

Problem Set V  
Econ 350, Winter 2021  
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Due February 17th, 2021  
This draft, February 10, 2021

- I. Define “complexity” as it relates to jobs in the modern labor market (see Caines et al., 2017). Discuss the evidence on the rise in the payment (“return”) to complexity and compare with Deming’s (2017) evidence on social skills and to Kosse et al. (2020) on the payment to prosociality. Specifically, discuss:
  - (a) How these skills are measured.
  - (b) The sensitivity of the evidence to alternative definitions of these skills.
  - (c) How does any of this relate to the discussion of the “holing out” of wages?
  - (d) How does “complexity” fit in with Mandelbrot’s (1962) definition of an occupation?
- II. Define statistical discrimination. Does the Bayesian theory of optimal decision-making vindicate this practice? Why or why not? (Discuss not only the application of priors in Bayesian decision-making, but also their formation.) Specifically, how could taste-based discrimination affect statistical discrimination?
- III. Many economists estimate “value-added regressions” based on test scores or discuss achievement gaps in terms of convergence of or divergence of test scores (see, e.g., Derek Neal’s handout (“Black-White Inequality”) on the class website).
  - (a) What is the “natural scale” of test scores?

(b) Why is a monotone transformation of a test score not a test score?

(c) Discuss evaluation of teachers through use of value-added regressions:

Test score at grade  $g$ :  $T(g)$ : test score at grade  $g - 1$ :  $T(g - 1)$

Value added regression for student  $j$  with teacher  $i$ :  
 $T_j(g) - T_j(g - 1) = \alpha + \beta I(i, j) + \varepsilon_j$  where  $\varepsilon_j$  is an error term and  $I(i, j)$  indicates the teacher that student  $j$  had in grade  $g$  and test scores are taken at the end of the school year with teacher  $i$ .

IV. When are prices (wages) linear in attributes? Identical across firms? Across sectors? Is nonlinearity in prices (wages) evidence of monopoly or monopsony power?

## References

- Caines, C., F. Hoffmann, and G. Kambourov (2017). Complex-task biased technological change and the labor market. *Review of Economic Dynamics* 25, 298–319.
- Deming, D. (2017). The growing importance of social skills in the labor market. *The Quarterly Journal of Economics* 132(4), 1593–1640.
- Kosse, F., T. Deckers, P. Pinger, H. Schildberg-Hörisch, and A. Falk (2020). The formation of prosociality: Causal evidence on the role of social environment. *Journal of Political Economy* 128(2), 434–467.
- Mandelbrot, B. B. (1962). Paretian distributions and income maximization. *Quarterly Journal of Economics* 76, 57–85.