Online Appendix:

Financial Incentives and Earnings of Disability Insurance Recipients: Evidence from a Notch Design

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A Additional Figures

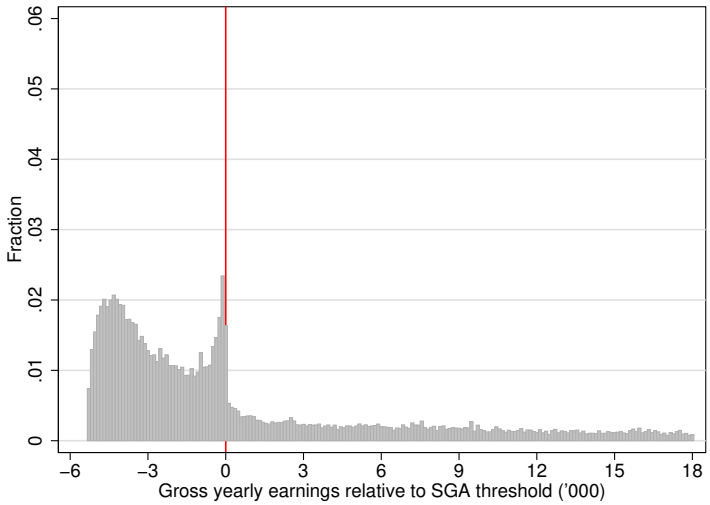


Figure A.1: Distribution of annual earnings around the SGA threshold

Notes: The figure shows the distribution of annual gross earnings relative to the annual SGA threshold (marked by the vertical solid line) for DI beneficiaries between 2001 and 2012. The histogram bin width is €120.

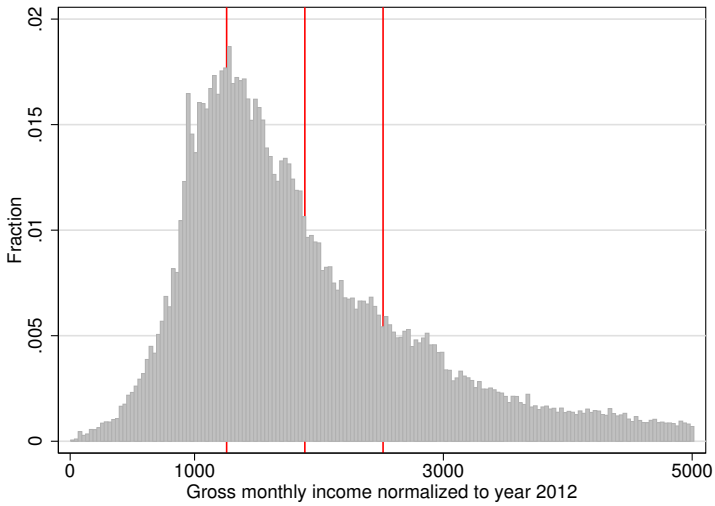
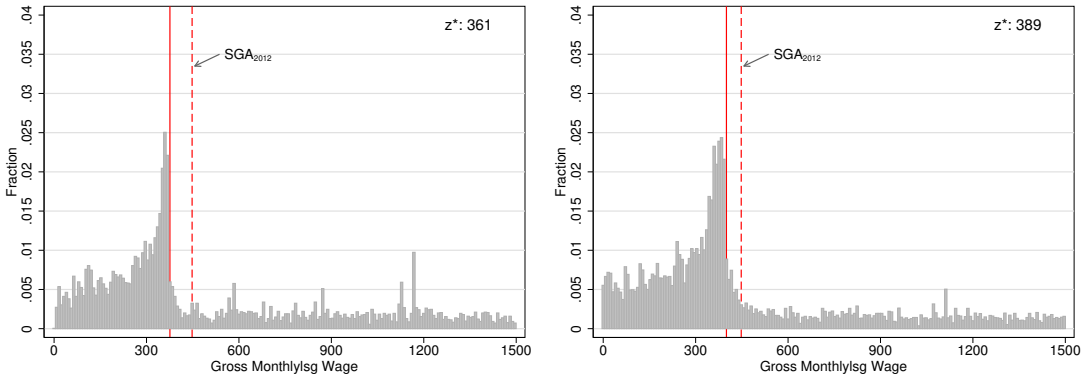


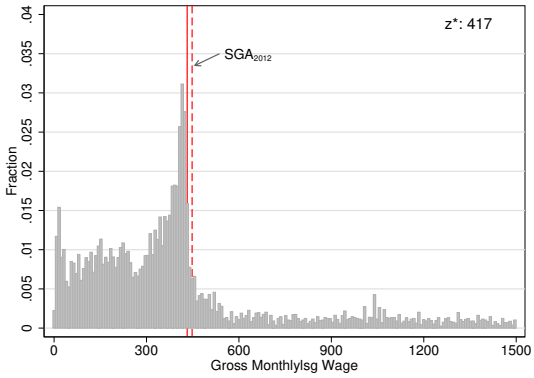
Figure A.2: Distribution of gross monthly income normalized to year 2012

The figure shows the distribution of gross monthly income for DI recipients between 2001 and 2012. Gross monthly incomes are normalized to 2012 with the adjustment factors used to adjust K_1, K_2, and K_3 for inflation. The vertical red lines denote the values for K_1, K_2, and K_3 in the year 2012 (see equation (1) for details). The histogram bin width is €30.

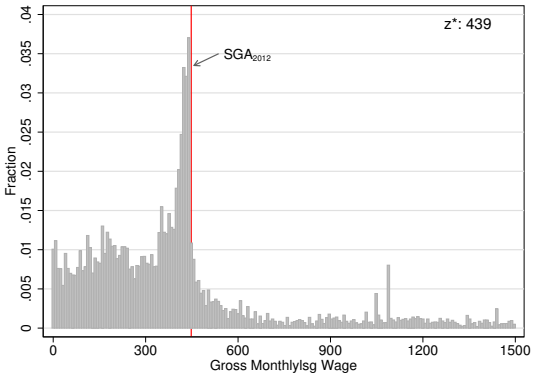


(a) 2003

(b) 2006



(c) 2009



(d) 2012

Figure A.3: Earnings distribution around the SGA threshold in 2003, 2006, 2009, and 2012

Notes: The figures show the distribution of gross monthly earnings relative to the SGA threshold (marked by the vertical solid line) for DI beneficiaries in the years 2003, 2006, 2009, and 2012. The sample in each figure consists of DI beneficiaries who entered the program in the four-year window before the observation year. The SGA threshold in 2012 is marked by the vertical dashed line. The histogram bin width is €8.

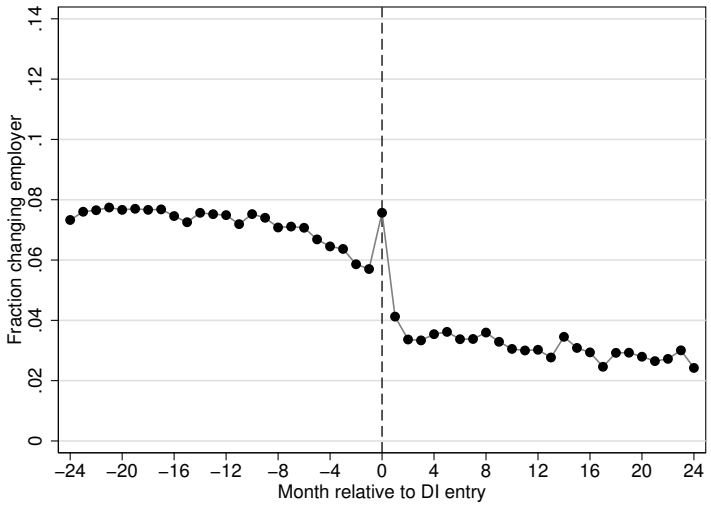
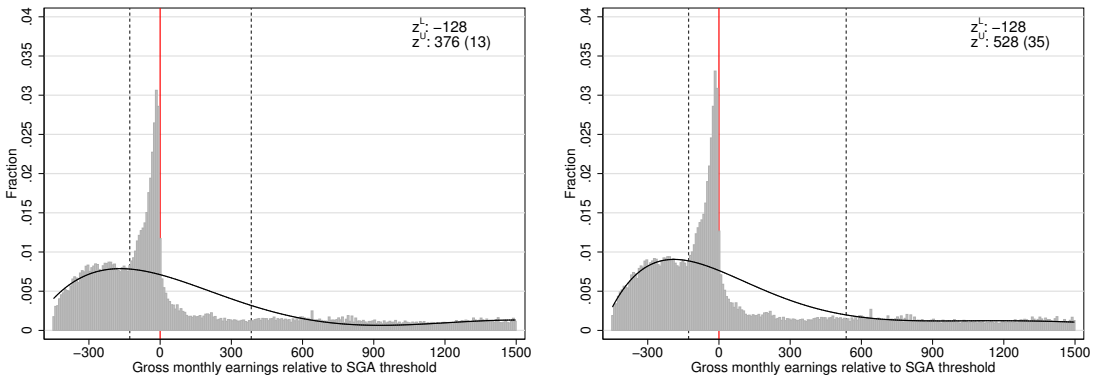


Figure A.4: Fraction of individuals changing the firm by month relative to DI entry

Notes: This figure shows the fraction of individuals who change the firm in different months before and after DI entry (vertical dashed line).



(a) 5^{th} degree polynomial

(b) 7^{th} degree polynomial

Figure A.5: Estimated counterfactual earnings distributions for 5^{th} and 7^{th} degree polynomial

Notes: The figure shows the distribution of monthly gross earnings relative to the SGA threshold (marked by the vertical solid line) for DI beneficiaries between 2001 and 2012. The excluded range $[z^L, z^U]$ is marked by vertical dotted lines. The histogram bin width is €10. The solid line beneath the empirical distribution in the left (right) figure is a fifth-degree (seventh-degree) polynomial fitted to the empirical distribution using equation (4). Bunching b is excess mass in the excluded range below the notch relative to the average counterfactual density in the interval $[z^L, z^*]$ and z^U has been estimated such that missing mass equals bunching mass. Bootstrapped standard errors are shown in parentheses.

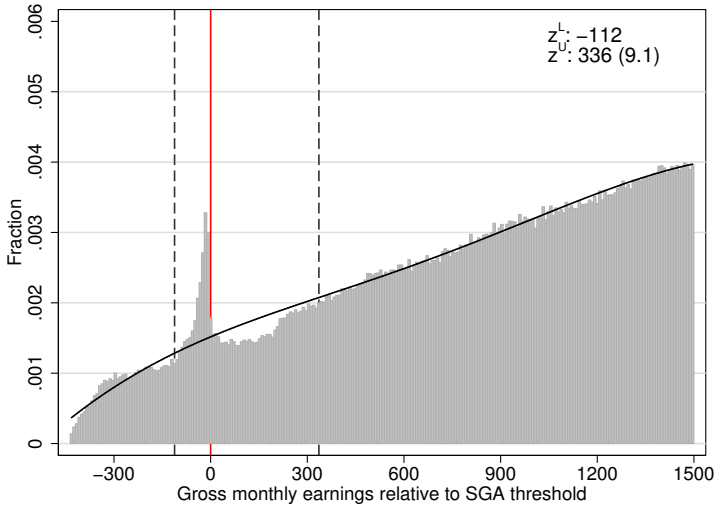
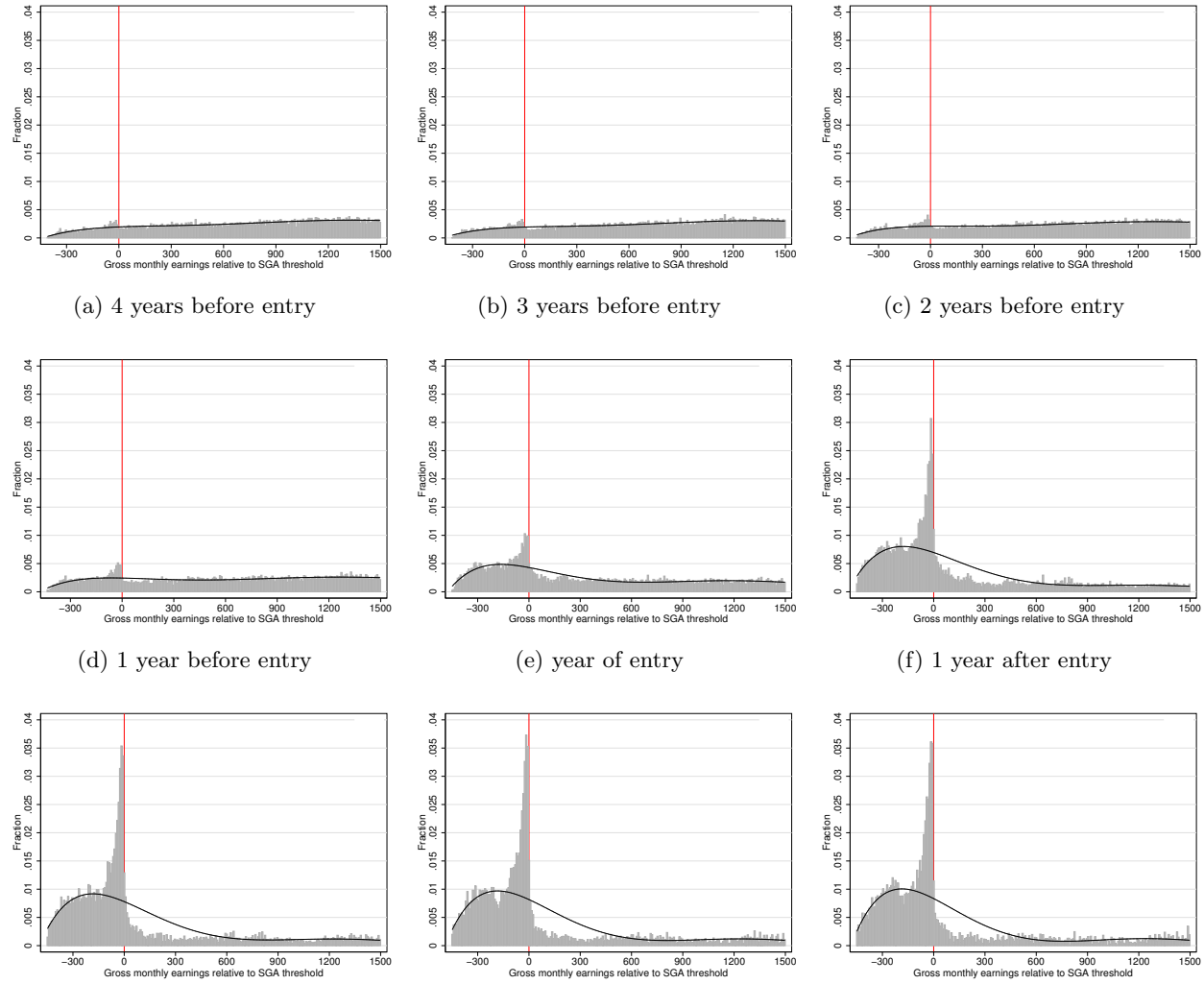


Figure A.6: Earnings distribution around the SGA threshold for workers not on the DI program

Notes: The figure shows the distribution of monthly gross earnings relative to the SGA threshold (marked by the vertical solid line) for individuals not on the DI program between 2001 and 2012. The excluded range $[z^L, z^U]$ is marked by vertical dotted lines. The histogram bin width is €10. The solid line beneath the empirical distribution is a sixth-degree polynomial fitted to the empirical distribution using equation (4). Bunching b is excess mass in the excluded range below the notch relative to the average counterfactual density in the interval $[z^L, z^*]$ and z^U has been estimated such that missing mass equals bunching mass. Bootstrapped standard errors are shown in parentheses.



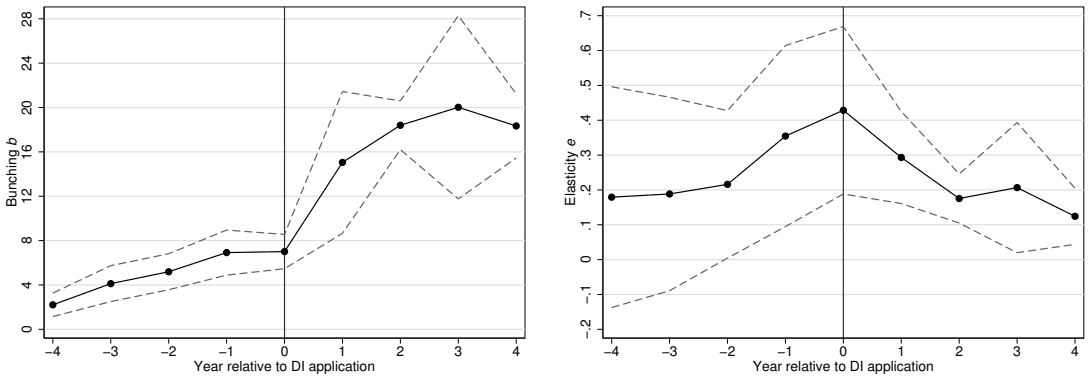
(a) 4 years before entry (b) 3 years before entry (c) 2 years before entry

(d) 1 year before entry (e) year of entry (f) 1 year after entry

(g) 2 years after entry (h) 3 years after entry (i) 4 years after entry

Figure A.7: Earnings distribution around the SGA threshold before and after DI entry

Notes: The figure shows the distribution of monthly gross earnings relative to the SGA threshold (marked by the vertical solid line) for DI beneficiaries each year in the four years before and after DI entry. The sample consists of DI beneficiaries who are working at least once in the first four years after program entry. The histogram bin width is €8. The solid line beneath the empirical distribution is a sixth-degree polynomial fitted to the empirical distribution using equation (4).



(a) Bunching b (b) Elasticity e

Figure A.8: Bunching and earnings elasticity before/after DI application

Notes: Panel (a) shows the amount of bunching b and Panel (b) shows the earnings elasticity e using equation (3) for different years before and after applying for DI benefits (vertical solid line). The sample consists of DI recipients who are working at least once in the first four years after program entry. The dashed lines denote 95 percent confidence intervals.

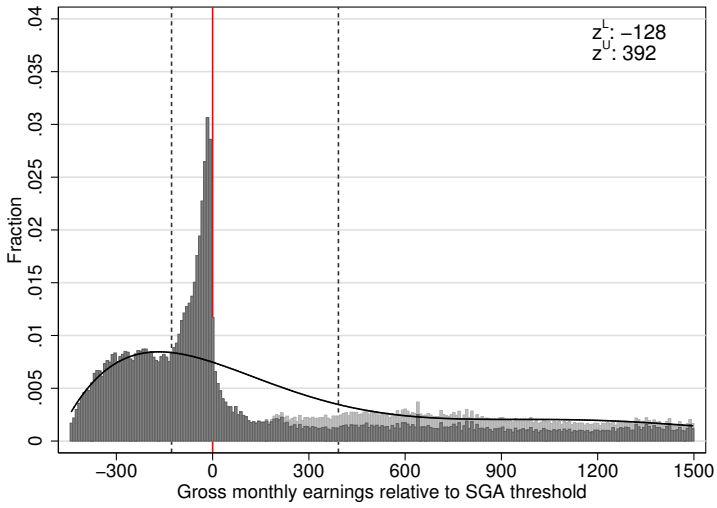


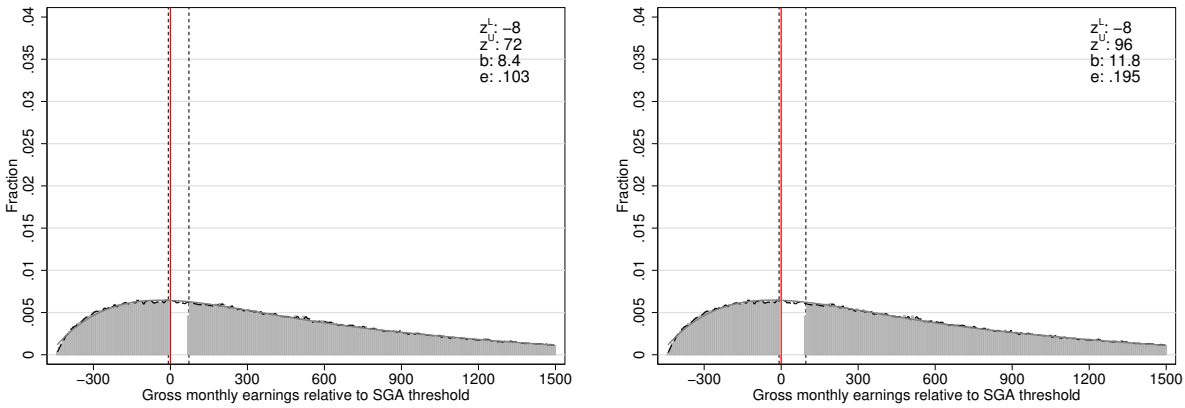
Figure A.9: Estimated effect on the earnings distribution above the SGA threshold

Notes: The figure shows the distribution of gross monthly earnings relative to the SGA threshold (marked by the vertical solid line) for DI beneficiaries between 2001 and 2012 when we add beneficiaries who would start working without the notch back to the right of the SGA threshold (the difference between the light and the dark gray bars) using the simulation-based adjustment described in section V. The histogram bin width is €8. The solid line beneath the empirical distribution is a sixth-degree polynomial fitted to the adjusted empirical distribution (light gray bars) using equation (4). The excluded range $[z^L, z^U]$ is marked by vertical dotted lines; z^U has been estimated such that missing mass equals bunching mass.

B Graphical illustration of Monte Carlo simulations

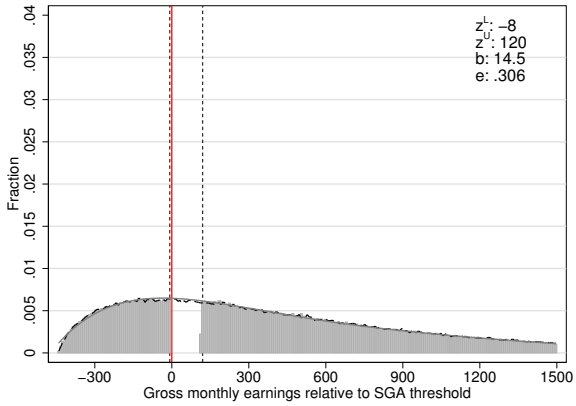
Figure B.1 shows the simulated and counterfactual earnings densities under the scenario "small notch," assuming a true underlying elasticity of $e = 0.1$ (Panel a), $e = 0.2$ (Panel b), or $e = 0.3$ (Panel c). Figures B.2 and B.3 display analogous results for the scenario "Austrian DI notch" and "Austrian DI notch with extensive margin response," respectively. In each panel, the black dashed line denotes the simulated earnings density *without* the notch and the gray bars represent the simulated earnings density *with* the notch. The gray solid line denotes the counterfactual earnings density which is obtained by estimating equation (4) on the simulated earnings density with the notch.

In each panel, we exclude the bin just to the left of the SGA threshold because bunching is so large that including this bin dwarfs all the other bins. The reason is that in the simulations individuals respond to the notch by precisely earning just below the SGA threshold, while in the empirical application bunching is more diffuse around the threshold. Moreover, in the simulations individuals can freely adjust their earnings, while in reality some people may not bunch because of optimization frictions (as discussed in the paper, the estimation strategy takes such frictions into account when estimating the earnings elasticity).



(a) e=0.1

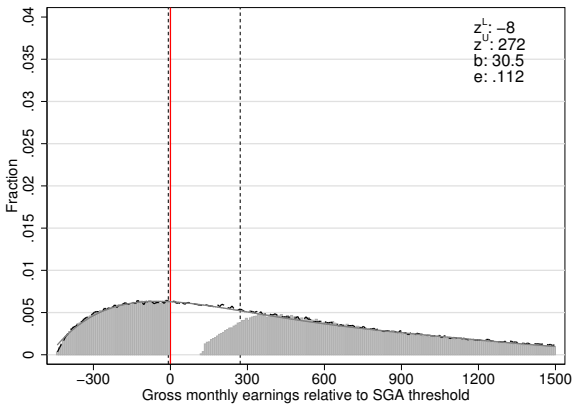
(b) e=0.2



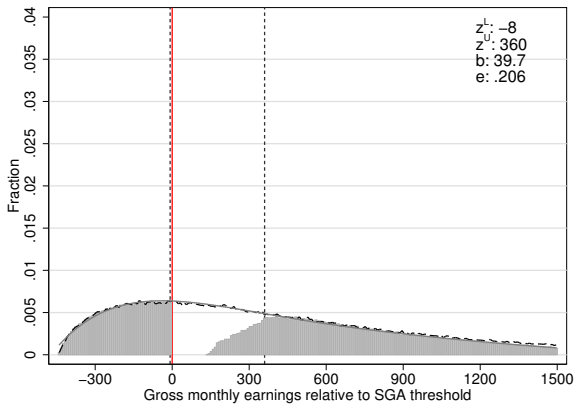
(c) e=0.3

Figure B.1: Simulated and counterfactual densities for small notch

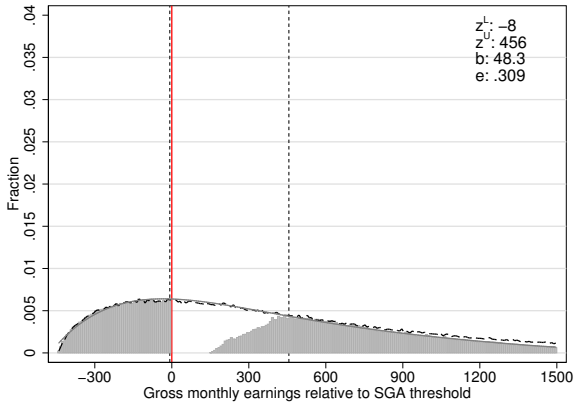
Notes: The figure plots the simulated earnings distributions without the notch (black dashed line) and with the notch (gray bars) for the cases $e = 0.1$, $e = 0.2$, and $e = 0.3$. The bin width of the gray bars is €8. The gray solid line denotes the counterfactual earnings density which is obtained by estimating equation (4) on the simulated earnings distribution with the notch. The bin just to the left of the SGA threshold is excluded in each panel.



(a) e=0.1



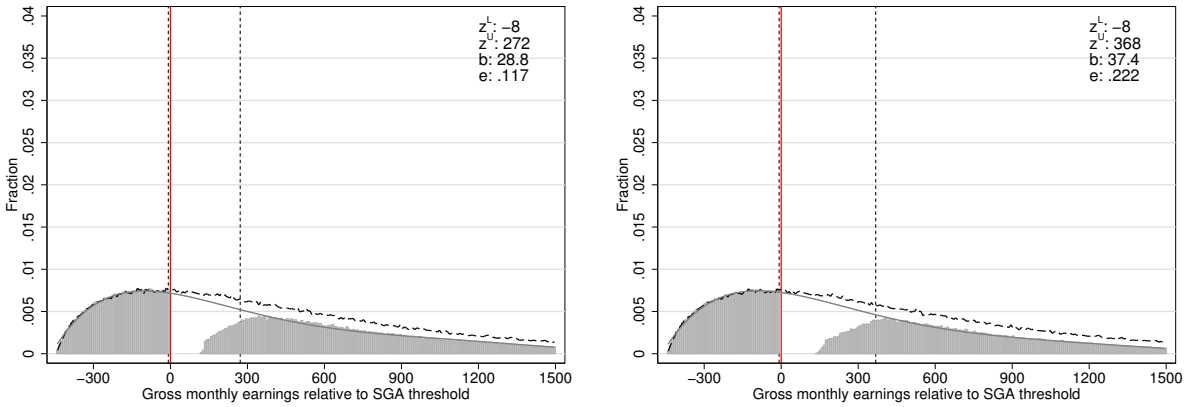
(b) e=0.2



(c) e=0.3

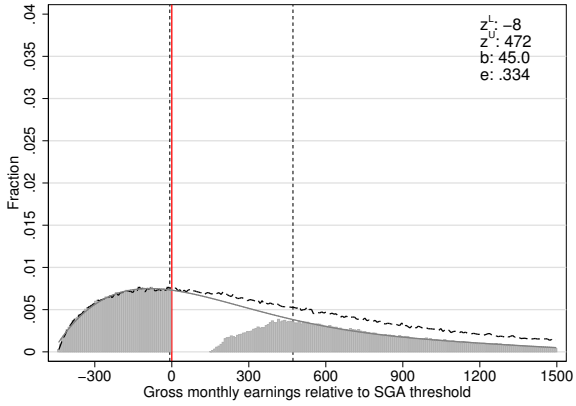
Figure B.2: Simulated and counterfactual densities for Austrian DI notch

Notes: The figure plots the simulated earnings distributions without the notch (black dashed line) and with the notch (gray bars) for the cases $e = 0.1$, $e = 0.2$, and $e = 0.3$. The bin width of the gray bars is €8. The gray solid line denotes the counterfactual earnings density which is obtained by estimating equation (4) on the simulated earnings distribution with the notch. The bin just to the left of the SGA threshold is excluded in each panel.



(a) e=0.1

(b) e=0.2



(c) e=0.3

Figure B.3: Simulated and counterfactual densities for Austrian DI notch with extensive margin response

Notes: The figure plots the simulated earnings distributions without the notch (black dashed line) and with the notch (gray bars) for the cases $e = 0.1$, $e = 0.2$, and $e = 0.3$. The bin width of the gray bars is €8. The gray solid line denotes the counterfactual earnings density which is obtained by estimating equation (4) on the simulated earnings distribution with the notch. The bin just to the left of the SGA threshold is excluded in each panel.

C Derivation of Equation (3)

This section illustrates the derivation of equation (3). The utility level at the SGA threshold z^* is given by

$$u(z^*) = (1-t)\cdot(s+z^*) - \frac{n^*+\Delta n^*}{1+1/e}\cdot\left(\frac{z^*}{n^*+\Delta n^*}\right)^{1+1/e},$$

where $(n^*+\Delta n^*)$ is the ability level of the DI beneficiary that is indifferent between z^* and z^I. The utility level at the interior point z^I is given by

$$u(z^I) = (1-t)\cdot(s+z^I) - \Delta T - \Delta t\cdot(z^I - z^*) - \frac{n^*+\Delta n^*}{1+1/e}\cdot\left(\frac{z^I}{n^*+\Delta n^*}\right)^{1+1/e}. \quad (1)$$

Maximizing equation (1) with respect z^I implies that $z^I = (n^*+\Delta n^*)(1-t-\Delta t)^e$. Using this expression, we can write the utility at the interior point z^I as follows

$$u(z^I) = (1-t)s - \Delta T + \Delta t z^* + \frac{1}{1+e}(1-t-\Delta t)^{1+e}(n^*+\Delta n^*).$$

Setting $u(z^I) = u(z^*)$ and using the condition $(n^*+\Delta n^*) = \frac{z^*+\Delta z^*}{(1-t)^e}$, we can rearrange terms so as to obtain equation (3):

$$\begin{gathered}(1-t)z^* + \Delta T - \Delta t z^* - \tfrac{n^*+\Delta n^*}{1+1/e}\left(\tfrac{z^*}{n^*+\Delta n^*}\right)^{1+1/e} = \tfrac{1}{1+e}(1-t-\Delta t)^{1+e}\left(\tfrac{z^*+\Delta z^*}{(1-t)^e}\right) \Leftrightarrow \\ \tfrac{1}{1+\Delta z^*/z^*}\left[1+\tfrac{\Delta T/z^* - \Delta t}{1-t}\right] - \tfrac{1}{1+1/e}\left(\tfrac{1}{1+\Delta z^*/z^*}\right)^{1+1/e} - \tfrac{1}{1+e}\left(1-\tfrac{\Delta t}{1-t}\right)^{1+e} = 0\end{gathered}$$