**N. Engbom, C. Moser (2022)**

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| **Question** | **Is the minimum wage an effective tool to reduce income inequality?**  Particularly, did the increase in the Brazilian minimum wage between 1996 and 2018 reduced earnings inequality? |
| **Context – data** | * Context: considering historically high levels of income inequality, it appears important to understand the effects of labour market policies on the distribution of income and employment because they’re put in place to reduce inequality. But debates on the benefits and costs of min wage policies. * In the US debates if recent increases in income inequality may be due to declining real min wage. Brazil has on the other hand seen between end of 80s’ and 2018 large increase in min wage and decline in income inequality (large increase in mean formal sector wages and large decrease in standard deviation of wages).   **Good to assess if min wage is really a good measure to reduce income inequality : understand and quantify effects of min wage increases on employment and earnings inequality.**   * Data: Administrative linked employer-employee data (RAIS) & 2 household surveys PNAD (nationally representative household survey that covers all individuals) PME (longitudinal household survey that track individuals monthly) |
| **Limitation** | * Focus on the formal labour market while the informal sector plays an important role in the Brazilian labour market. Informality accounted for in a simple manner, mention other work that suggest min wage may influence pay and employment in both sectors. |
| **Main results** |  |
| **Literature** | * Main contribution is to **quantitatively assess the effect of a large increase in minimum wage** in Brazil from 96 to 2018 on inequality and employment. * 1) Many studies on reduced-form measurement of minimum wage effects on labour market focus on effects on employment. Also studies on the distributional effects of the minimum wage but for high-income countries. **Engbom & Moser** use administrative data to quantify effects of a large increase in min wage in a developing country. **Find robust evidence of spillovers throughout much of the wage distribution as opposed to studies in the US** (Autor & al.) that find little evidence: link this to Brazil-specific features. * 2) A simple extension of the Burdett Mortensen model provides good description of the brazilian labour market - using the predictions on worker reallocation across heterogeneous employers and change in firm pay policies in response to a min wage using a model of multi-worker firms. * 3) Understand the evolution of wage inequality in Brazil. **Other papers document the role of falling labour pay differences as a key driver of the decline in inequality** and ***Engbom & Moser* findings provide a structural explanation (of the fall in pay differences) = the rise of minimum wage**. |
| **Results:** | **1/ Decline in Brazil’s income inequality – role of firms**     * Between 1996 and 2018:   + Large increase in mean formal sector wages and a large decline in wage dispersion.   + Relative to formal sector, informal wages are characterized by initial lower levels but same dispersion: increase in formality over sample.   + The employment rate has remained stable.   + *Lower-tail inequality = ratio of P50/P10(25) at t and 1996*   + *Upper-tail inequality = ratio of P75(90)/P50 at t and 1996* * Appears that Brazil reduced income inequality (fall in wage dispersion 1996-2018) is associated with relatively greater **compression in the left tail of the wage distribution**:   *(****/!\****‘wage’=multiple of min wage* ***/!\****)*   * **indeed** ***lower-tail wage inequality*** *(log* ***wage percentile ratio between t and 1996****)* **much more decreased** **than upper-tail inequality (***ie le bas de la distrib des salaires en multiple de MW s’est plus concentré et écart +/- le même entre top et médiane).* * **AKM decomposition of wages between: worker-FE, firm-FE, observable worker charact.**   To understand decline in *wage inequality*.  A math symbols in a red rectangle  Description automatically generated  *Finite sample, variance estimate generally biased > leave-one-out estimator by KSS that yields unbiased variance estimators*  *A screenshot of a graph  Description automatically generated*  *. 1) No KSS - No control -> 3) No KSS – Yes control -> 4) KSS + control*   * **AKM wage variance decomposition 1994-1998 p/r 2014-2018**: reduction in wage variance   - **Worker heterogeneity is the most important factor behind wage variance between workers**.  - **BUT reduction in firm FE accounts for around half of the decline in wage variance!**  - AKM : positive correlation between firm and worker FE  Strong **decline in wage inequality** between 1996-2018 in brazil is **strongly driven by reduced pay differences across firms for identical workers (reduced firms FE)**   * Evidence in favour of hypothesis that **decline in wage inequality was the result of changes in firms’ pay policies rather than changes in worker composition.**   **2/ Brazil minimum wage & cross-sectional heterogeneity (initial low vs high income states)**   * Notable negative correlation between decline in wage inequality and rise in minimum wage (1996-2018) **but** does not mean causal interpretation! Neither necessary not sufficient. * *Wage inequality (log-wage perct ratio t/1996)* declined overall but **fell disproportionately in initially lower-income regions where federal min wage was relatively more binding.** * Brazil inequality decline was **due to factors that matter more at lower income levels**. * Inequality decline was associated with compression particularly at the bottom of the wage distribution *(more people earn wages close to median)* * Compression in the wage distribution reaches from the bottom to above the median. *(more people from below earn close to median but also less people earning much more than median)*   A graph of the same type of income  Description automatically generated with medium confidence   * Econometric framework: *Kaitz-p index by state at date t = log diff of min wage at t and p-th percentile of wage distribution in the state at t.*   *Marginal effect of min wage throughout the wage distrib.* *Rho(p’,p)*  *Base percentile p would be chosen high enough so as to be unaffected by min wage. Still find correlation between outcome variable when p=50, so consider p=90.*  *Y outcome variable = log ratio of wage percentile p’ / p*   * Inclusion of percentile p both dependent and kaitz may induce spurious correlation and result in bias estimate. * Adopt IV strategy to predict kaitz-p index and its powers.   A white rectangular object with black text  Description automatically generatedA white rectangular object with black text  Description automatically generated   * **Effect of min wage on wage inequality:**   A graph of a graph with a line drawn on it  Description automatically generated with medium confidence   * There is correlation between minimum wage and standard deviation of log wages (inequality outcomes) above the median motivating using higher base percentile > p90 * Estimated semi-elasticity=-0.2 > **one percent increase in the nominal min wage** *(holding fixed 90th percentile of wages)* **= decrease in standard dev of wages** *(inequality measure)* **of 20 log points.** * Robustness check, consistantly find spillovers reach up to/above the 75th percentile *(there is still correlation between outcome at these percentile and kaitz index)*   **Significantly find spillovers reaching much more far up in the wage distribution compared to previous evidence in the US** (up to only 20th percentile by Autor et al. in the US).  Why difference?   * Large-scale administrative data plausibly reduces measurement-errors, and also use and IV specification reducing bias concerns. * Minimum wage more binding in Brazil than in the US (gone from less binding to more binding over the sample) = due to nonlinear nature of spillover effects is expected to lead to greater effects on the wage distribution. * **Min wage in Brazil may act as a stepping stone**, even for workers that end up earning more, as they find that a large fraction of Brazilian workers ever earn it! *Not a lot of people earn it at a given date but throughout the sample a lot of workers will have had a period where they earned it before moving to better paying jobs!* * Despite not indexation, min wage still serves as an **important reference point** in wage setting. * Compared to US, **Brazil workforce heavily skewed toward low-skill workers**: only far up in the wage distribution (75-90th percentile) where there is a sharp increase in worker education. **Naturally expect min wage to have greater impact on lower-skill workers which make up a larger share of the worker population and thus the wage distribution**. * **Effects of min wage on employment:**   *Supplement administrative data RAIS for household surveys.*  Regression on Kaitz-p coeff using outcome variable that captures employment at the region-year lvl  A screenshot of a document  Description automatically generated  Marginal effect of Min wage on employment outcome variables   * Minimum wage has close to zero estimated effects on the population size, LF participation, Employment rate and formal employment share. * Small estimated marginal effects of min wage on transition rates, but insignificant. * Appears that **intensive margin of hours adjustements** in response to min wage **is not of prime importance** in Brazil. * **Mean firm size correlates strongly positively with the min wage = min wage induces small firms to shrink of exit in favor of larger competitors.** * Estimated effect on **probability of remaining employed at the same firm is significant and negative suggesting that some jobs are destroyed as min wage increases**. * Estimate an equilibrium model of a labour market subject to minimum wage as multiple heterogeneous Burdett and Mortensen economies separated by worker types. Estiamate the models by targeting empirical moments.   A graph with red line and blue line  Description automatically generated  Model overestimates share of workers earning less than the minimum wage and underestimates share wages at the very top of the distribution.   * **Model vs data:**   A graph of a graph with a line  Description automatically generated with medium confidence   * Model estimates relative to the 50th percentile are more pronounced than in the data for above 60th percentile of disrtib.   A graph of a graph of a wage distribution  Description automatically generated with medium confidence   * Plot B : difference in log wages 1996-2018 conditonal on cdf : spillover effects of the minimum wage are far-reaching, but remain moderate above the median (few %).   A table of numbers and a number of numbers  Description automatically generated with medium confidence  **Model-implied effects of the min wage on wage inequality**: 1996-2018 (modifed Burdett Mortensen)   * Rise in min wage accounts for 45% of empirical decline in vairance of log wages. * Min wage causes a **greater absolute reduction** in lower-tail inequality relative to upper-tail. * Min wage accounts for a **larger share of the decline** in reduction in lower-tail inequality measures (70%) than in upper-tail (20%). * Min wage still has effects on upper-tail, accounting for 20% of compression in P90/P50 ratio reduction = **spillover effects reach above the median**. * Potential concern that job ladder model = Burdett-Mortensen is best for young worker, but worse for older workers: reestimate model on only young workers and do not find much difference. * **Distributional effects of the minimum wage:** effect of a 57.7 log pt increase in min wage   A table of wage on wage  Description automatically generated with medium confidence   * **Decompose variance in log-wages**: ***between-worker*** (captures average differences across worker types) and ***within-worker*** (reflects wage differences among worker of the same type = due to employer heterogeneity) * Consider two **counterfactuals** from decomposition:  1. *Rent channel* fixing allocation of workers, and let firms’ wage policies adjust in response to minimum wage = captures redistribution of rents from firms to workers. 2. *Reallocation channel* fix firms’ wage policy and let allocation of workers adjust to minimum wage = reflects change in wage distribution due to worker reallocation across firms.  * **Results: Reduction in total variance in wages is mainly driven by decline in between-workers wage diff – for which most important compression factor is the *rent channel* = change in firms wage policies in reaction to min wage!**   - 60/40 in total variance for between/within  - Increase in min wage decrease both between and within variance components. Overall decline in total variance driven by decline in between-workers component.  - **Rent channel** – firms raising pay for identical workers – is the most important factor behind compression in between & within workers components. |