Figures for WealthRedistribution Simulation Analysis

Data description

The simulation dataset has data from 275,400 simulatiofvn runs. Simulations iterate over 2 tax regimes ("Wealth Gains Tax"; "Wealth Tax"), 7 numbers of entrepreneurs (1,000; 2,000; 5,000; 10,000; 20,000; 50,000; 100,000), and tax rates $\{0, \overset{+0.001}{...}, 0.05\}$ for "Wealth Tax" and $\{0, \overset{+0.005}{...}, 0.2\}$ for "Wealth Gains Tax" both with 51 values. This amounts to $2 \times 7 \times 51 = 714$ parameter configurations. For each configuration we ran 100 simulation.

These parameters are fixed for each simulation: $\mu = 0.02$ and $\sigma = 0.3$ as parameters of the log-normal distribution of the random yearly growth rates. This implies an expected growth rate of $\exp(\mu) = 1.0202$.

Examples of a trajectories over time

Parameters:

Tax rate for "Wealth Tax":

Tax rate for "Wealth Gains Tax":

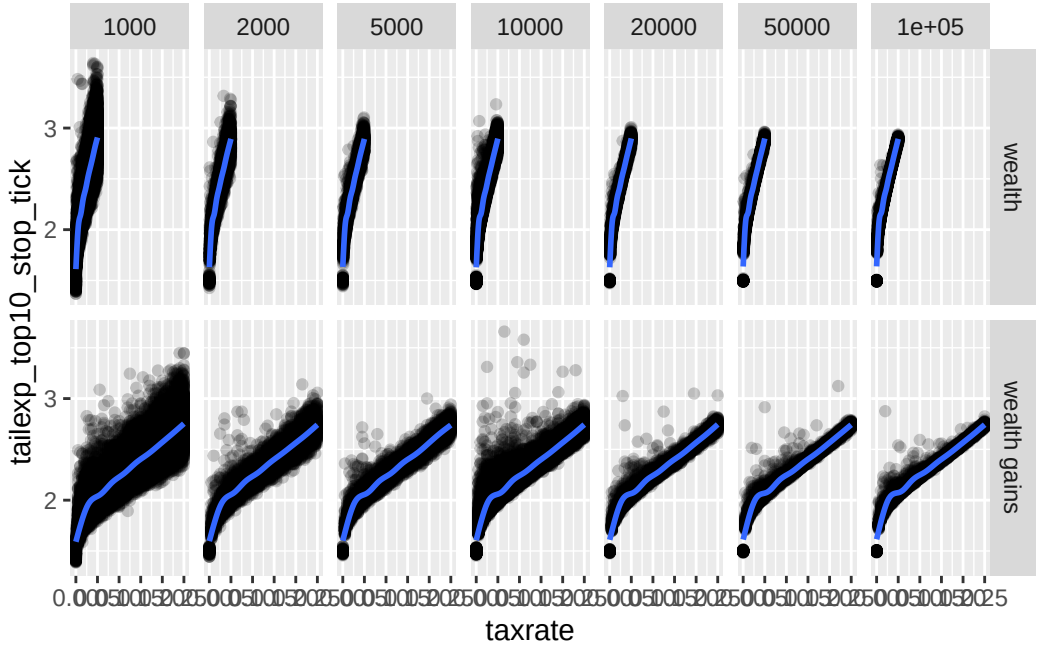
Calibrate tax rate for both regimes close to empirically most fitting outcome measures. See later.

Characteristics of the wealth distribution

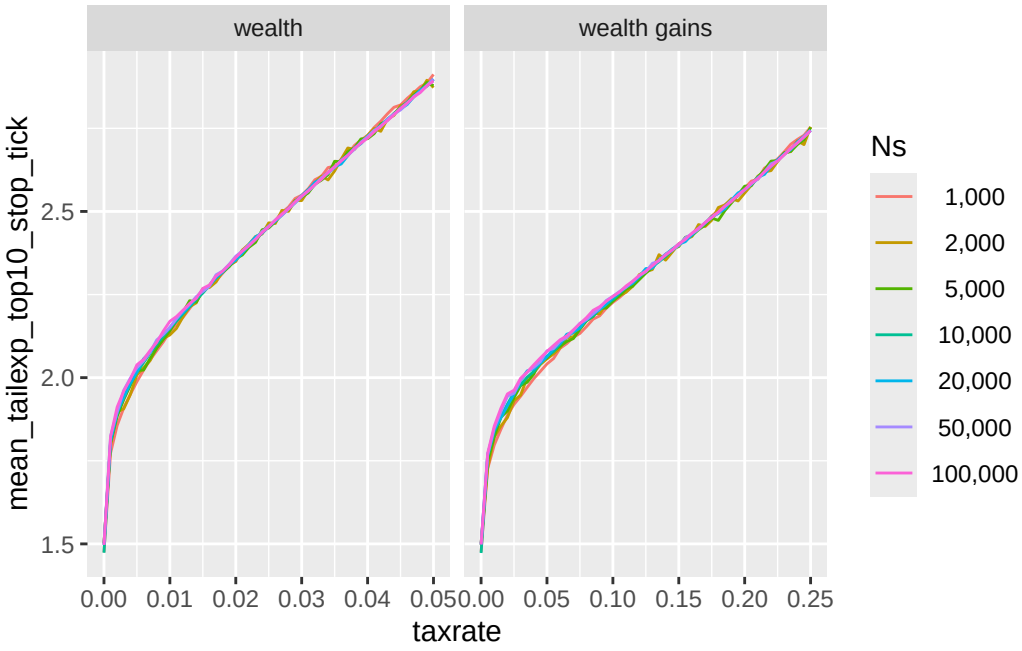
Tail exponent

```
d |> filter(stop_tick == 200) |>
 ggplot(aes(taxrate, tailexp_top10_stop_tick)) +
 geom_point(alpha = 0.2) +
 geom_smooth() +
 facet_grid(tax_regime ~ N)
```

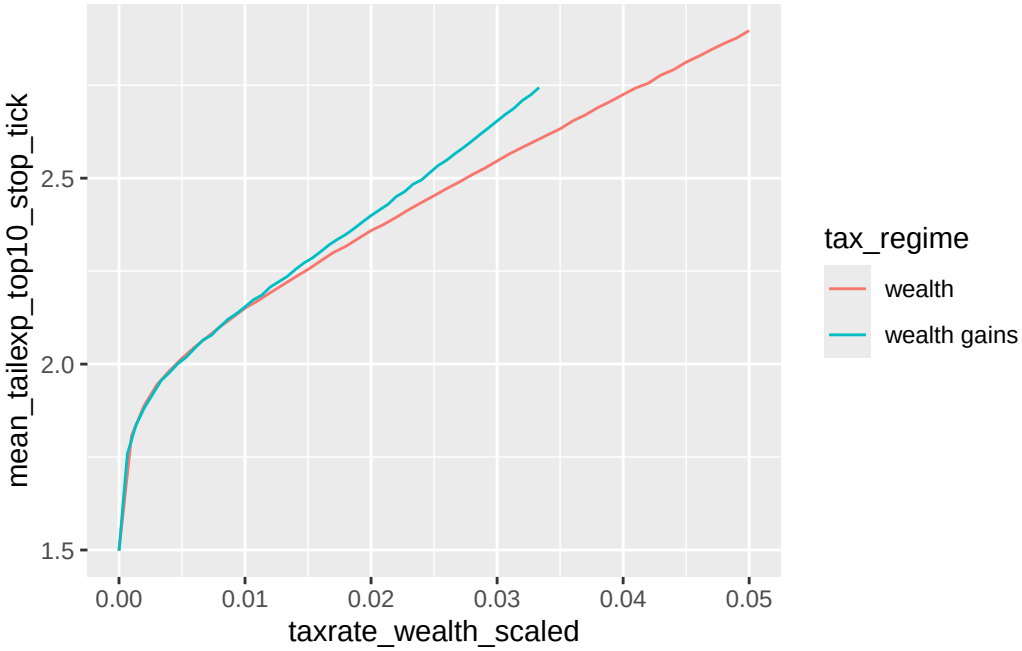
```
`geom_smooth()` using method = 'gam' and formula = 'y ~ s(x, bs = "cs")'
```



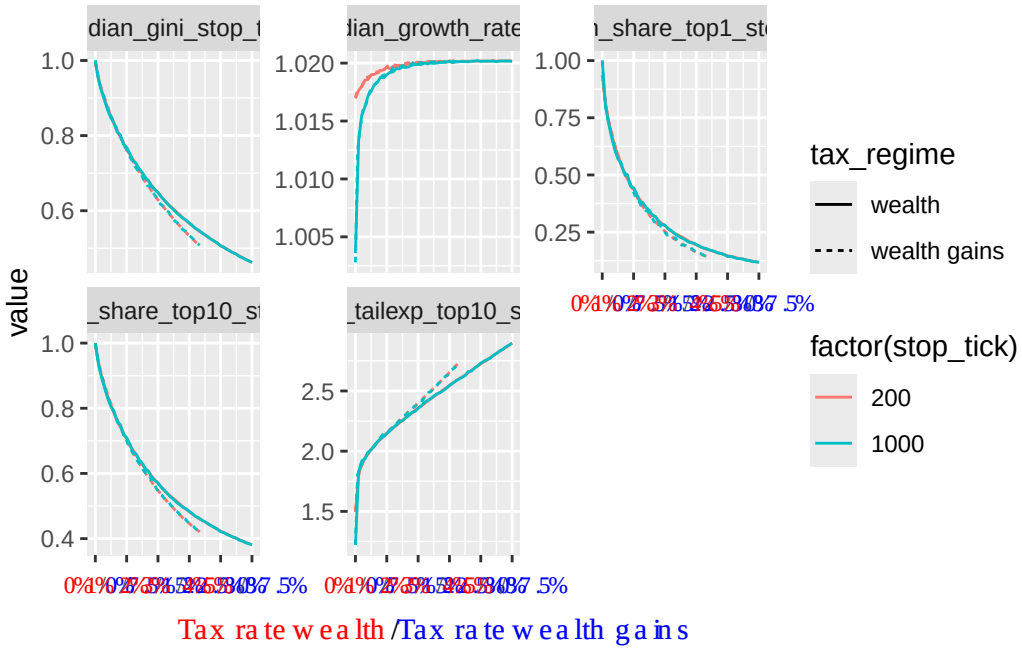

```
d |> summarize(mean_tailexp_top10_stop_tick = mean(tailexp_top10_stop_tick), .by = c(tax_regi
 ggplot(aes(taxrate, mean_tailexp_top10_stop_tick, color = Ns)) +
 geom_line() +
 facet_wrap(~tax_regime, scales = "free_x")
```




```
d |> filter(N == 10000, stop_tick == 200) |>
 summarize(mean_tailexp_top10_stop_tick = mean(tailexp_top10_stop_tick), .by = c(tax_regime,
 ggplot(aes(taxrate_wealth_scaled, mean_tailexp_top10_stop_tick, color = tax_regime)) +
 geom_line()
```




```
d |> filter(N == 10000) |>
 summarize(median_growth_rate_all = mean(growth_rate_all),
           median_tailexp_top10_stop_tick = mean(tailexp_top10_stop_tick),
           median_gini_stop_tick = mean(gini_stop_tick),
           median_share_top10_stop_tick = mean(share_top10_stop_tick),
           median_share_top1_stop_tick = mean(share_top1_stop_tick),
           .by = c(tax_regime, taxrate_wealth_scaled, taxrate, Ns, stop_tick)) |>
 pivot_longer(c(median_growth_rate_all,median_tailexp_top10_stop_tick,median_gini_stop_tick,
                median_share_top10_stop_tick, median_share_top1_stop_tick)) |>
 ggplot(aes(taxrate_wealth_scaled, value, color = factor(stop_tick), linetype = tax_regime))
 geom_line() +
  facet_wrap(~name, nrow=2, scales = "free_y") +
   scale_x_continuous(labels = ~paste0("{.red ",100*.,"%}/{.blue ",100*.*7.5,"%}"),
                      name = "{.red Tax rate wealth}/{.blue Tax rate wealth gains}") +
 theme(axis.title.x = element_marquee(), axis.text.x = element_marquee())
```



Gini

Share of top 10%, 1% and 0.1%

Long-term growth rate

Explore the relation between the two tax regimes.