Formula for an ellipse:

Let *x* be labor and *y* be utility associated with that level of labor. We center about the point (0,0) so we have .

Rewriting:

And now solving for *v*:

The derivative of this function is:

If we have , then the labor leisure Euler equation is:

Note that the budget constraint is , so substituting gives:

Totally differentiating with respect to *n* and *w* gives:

Solving:

So that the Frisch elasticity is:

This is not a constant but we could calibrate to the SS values of *n* and *w* across all cohorts and ability types.