AGGREGATION AND LABOR SUPPLY ELASTICITIES

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Introduction

- Original contribution with interesting results on a long-standing debate.
- The Frisch elasticity is the elasticity of labor supply with respect to real wages, holding marginal utility of consumption constant.
- A RBC model can generate volatile aggregate hours only if Frish elasticity 'large'.
- This view assumes a large mass of non-employed workers around the reservation wage.

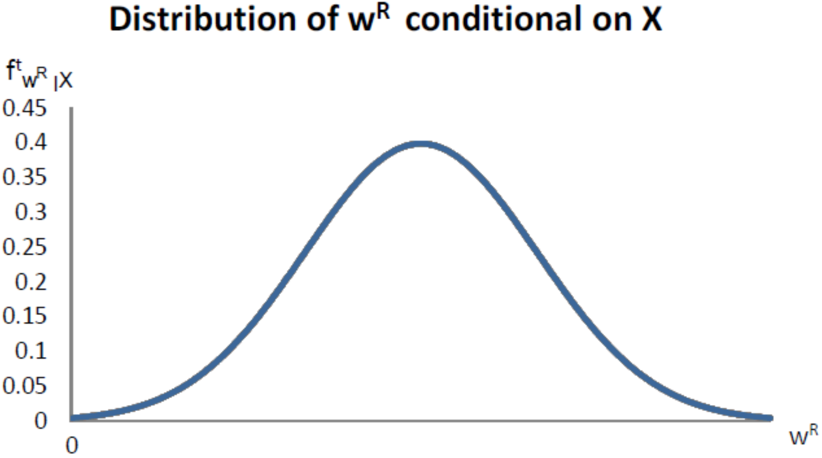
CONTRIBUTION

- Important contributions:

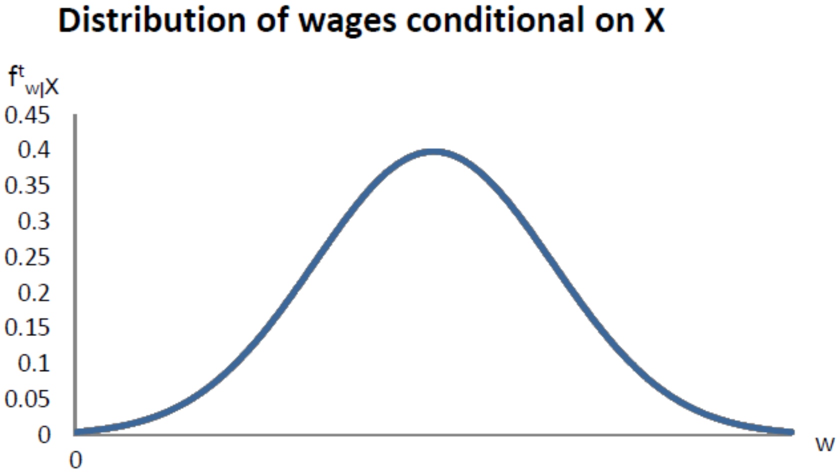
1. Aims to estimate the mass of workers around reservation wages (Gourio and Noual (2009)).
2. Methodological innovation: needs no parametric assumptions
3. Nice features:allows for workers heterogeneity and time variation.

- Bottom line: Frish elasticity 0.8 well below the threshold of 2 (Chetty et al, 2012).
- Virtually no time variation: Frish parameter is structural.

AGGREGATION AND STATISTICAL MODEL



DISTRIBUTIONAL ASSUMPTIONS



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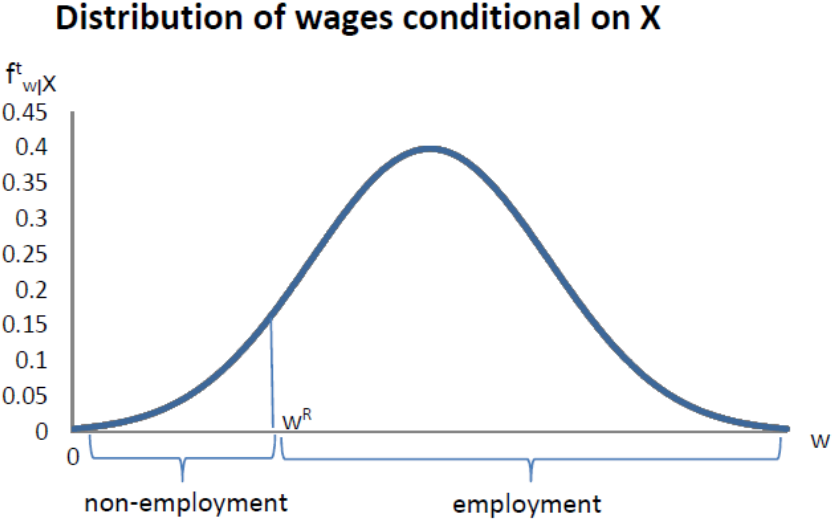

RECOVERING ELASTICITIES

- Aggregate Frish elasticity:

$$e_t = \frac{\bar{W}_t}{\bar{H}_t} \left(\frac{\tau^{int}_{h,t} + \tau^{ext}_{h,t}}{\tau^{int}_{w,t} + \tau^{ext}_{w,t}} \right)$$

- In what follows I will focus on the extensive margin components.

EXTENSIVE MARGIN COMPONENTS

1. $\hat{\tau}^{ext}_{w,t}$ can be recovered from the joint distribution $\hat{f}^t_{w^R,w}$ which is unobserved.
2. $\hat{f}^t_{w^R,w}$ can be obtained from $\hat{f}^t_{w^R|X}$ and $\hat{f}^t_{w|X}$ **assuming independence of** w^R, w **conditional on** X and integrating over X:

$$\begin{aligned}\hat{f}^t_{w^R,w}(w_1, w_2) &= \int \hat{f}^t_{w^R,w|X}(w_1, w_2)\, d\pi^t_X \\ &= \int \hat{f}^t_{w^R|X} \hat{f}^t_{w|X} d\pi^t_X\end{aligned}$$

3. $\hat{f}^t_{w^R|X}$ and $\hat{f}^t_{w|X}$ are estimated non-parametrically.

RECOVERING MARGINAL DENSITIES

- $\hat{f}^t_{w^R|X}$ and $\hat{f}^t_{w|X}$ are estimated in two-steps:

1. Linear regressions:

$$\begin{aligned} w_{it} &= \alpha_{0,t} + \sum \alpha_{t,j} X_{it,j} + \delta_{it}, \quad i = 1, ..., N^w_t, & (1) \\ w^R_{it} &= \alpha^R_{0,t} + \sum \alpha^R_{t,j} X_{it,j} + \delta^R_{it}, \quad i = 1, ..., N^R_t. & (2) \end{aligned}$$

2. Non-parametric estimates of the residuals of the above equations $\hat{\delta}_{it}$ and $\hat{\delta}^R_{it}$ because $\hat{f}^t_{w|X} = \hat{f}^t_{\delta|X}$, $\hat{f}^t_{w^R|X} = \hat{f}^t_{\delta^R|X}$.

Joint densities in empirical analysis

- The wage regression is based on observed wages, so $\hat{f}^t_{w|X}$ is the truncated distribution, while in the model $f^t_{w|X}$ is the wage offer distribution.
- **How is $f^t_{w|X}$ identified?**
- $Z \subset X$ in wage regression includes school, experience and experience squared.
- $Y \subset X$ in reservation wage regression includes unemployment duration, benefits and dummy for high education.
- So effectively $X = Z \cup Y$, with $Z \cap Y = \varnothing$.
- **What is the intuition for $\hat{f}^t_{w,w^R|X}$ where $X_t = Z_t \cup Y_t$?**
- Aren't Z_t and Y_t mutually exclusive?
- What info should I have on X in an ideal world to construct $f\left(w, w^R\right)$?

Joint densities in empirical analysis

- Can we restrict X to include only commonly observed variables?
- $X : Z = Y \implies$ omission of relevant variables $\implies$ violation of $w \perp w^R \mid X$ if Z and Y are correlated.
- However, the current selection of controls Z and Y such that $Z \cap Y = \varnothing$ might create other issues.

MCCALL'S (1970) MODEL

$$w^R = b + \frac{\beta}{1-\beta}\int_{w^R}^{\bar{w}} \left(w' - w^R\right) dF\left(w'\right)$$

- w^R depends on w so the controls in wage equation should also enter reservation wage equation, i.e. schooling/education.
- Ideally control for sector of occupation, to proxy for wage distributions. Maybe unavailable for non-employed?
- Could also control for family/partner as in Gourio and Noual (2009).

SEARCH AND MATCHING MODEL

$$
\begin{aligned}
w &= rU(\theta) + \gamma\left[y - rU(\theta)\right] \\
w^R &= rU(\theta).
\end{aligned}
$$

- w depends on w^R
- Both are driven by common factor θ.
- Need to control for heterogeneity in aggregate labor market conditions if markets are segmented over space or occupation.
- w_{it} and w_{it}^R might not be independent if the common factors are not controlled for.
- Could control for regional unempoyment rates by gender and occupations.

Important results

Some important features of this study:

- Great plus is the estimation of $\hat{f}^t_{w^R,w}$. Could you show a figure, conditional on $\bar{X}$, to get a feeling of the mass around reservation thresholds?
- Gourio and Noual (2009) find that 22% of workers account for about 50% of employment fluctuations. Could you relate?
- Another plus is that it carefully accounts for heterogeneity: What is the dispersion of elasticities by quintiles?

CONCLUSION

- Very nice, original and important contribution;
- Bridging statistical model and empirical analysis needs to be more compelling;
- Room to elaborate more on results.