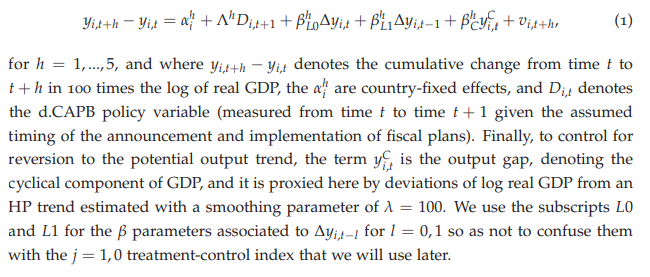
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) |
|  | Year 1 | Year 2 | Year 3 | Year 4 | Sum |
|  |  |  |  |  |  |
| Education exp. | -0.0224 | -0.00112 | 0.00341 | 0.0147 | -0.0355\* |
|  | -1.34 | -0.07 | 0.16 | 1.06 | -1.63 |
| Health exp. | -0.00938 | 0.0132 | 0.00527 | -0.0140 | -0.00629 |
|  | -0.79 | 1.08 | 0.50 | -0.97 | -0.54 |
| Cash transfers | -0.0347\* | 0.0119 | 0.0351 | -0.00826 | -0.00790 |
|  | -1.70 | 1.09 | 1.24 | -0.56 | -0.72 |
| In-kind transfers | 0.00454\* | 0.00865\* | 0.00419 | 0.00504 | 0.00549 |
|  | 2.23 | 2.58 | 1.50 | 1.71 | 1.42 |
| Indirect tax | 0.0128 | 0.0203\* | 0.00656 | 0.0242\*\* | 0.0160\*\* |
|  | 1.00 | 1.79 | 0.94 | 2.14 | 2.23 |
| Property tax | 0.00632\*\* | 0.00331 | 0.000514 | -0.00311 | 0.00652 |
|  | 2.15 | 0.94 | 0.14 | -1.07 | 0.88 |
| Progressivity Inc. | 0.0103 | -0.0283\*\* | 0.00642 | 0.0217\*\* | -0.00145 |
|  | 1.00 | -3.84 | 0.49 | 2.46 | -0.11 |
| ***N*** | **713** | **690** | **667** | **644** | **621** |

**Note:** T-statistic (standard error clustered by country) in parentheses. ∗∗∗/∗∗/∗ indicate p < 0.01/0.05/0.10. Additional controls: cyclical component of y, 2 lags of change in y, country fixed effects.

**Replicating Fiscal policies on Inequality: OLS Results**

Our first estimates use OLS estimation with the LP methodology, based on what is the traditional variable in the literature, the Gini net. The LP is done from year 0, when a policy change is assumed to be implemented or executed. Table 1 shows the LP output forecast until year 4, and the sum of these changes on Gini across all of those four years.

For h = 1…4, and where are country-fixed effects, and denotes the fiscal policy variable. Finally, to control for reversion to the potential output trend, the term  is the output gap, denoting the cyclical component of GDP, estimated by deviations of log real GDP from an HP trend with a smoothing parameter of 100.



The coefficient *Λh* from expression (1) is the parameter governing the impact of the continuous policy variable and corresponds to the constrained version of equation (6), where we have rearranged that expression to get a direct estimate of the average response to policy intervention *Λh* from the regression output.

Table 1 reports estimates based on equation (1). Estimated Gini Net for each year are reported in columns 1 to 4, and the 4-year sum of the deviations in column 6. The data appear to support the notion that *Cash transfers* can alleviate (especially in the first year), although the cumulative effect over a four-year period is not significant. If we focus on taxation -*Indirect taxes* and *Property taxes*-, output has a negative effect impact on income equality, *Indirect taxes* has a longer effect. On the other hand, we found that Income Progressivity has the expected sign on the first years losing effect the following years.

**Table 2**

Table 2 presents an OLS estimated responses using expression (1), with a detailed breakdown analyzing the impact of fiscal policies based on whether the economy is in a boom or slump episode. The estimation was conducted on two subsamples to account for state-dependent responses. We categorized observations into "boom" and "slump" bins based on the sign of *yC*, the time-0 output gap (HP filtered), resulting in approximately 400 and 315 observations for each subsample after considering lag-induced observations lost. Here our objective is to offer a more detailed statistical overview of the primary effects of fiscal variables on inequality. It's important to note that we're not debating the likelihood of a boom or slump under a specific fiscal policy choice.

Stratifying the results by the state of the cycle at time 0 reveals a novel insight. It becomes apparent that the impacts of In-kind transfers and Progressive tax income are entirely influenced by boom periods, and they exhibit the expected sign on inequality. Additionally, it's observed that the effect of Progressivity diminishes over time. Conversely, during slump episodes, we observe a significant negative response of the Gini coefficient to Cash transfers. On average, this coefficient is nearly 0.04 in years 1 and 3. However, over a 5-year period, the cumulative effect of these responses is negligible and statistically insignificant, mirroring the findings from Table 1.

**Table 5**

So far, we have briefly replicated the current state of the literature we found that indeed fiscal policies impacts vary considerably across these states: the inequality response to government transfers is more favorable the weaker is the economy, and vice versa when we talk about income taxes.

To continue, we will evaluate whether the Fiscal policies might be a valid instrument. However, if the Fiscal variable can be predicted by excluded controls, and those controls might have some correlation with the Gini net index, the excluded controls should be added to the regression. At worst, predictability points to having failed to resolve the allocation bias in our estimates might be simply an endogenous response. To address this issue, we report two diagnostic tests in this section in Tables 5, and 7.

In a perfect randomized controlled trial, with treatment and control units allocated randomly, the probability density function of each of the controls in *X* would be the same for each subpopulation—resulting in a perfect overlap between the two subpopulation densities. A simple way to check for this balance condition, as it is often referred to in the literature, is to do a test of the equality of the means across subpopulations.

Notice that the balance condition also lies behind the simple assumption that one can estimate the LP by restricting the coefficient of the controls to be the same for the treatment and control groups, an observation that we discuss in detail in Section 5. The balance condition is evaluated in Table 5 for several important economic control variables included in expression (1). The null hypothesis of balance is rejected for all of them, strongly suggesting that the fiscal policies are not truly exogenous events. We decided to go beyond this check and perform one additional test. And we check if excluded controls predict fiscal consolidations?