Le Barbanchon, Rathelot, and Roulet (2021) Replication Exercise

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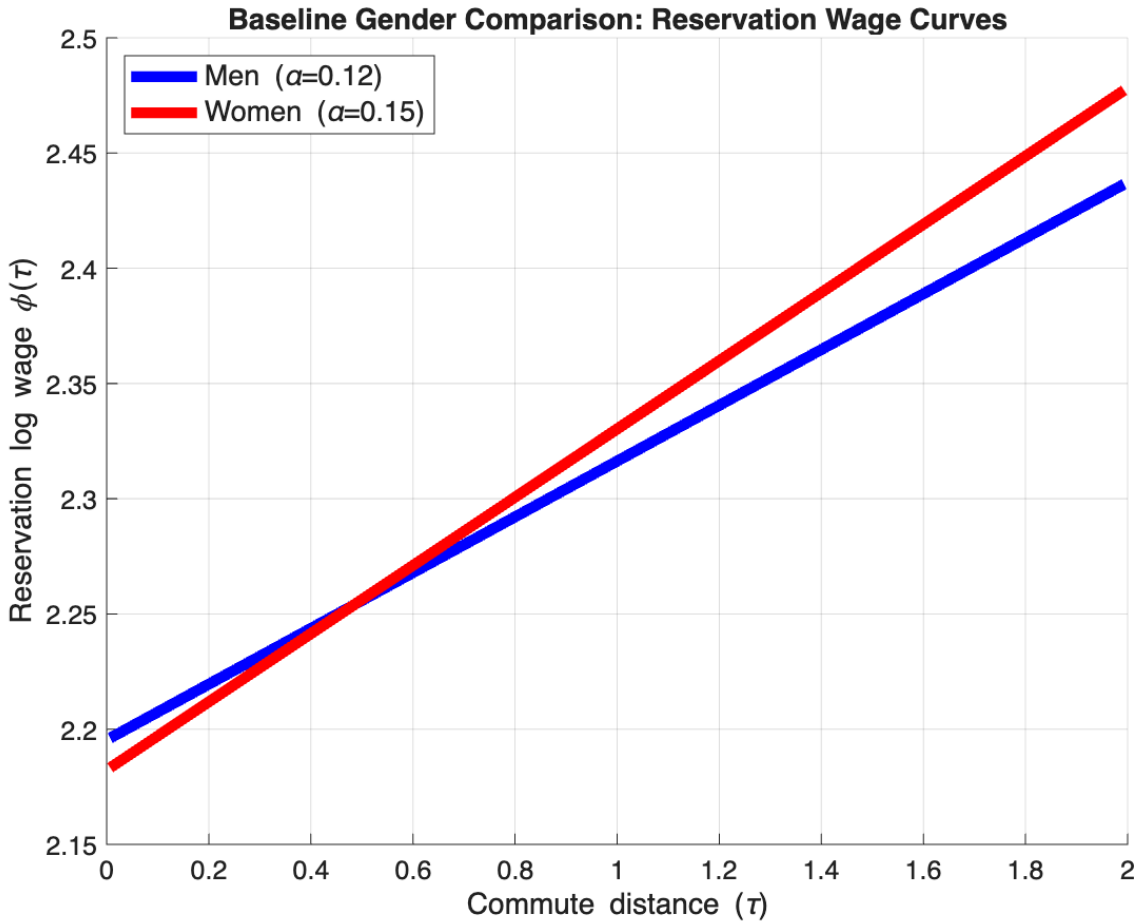
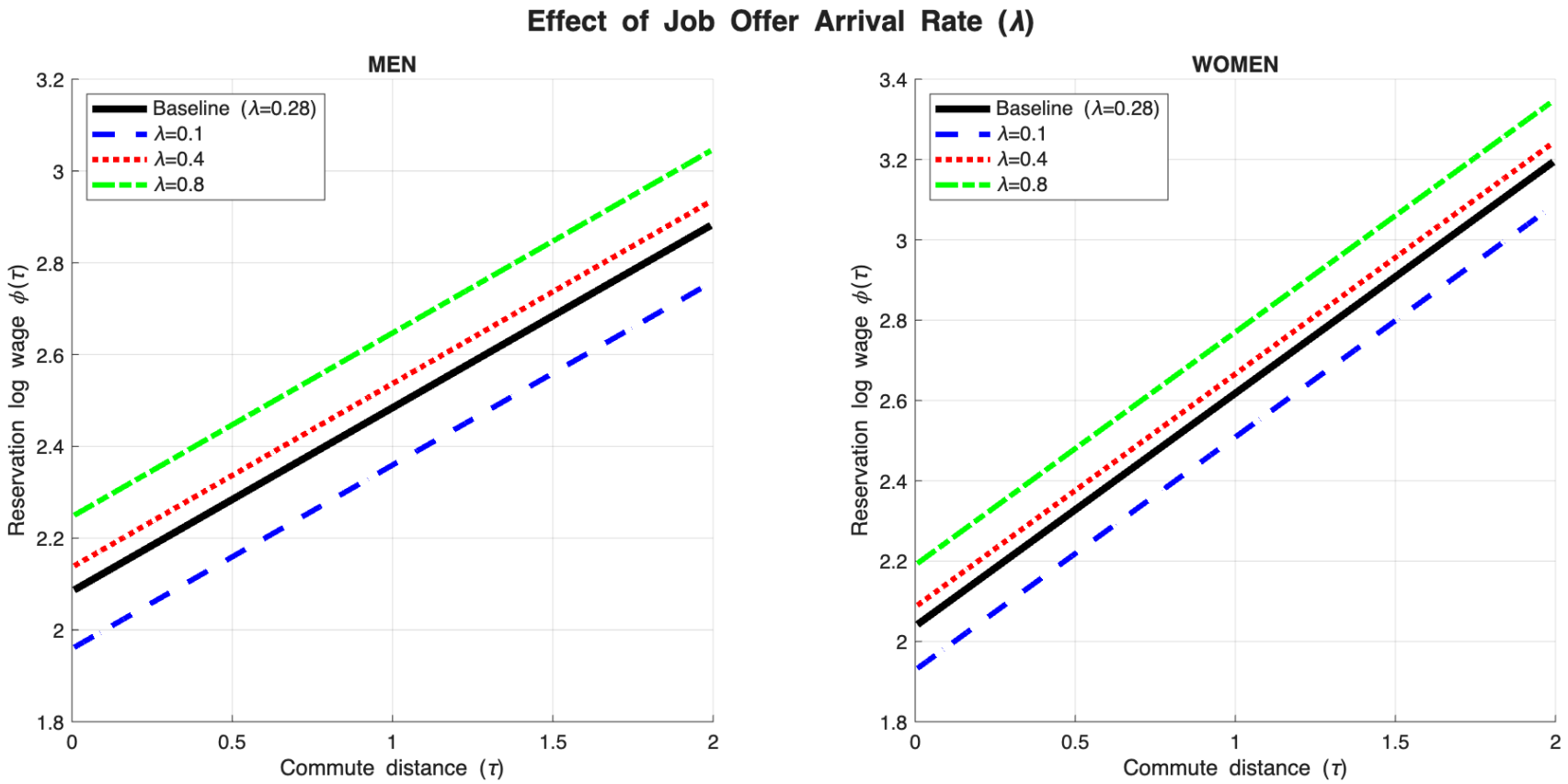
August 21, 2025

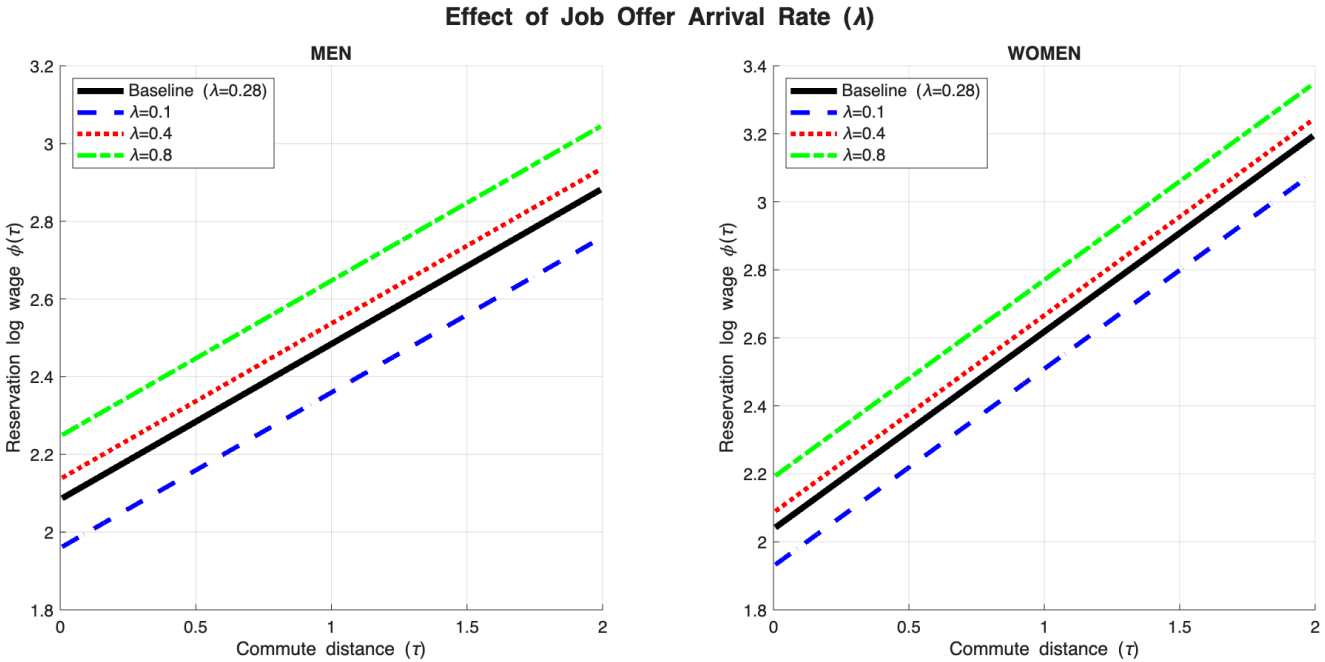
Reservation Wage Curve



Job Arrival Rate λ



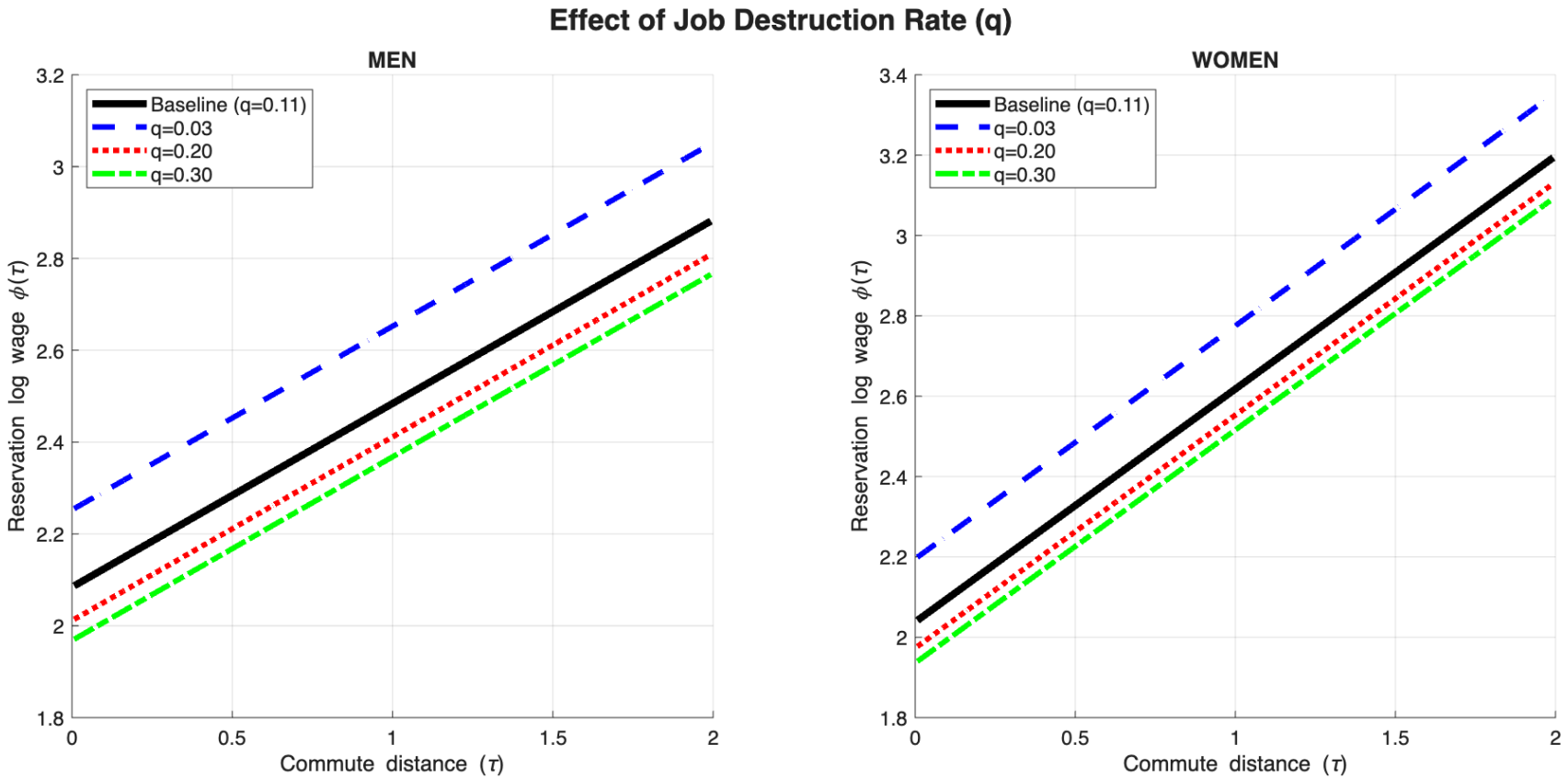
Job Arrival Rate λ



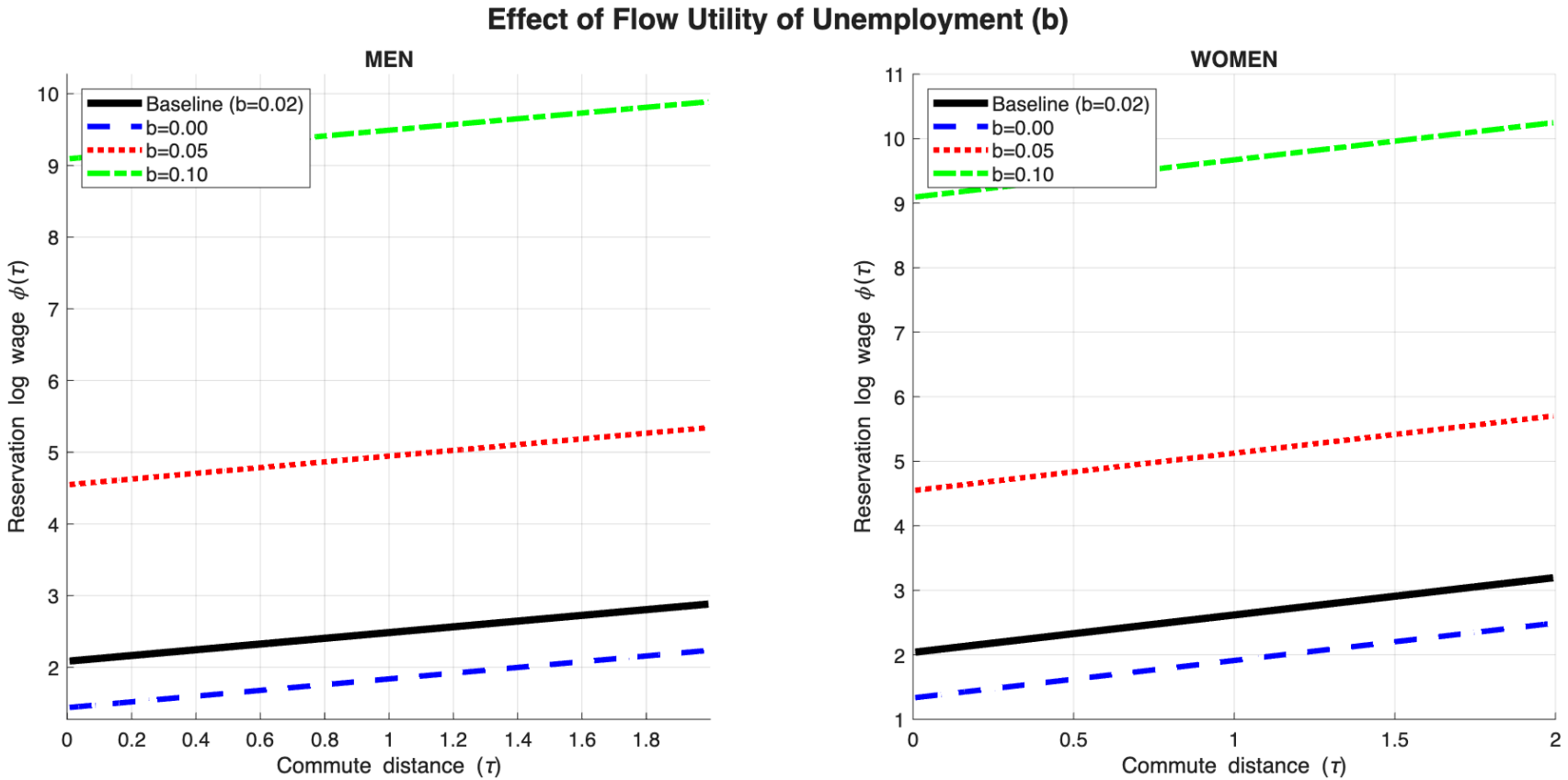
$$\phi(0) = b + \frac{\lambda}{r+q} \int_0^\infty \int_{\phi(0)+\alpha\tau}^\infty (w - \phi(0) - \alpha\tau) dH(w, \tau)$$

$$\phi(\tau) = \phi(0) + \alpha\tau$$

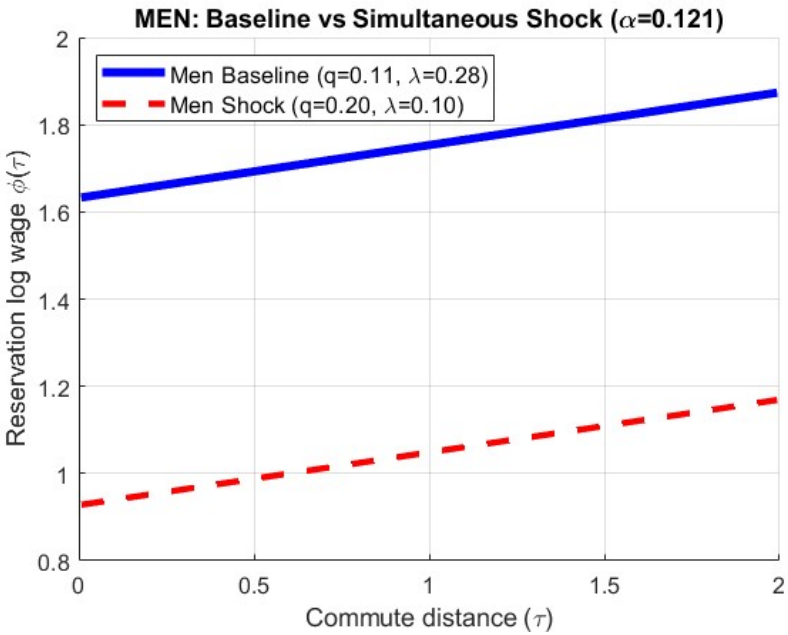
Job Destruction Rate q

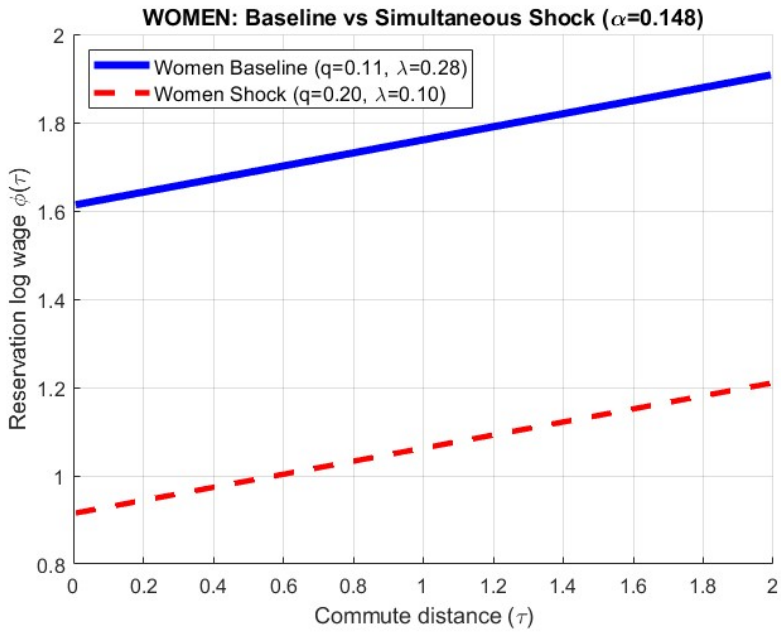


Unemployment Benefit b



Covid Effect





Bellman equation:

$$\phi(0) = b + \frac{\lambda}{r+q} \int_0^\infty \int_{\phi(0)+\alpha\tau}^\infty (w - \phi(0) - \alpha\tau)\, dH(w,\tau)$$

Extra Practice - Estimating α

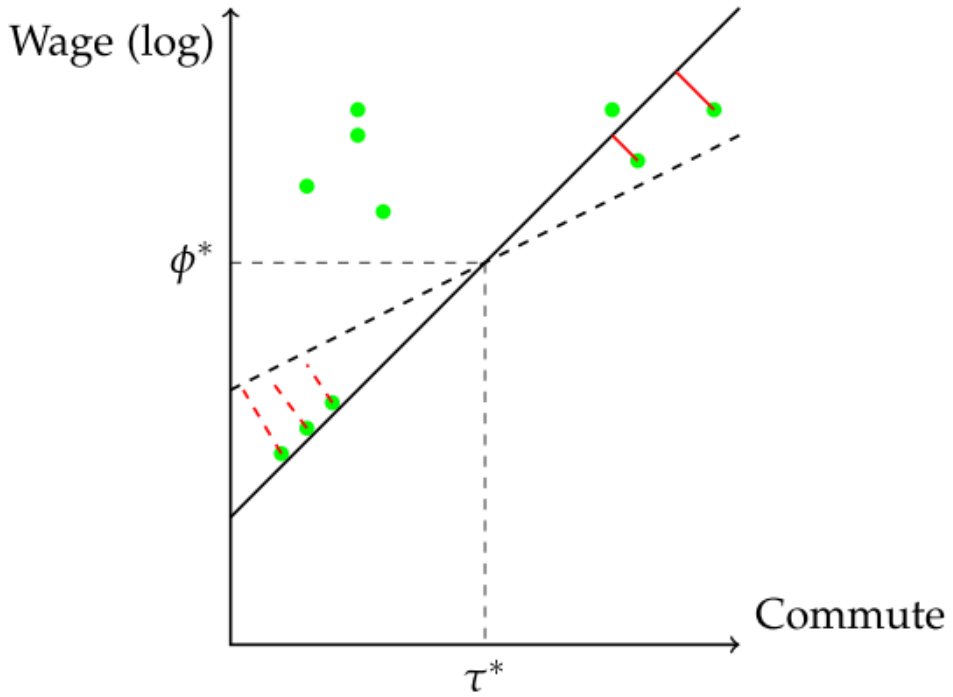


FIGURE VI

Estimation Strategy for the Slope of the Reservation Log-Wage Curve in the Log-Wage-Commute Plane

As stated in the presentation, since the data prefer Interpretation 1, we estimate alpha by fixing a reservation point (τ^*, ϕ^*).

Estimating α

$$\hat{\alpha} = \arg\min_{\alpha} \sum_{i \in \mathcal{B}_\alpha} p_i \left(d_{\alpha, \tau_i^*, \phi_i^*}(\tau_i, w_i) \right)^2$$

1. Define a function of $\alpha, \phi^*, \tau^*, w, \tau, p$ (all vectors) as above.
2. Calculate/assume the p_i for each individual.
3. Fixing a (τ^*, ϕ^*) and collecting points (τ, ϕ) representing jobs accepted by employees with (τ^*, ϕ^*).

Without assuming α_{men}, α_{women}, and using q, b, λ, r set in the baseline case, The estimated $\hat{\alpha}_{men}$, $\hat{\alpha}_{women}$ exhibit the following patterns.[1]

[1] If you want to make the exercise easier, you may randomly assign p_i for each individual, randomly generate some points along the "real" curve, keep points close to or above the curve, and estimate α.

Estimating α

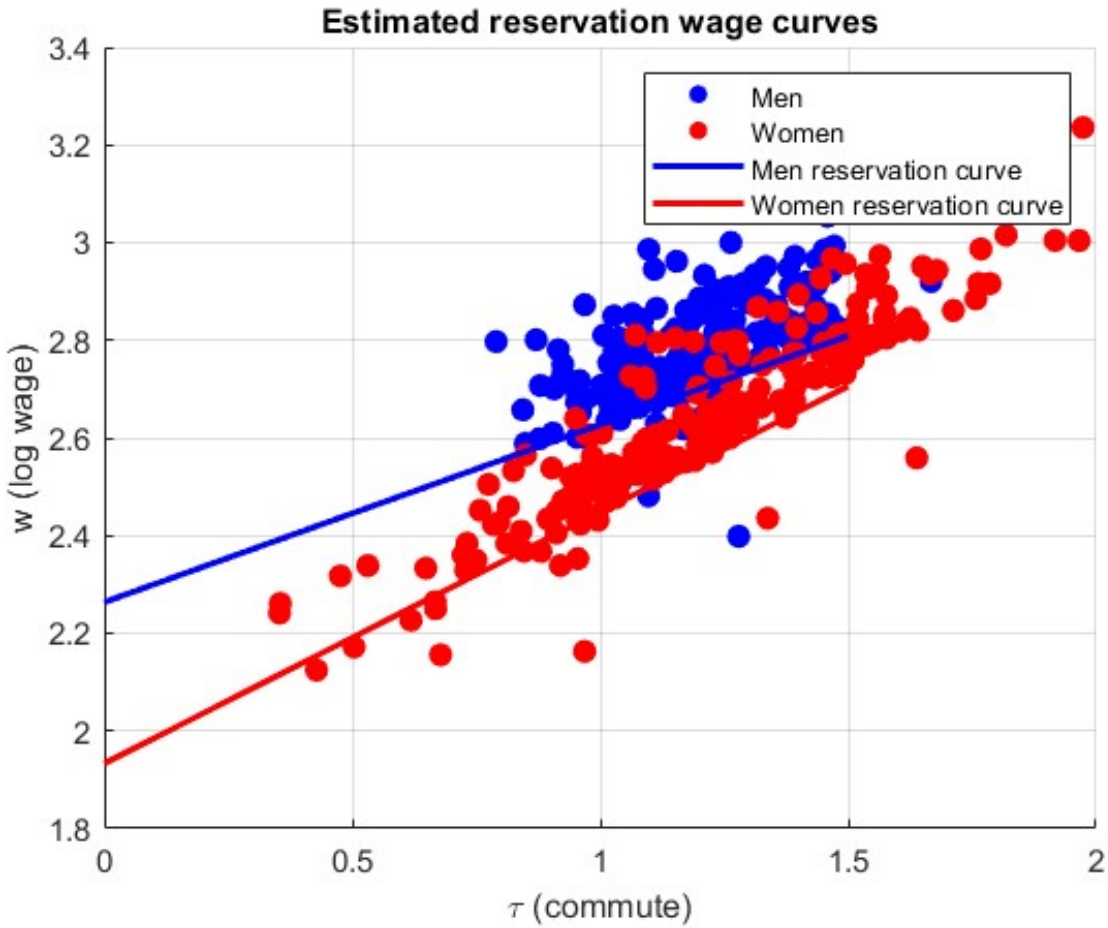


Figure: Estimated alpha curve for the baseline scenario

$\hat{\alpha}_{men} = 0.36 \approx \alpha_{men} = 0.4, \hat{\alpha}_{women} = 0.52 \approx \alpha_{men} = 0.58$ as we assumed