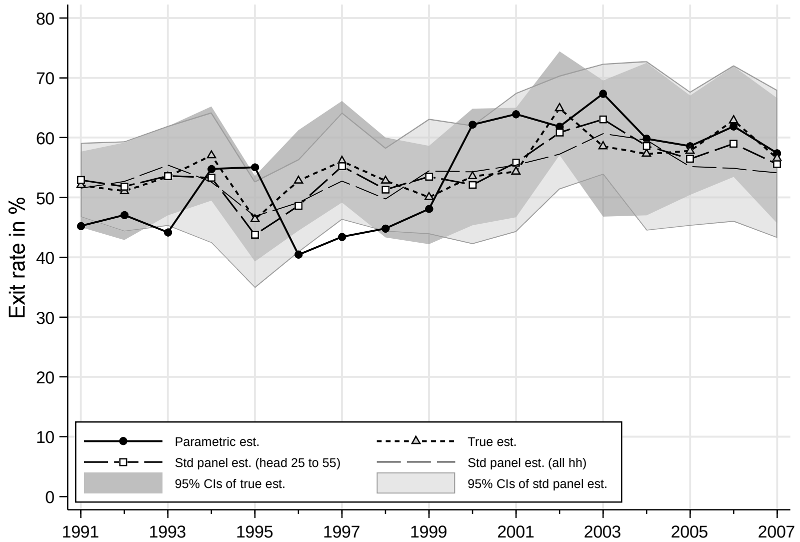
Exit rate = Prob(non-poor in year 2 | poor in year 1)



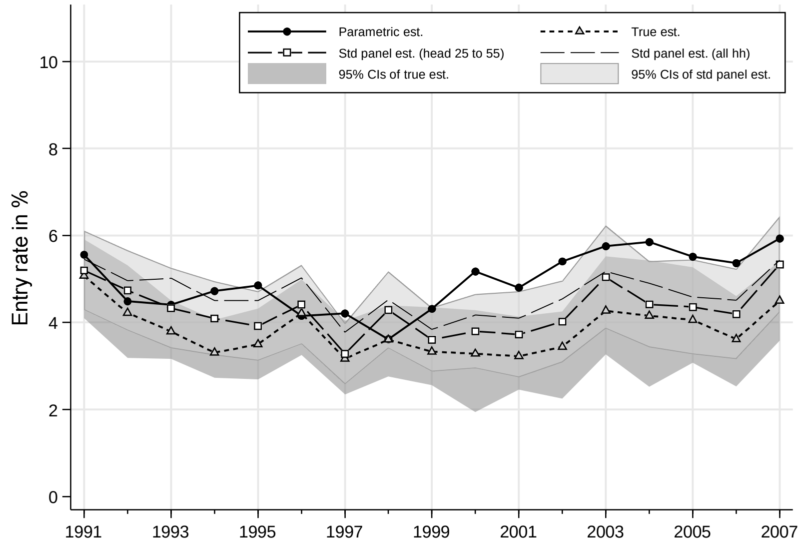
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

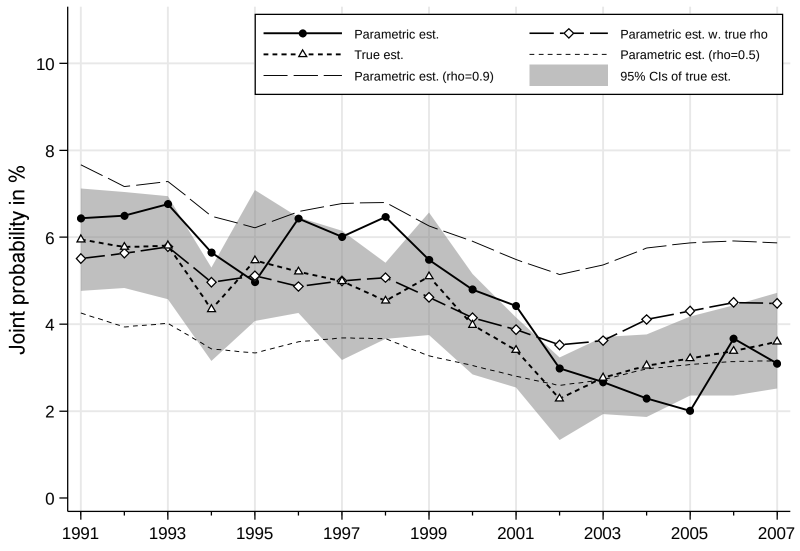


Entry rate = Prob(poor in year 2 | non-poor in year 1)

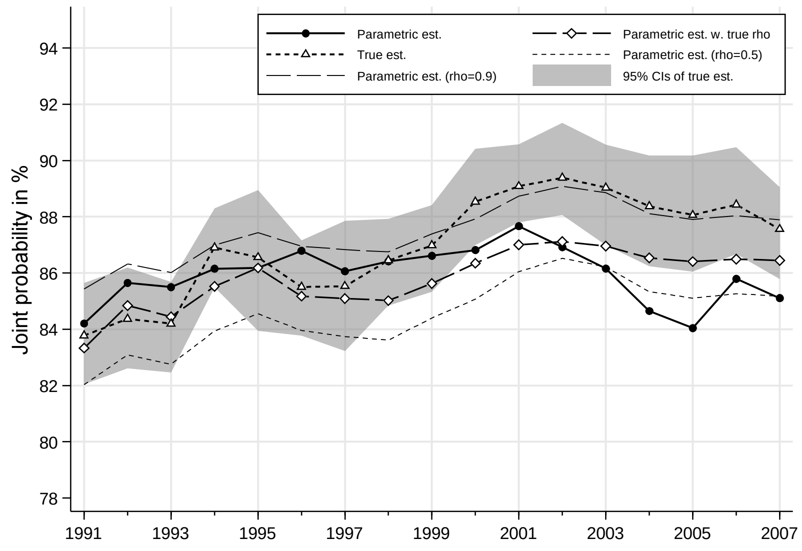


26. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), all individuals

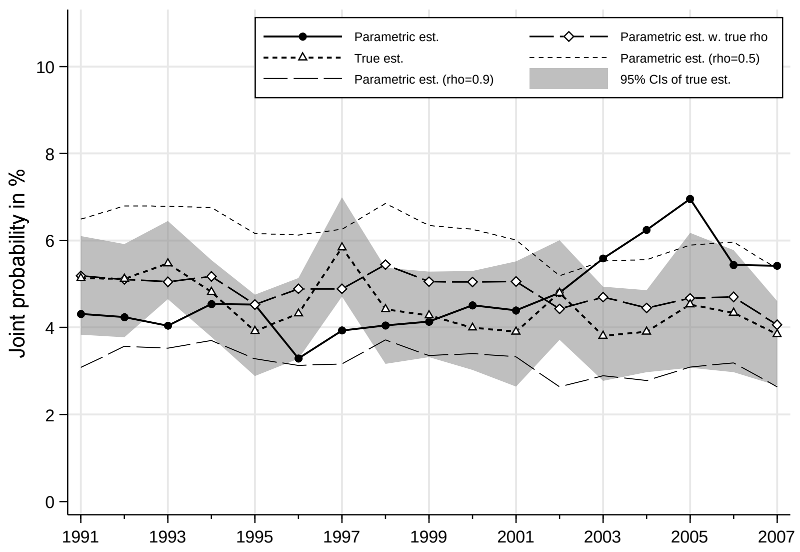
Prob(poor in year 1, poor in year 2)



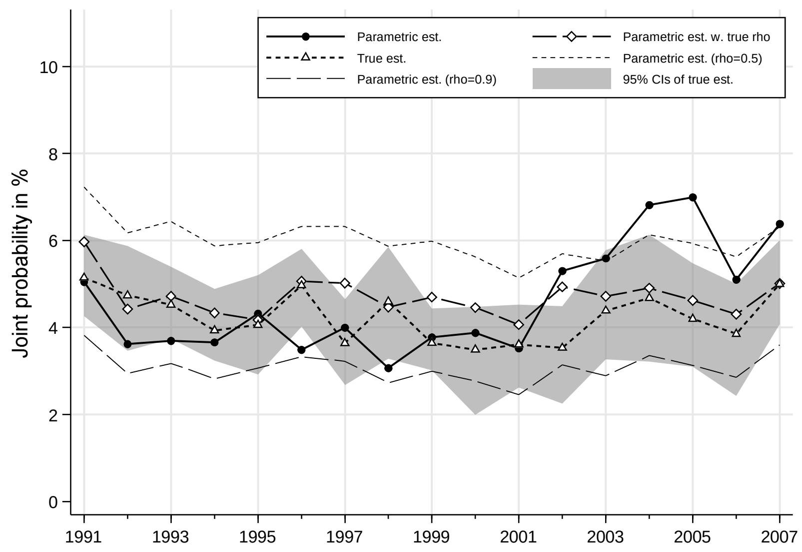
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

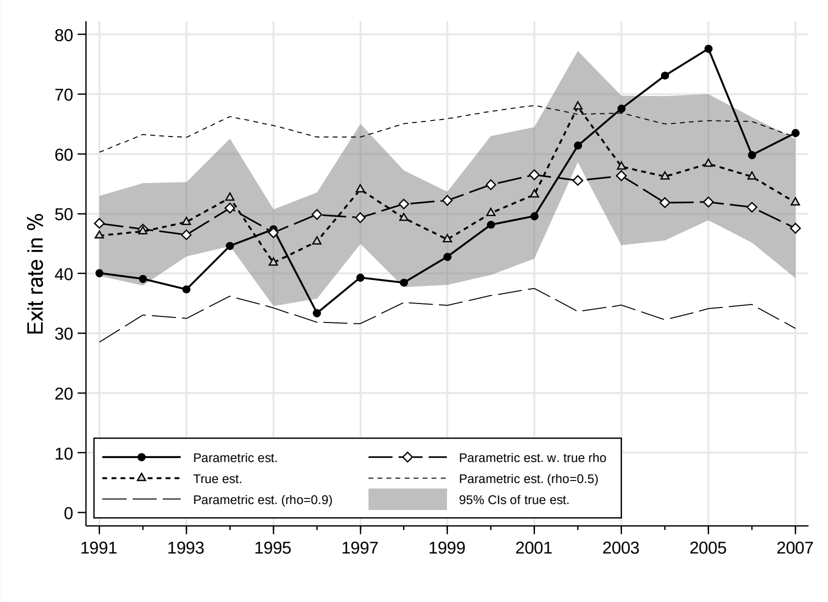


Prob(non-poor in year 1, poor in year 2)

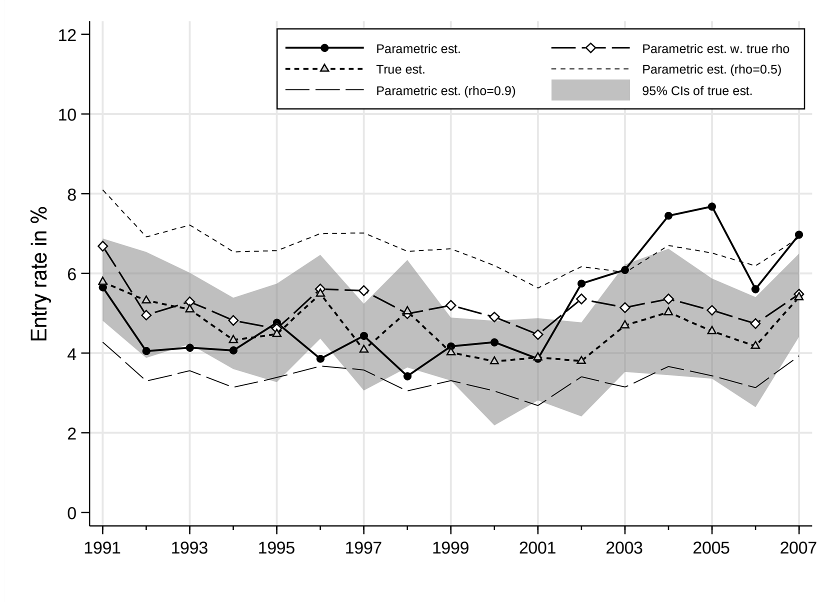


26. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), all individuals

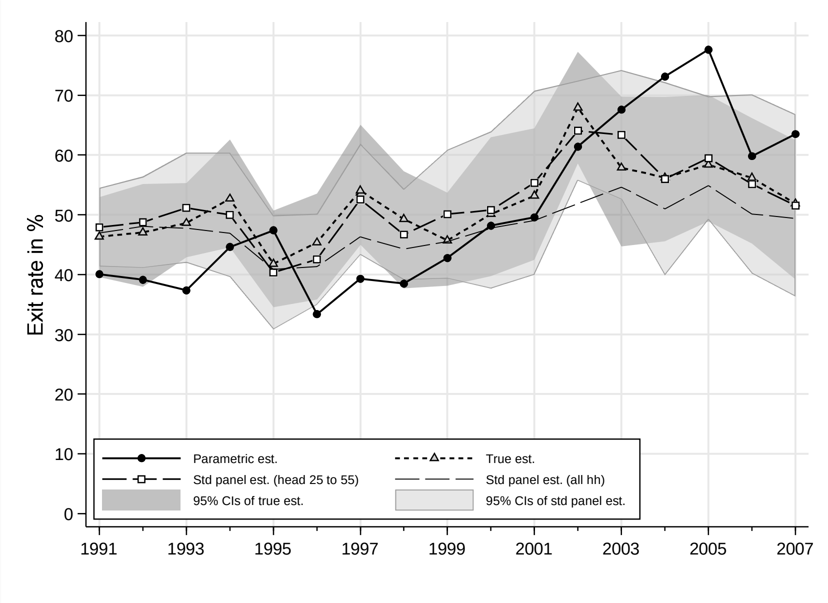
Exit rate = Prob(non-poor in year 2 | poor in year 1)



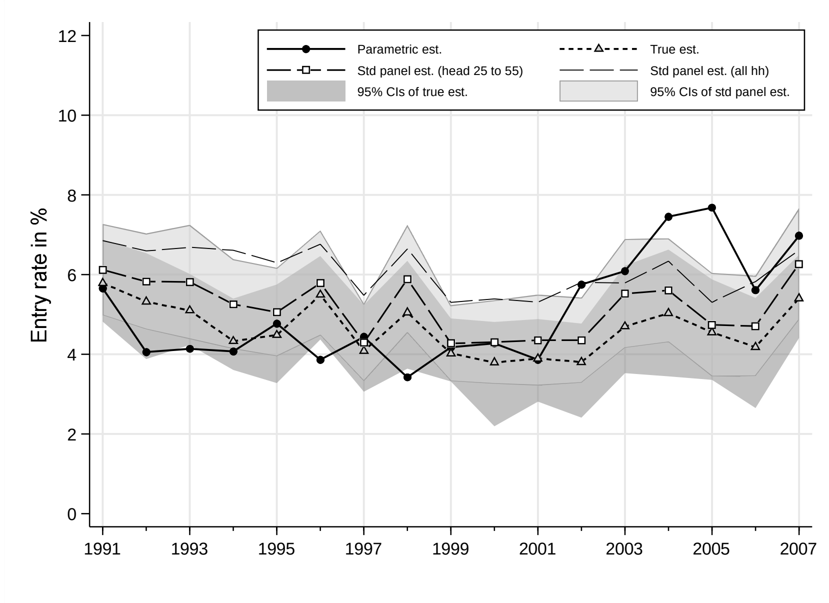
Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)

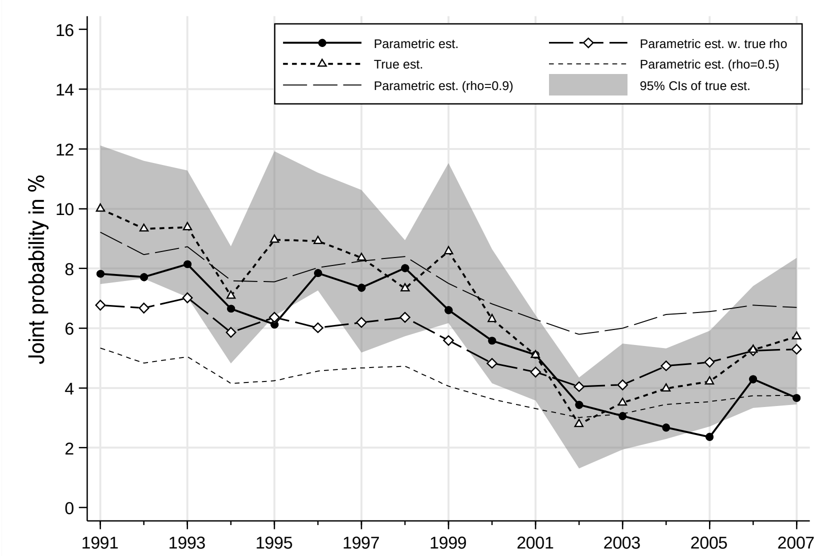


Entry rate = Prob(poor in year 2 | non-poor in year 1)

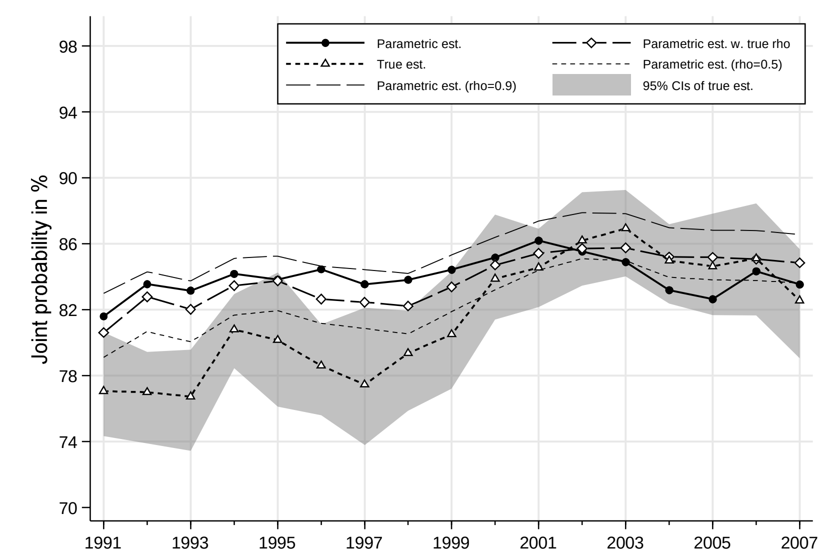


27. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

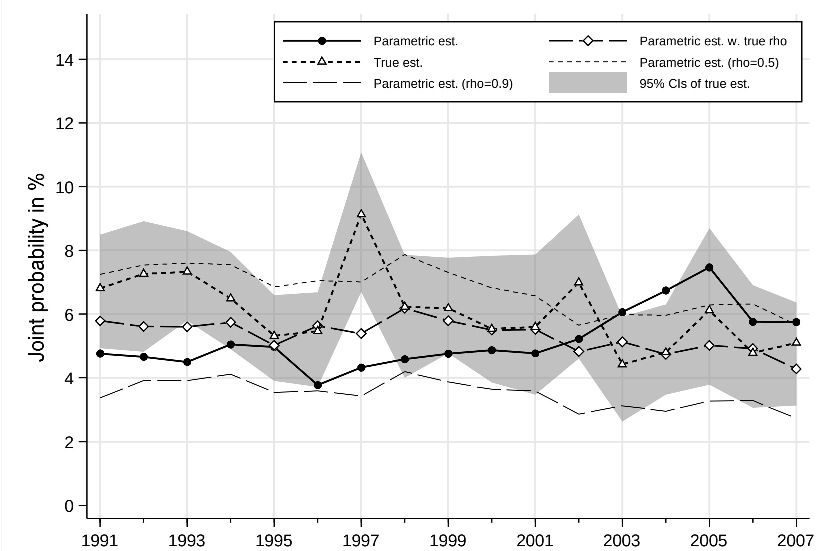
Prob(poor in year 1, poor in year 2)



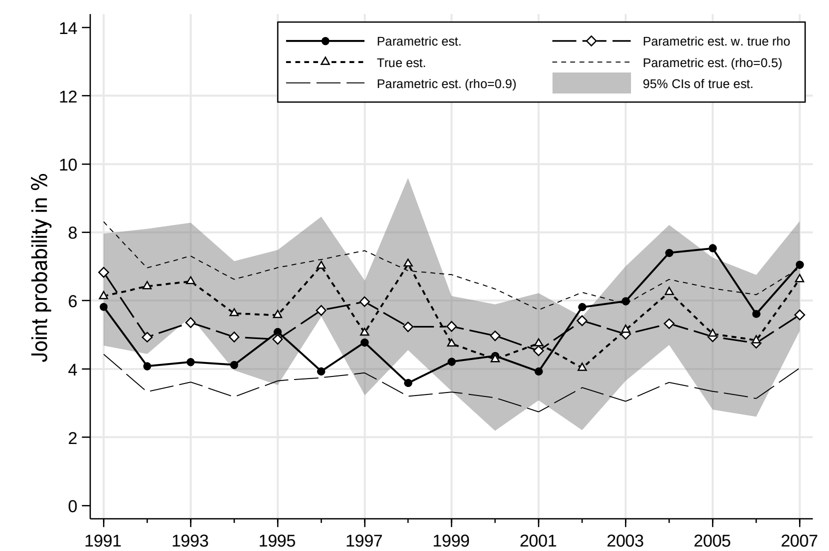
Prob(non-poor in year 1, non-poor in year 2)



Prob(poor in year 1, non-poor in year 2)

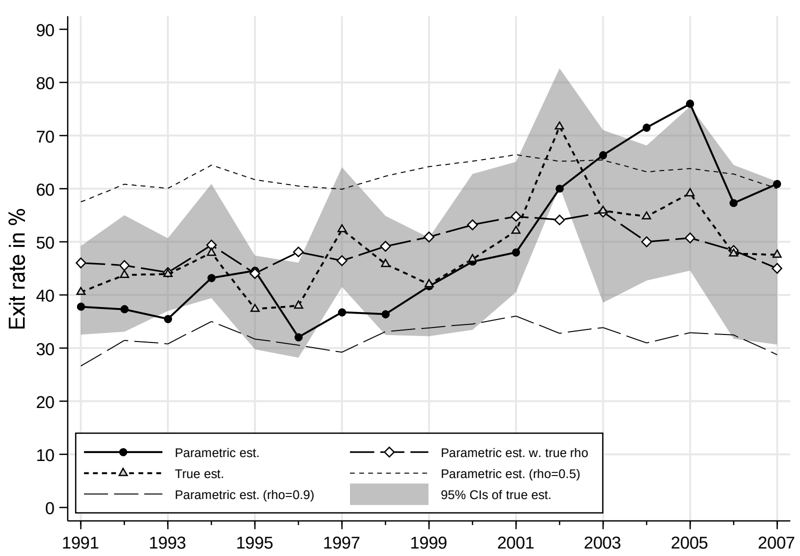


Prob(non-poor in year 1, poor in year 2)

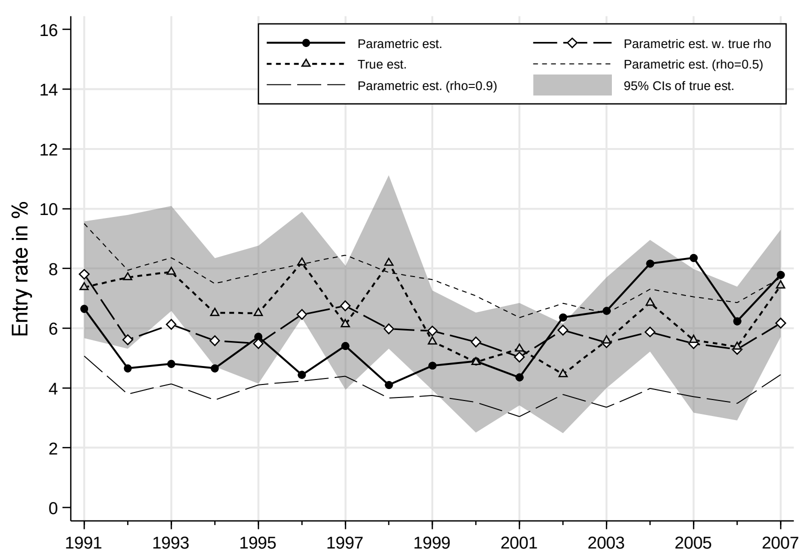


27. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 0–17

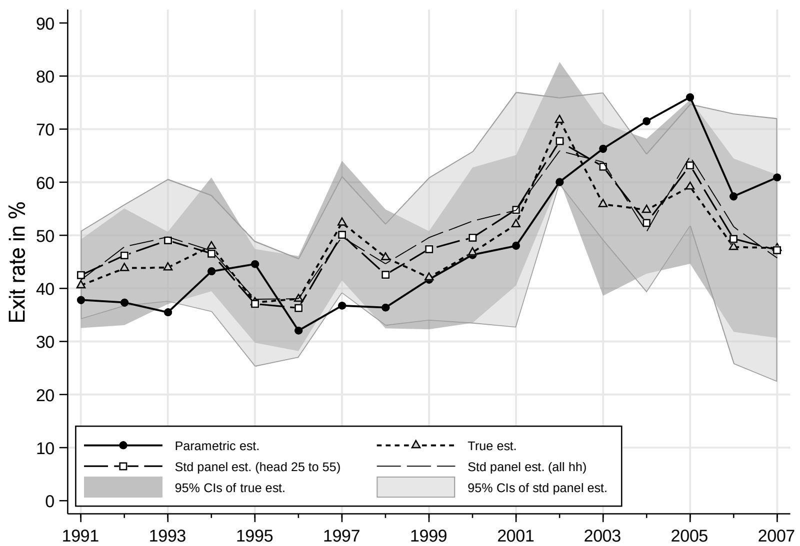
Exit rate = Prob(non-poor in year 2 | poor in year 1)



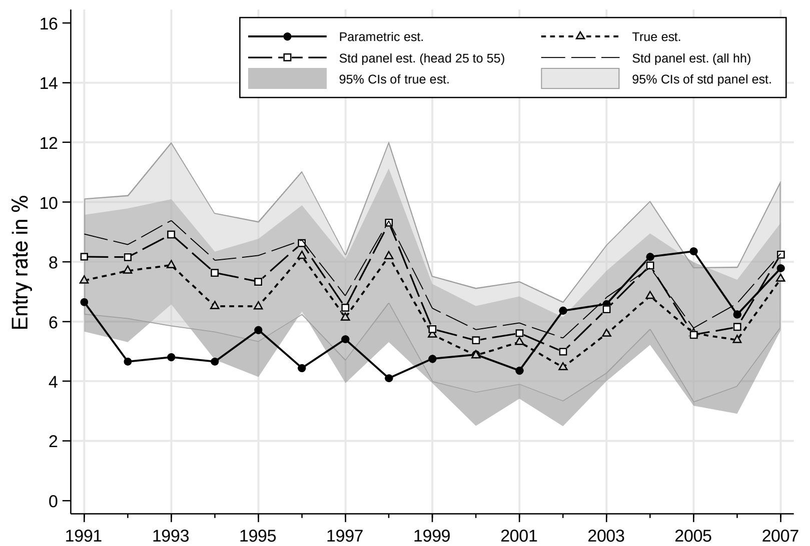
Entry rate = Prob(poor in year 2 | non-poor in year 1)



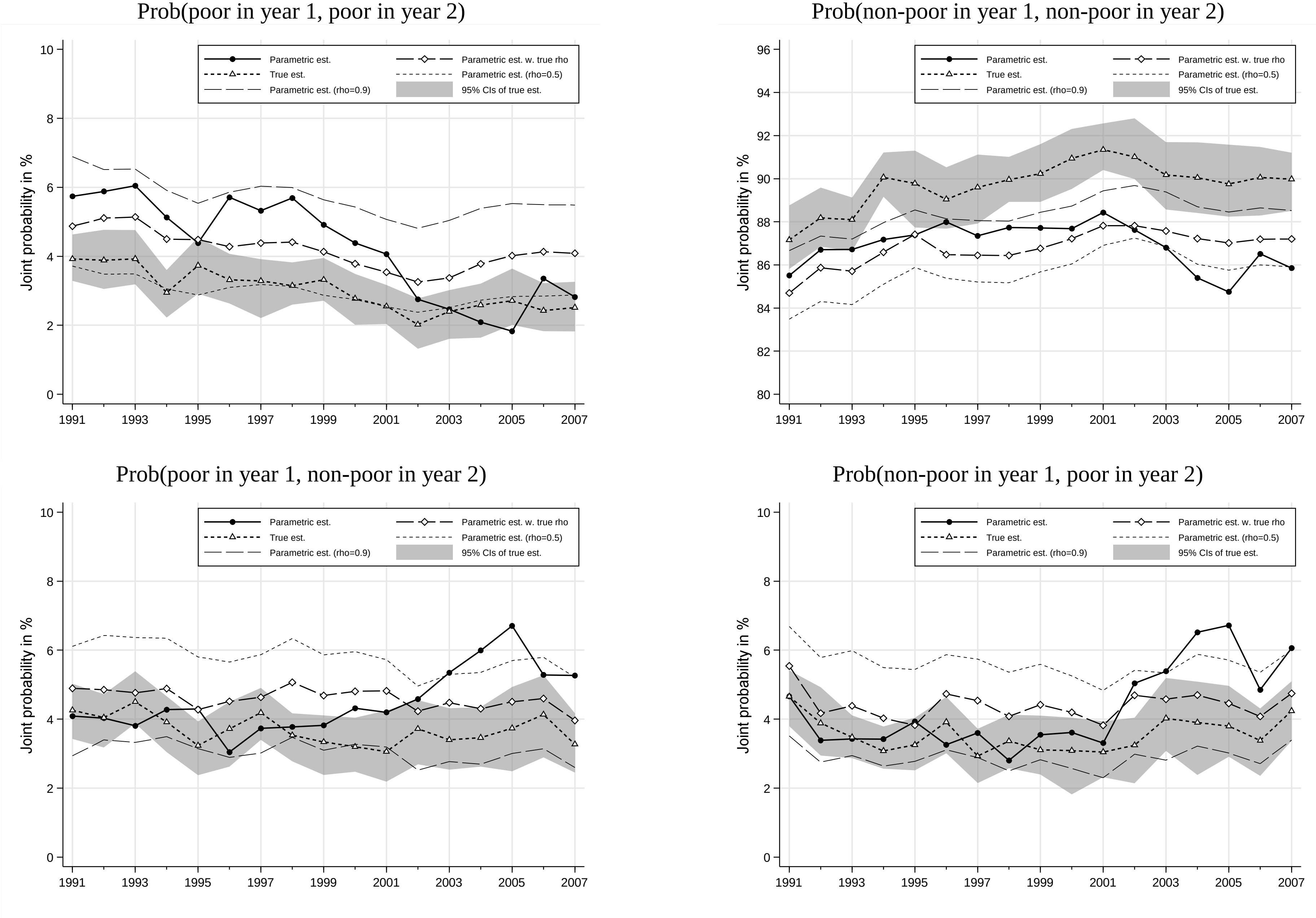
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)

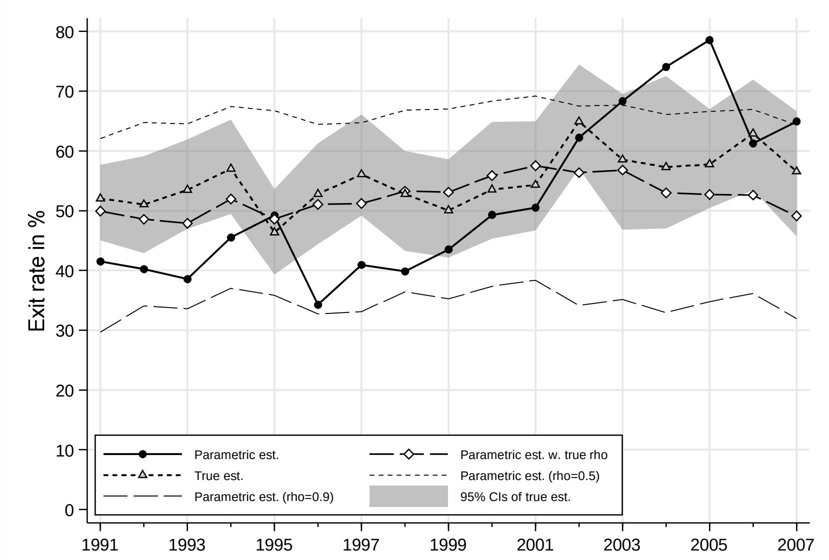


28. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

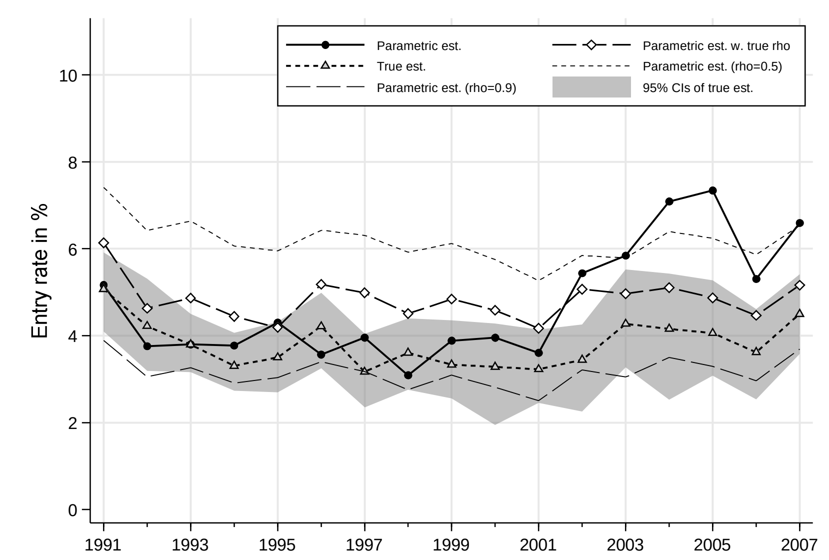


28. BHPS, head 25–55, poverty line 50% median, cohort definition YOB(5), individuals aged 18–59

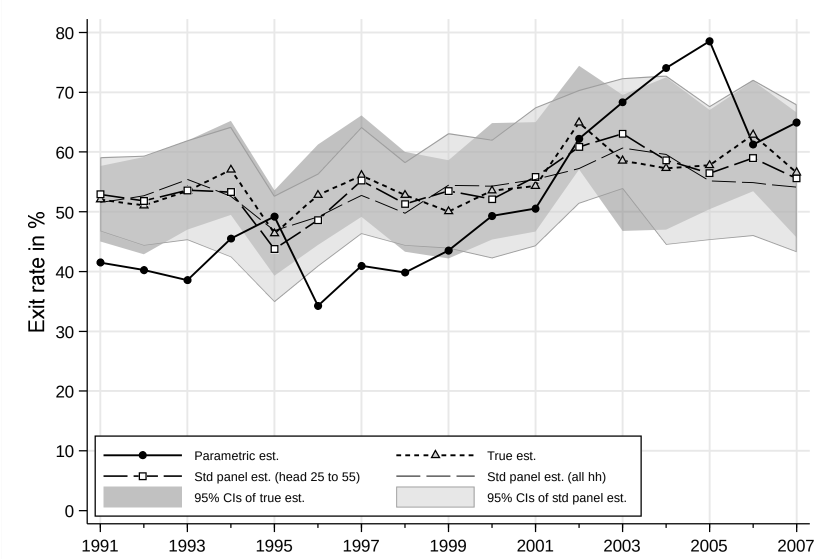
Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)



Exit rate = Prob(non-poor in year 2 | poor in year 1)



Entry rate = Prob(poor in year 2 | non-poor in year 1)