

Disentangling the Contemporaneous and Life-Cycle Effects of Body Mass on Earnings

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What the Paper Sets Out To Do

- Uncover the effects of body mass on women's wages
- Is there a “contemporaneous” effect?
- Is there a “human capital accumulation” effect
- This has similarities to thinking about racial/gender wage differentials holding occupation fixed. Unlike earlier work, they address these issues.

The contemporaneous effect of body mass on wages

- It might pick up a true effect of BMI on productivity if BMI causes some unmeasured aspects of human capital – BMI is a HC “proxy”
- It might pick up unobserved costs associated with BMI like the costs of providing health insurance – BMI is a proxy for costs
- It might pick up employer preferences or employers’ perceptions of their customers’ preferences – BMI proxies “discrimination”
- The paper does not disentangle these

The life cycle effect of body mass on wages

- How does body mass affect human capital acquisition?
Lots of ways in this model
- Schooling and work experience
- Marital status and number of children
- Each of these is modeled as a “demand” or choice throughout the life cycle

- But all might be affected by the proxy/cost/discrimination issues as just mentioned
- If so, what does this do to the interpretation of the decomposition results?

What the paper does not do

- Little focus on ADA and 1993's Cook vs Rhode Island effect?
- No extended focus on how body mass is associated with human capital accumulation
- Does not justify the “interpolation” of the outcomes due to the shift to biannual surveys
- Does not argue why the “conditional demand” for BMI that does not depend on current labor market conditions (e.g., these help predict future conditions; provides a better life-cycle approx.)

What the paper does(1)

- Compare OLS/Fixed effect/random effect MLE estimates
- The random effect MLE is a massive undertaking
- Wage and BMI outcomes modeled quite flexibly (11 pages of parameter estimates; 116 of the coefficients determine the wage distribution)
- Not the naïve/conventional random effects model
- Think of it as a flexible parametric system of equations, LIML or FIML model (more in 2 slides)

What the paper does (2)

- Approximates the demand/production functions as outcomes arising from optimal policy choices when maximizing expected discounted future utility at each point in time (Bellman equation)
- Assumes all information about the future distributions can be captured variables observed today and in the past.
- Unlike more explicit structural approaches, approximates the decision rules and production functions even if the observed decisions are generated by more “behavioral” rules.

Random Effect MLE

- Permanent/transitory error components
- Permanent components affect outcomes through time (somewhat unrestricted discrete multivariate distributions for the permanent factor)
- The “same” permanent components affect subsequent wage/HC outcomes that are also determined by “lagged endogenous variables”
- Also jointly models endogenous initial conditions and non-ignorable sample attrition

Identification

- Exploits geographic (state and county) variations in food prices and local labor market conditions.
- Only contemporaneous prices/conditions affect decisions and outcomes today through their current effects and impacts on expectations about the future (first order Markov)
- The entire past history of the prices, conditions, and exogenous variables serve as “instruments”
- Potentially a huge amount of over-identification

What I wish they had done (1)

(not that I know how to do all these)

- Many working with LATE/IV find these types of models unconvincing. Take some lessons from what researchers do in that literature
- Show that the “instruments” are relevant – need to go beyond just a likelihood ratio test; need something akin to a rank test.
- Show that the timing/exclusion, over-identification restrictions are valid – a Lagrange multiplier test would work.

What I wish they had done (2)

(not that I know how to do any of these either)

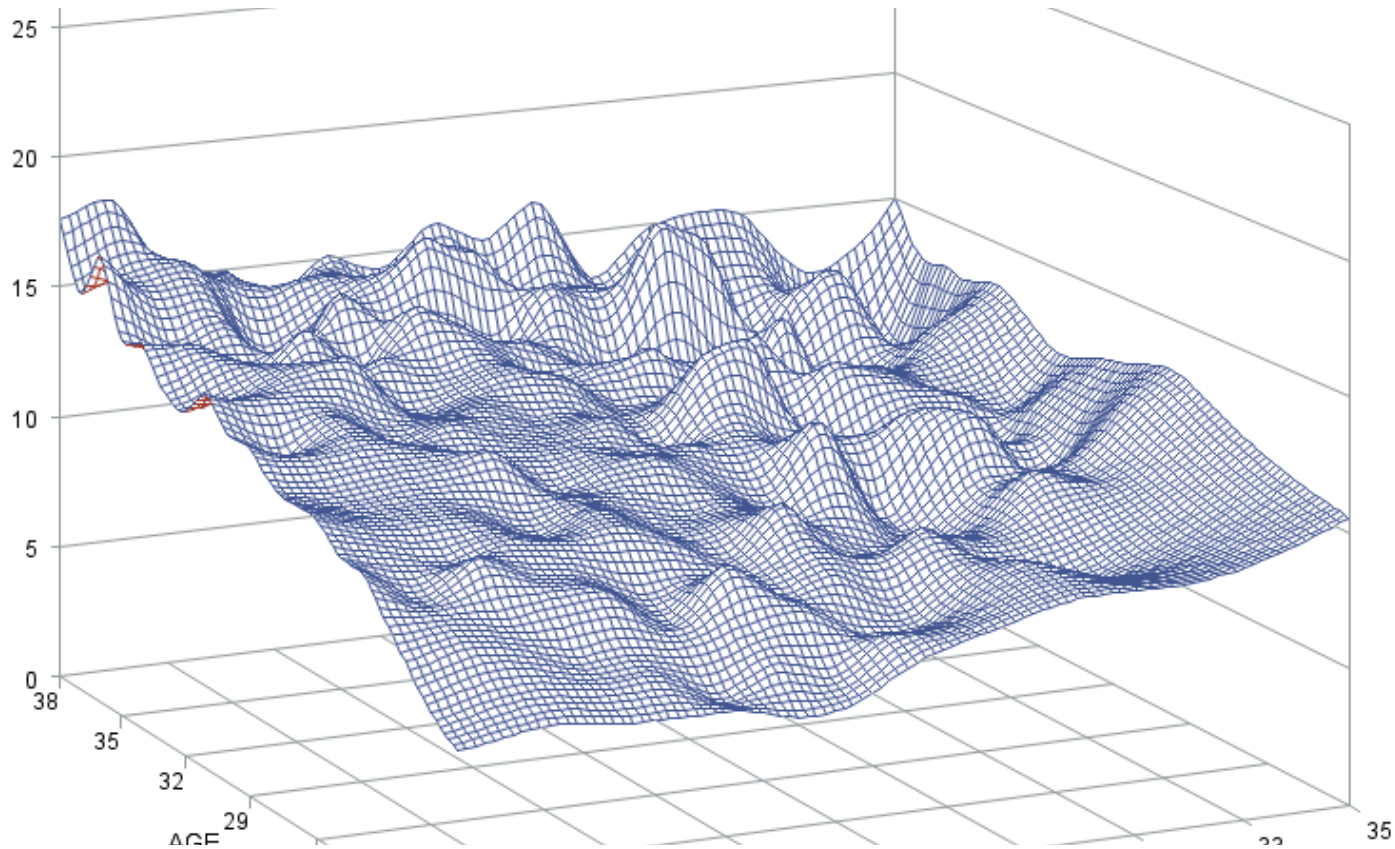
- Highlight better the gains from using this estimation approach.
- Do something like Table 6 for the full life-cycle model (but using IV with and without simple selection corrections).
- Add these estimates to the figures. Show where they perform well and where they are inaccurate.
- Put in confidence bands/standard errors on the simulated results.
- I suspect the MLE approach would perform much better than naïve IV when one takes estimation accuracy into account.

What I wish they had done (3)

- Allow the impacts of the unobserved factors to vary over time (quadratic trend in effects)
- Allow the unobserved factors to interact with some key explanatory variables – a less restrictive way to allow for random coefficients/effects
- Examine more closely how well the model predicts dynamics – e.g., does it capture the sample distribution of employment spell durations observed at age 40?

Overfitting?

(below is not from their estimation)



Potential Approach to Overfitting

- Penalized likelihood seems promising
- A ridge approach (e.g., constrain sum of squared coefficients) likely better than a lasso (constrain sum of absolute coefficients) in approximation models like this one
- Can pick the size of the penalty/constraint by a k-fold bootstrap
- That will increase the computation time considerably, but it seems to work well

Concluding remarks

- They did disentangle the contemporaneous from the life cycle effects of BMI on wages
- The results seem consistent with women increasing their investments in human capital to offset the contemporaneous BMI penalty (except at high wages)
- I have a big “wish they had done” list – because I think approaches like this are extremely useful, but underused, when analyzing important dynamic decisions and effects.
- Lots of uses for their approach -- effects of life cycle variations in mental health or job loss/training or drug use ... on demographic and labor market outcomes without imposing considerable structure on behaviors