CODERS' CORNER

CENTRE FOR THE STUDY OF AFRICAN ECONOMIES

WHAT TO DO WHEN YOU HAVE MANY FIXED EFFECTS

Using **regress** to estimate models with a large number of fixed effects runs into Stata memory problems. Plus, the regression takes a long time to execute. Here I outline an alternative that speeds up your regressions.

Let's say we want to regress average village consumption (y) on a set of village controls (x1 x2 x3), and include district fixed effects. This is easy to implement with 20 districts:

```
regress y x1 x2 x3 i.district, vce(robust)
```

But the estimation becomes time consuming with 20,000 districts. Using **reghdfe** makes this estimation faster.

reghdfe allows for two levels of fixed effects, interactions between fixed effects, and multi-way clustering. It is a generalisation of the commands **areg** and **xtreg** – so if you've been using these, switch to **reghdfe** to gain speed and increased functionality. **reghdfe** is faster than **regress**, **areg** and **xtreg** even with only one fixed effect, and orders of magnitude faster with multiple fixed effects.

Its syntax:

```
reghdfe depvar indepvars, absorb(i.fixed-effect1 i.fixed-effect2)
vce(type)
```

The command can generate different types of standard errors through the vce option: ols (default), robust, clustered, boostrap and jackknife. It also allows multi-way clustering.

In terms of our example with 20000 district fixed effects, you could estimate this using the following:

```
reghdfe y x1 x2 x3, absorb(i.district) vce(robust)
```

Now suppose you want to include both district and year fixed effects. **reghdfe** allows you to include both:

```
reghdfe y x1 x2 x3, absorb(i.district i.year) vce(robust)
```

You can also integrate the functionality of the **ivreg2** package with the ability to handle large numbers of fixed effects and two-way clustering using the command **ivreghdfe**. The syntax is:

```
ivreghdfe depvar exogenousvars (endogenousvars=instruments),
absorb(i.fixed-effect1 i.fixed-effect2) vce(type)
```

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