

Compute for Equilibrium Tax

Taking advantage of `snw_find_tax_rate` from the [PrjOptiSNW Package](#), this function solves for equilibrium tax rate.

Parameter Controls

```
clear all;
mp_params = snw_mp_param('default_docdense');
% mp_params = snw_mp_param('default_dense');
% mp_params = snw_mp_param('default_base');
% mp_params = snw_mp_param('default_small');
mp_params('beta') = 0.95;
xi=0.651; % Proportional reduction in income due to unemployment (xi=0 refers to 0 labor income)
b=1; % Unemployment insurance replacement rate (b=0 refers to no UI benefits; b=1 refers to 100%)
mp_params('xi') = xi;
mp_params('b') = b;
mp_controls = snw_mp_control('default_test');
```

Parameters for COVID related Costs:

```
% Average check per household, given COVID actual policy payment schedule
% And given distribution. The number is from averaging over the actual
% allocations given distribution.
Covid_checks_per_capita = 18.7255856*100/62502;
% Covid_checks_per_capita = 0;
% which tax parameter to change a2 is the default, a0 shifts max tax rate
bl_adjust_a0 = false;
bl_load_existing = false;
```

Graph Controls etc:

```
mp_controls('bl_timer') = true;
mp_controls('bl_print_vfi') = false;
mp_controls('bl_print_vfi_verbose') = false;
mp_controls('bl_print_ds') = false;
mp_controls('bl_print_ds_verbose') = false;
mp_controls('bl_print_find_tax_rate') = true;
mp_controls('bl_print_find_tax_rate_verbose') = true;
```

Solve for New Tax Rate

Solve for Equilibrium Tax rate that clears government costs and income. In the extreme bounding exercise, we assume the government will pay COVID costs all in one year. This is to test whether an extreme tax scenario will lead to changes in allocation results.

Given the checks that the government hands out and the taxes imposed, individual resources post-tax are different in 2020. Households' savings decisions in 2020 vary with taxes and checks. However, the policy function post 2020 shifts back to the previous non-COVID world's policy function because the COVID shock is an one period surprise shock.

```
a2 = snw_find_tax_rate(mp_params, mp_controls, Covid_checks_per_capita, bl_adjust_a0, bl_load_e
```

```
Completed SNW_VFI_MAIN_BISEC_VEC;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time=315.585
Completed SNW_DS_MAIN_VEC;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time=1056.1907
Wage quintile cutoffs=0.4645      0.71528      1.0335      1.5632
Y_inc_agg=61.7582
A_agg=119.2022
Y_inc_agg_per_capita_1=1.3486
A_per_capita=2.6031
Gov_cons_per_capita=0.23703
Covid_checks_share_of_GDP=0.022215
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SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:2 of 83, time-this-age:0.33319
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:3 of 83, time-this-age:0.41771
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:4 of 83, time-this-age:0.34531
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:5 of 83, time-this-age:0.33489
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:6 of 83, time-this-age:0.35842
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:7 of 83, time-this-age:0.35655
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:8 of 83, time-this-age:0.35122
SNW_FIND_TAX_RATE: Aggregation, Finished Age Group:9 of 83, time-this-age:0.33076
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```
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-----
--- SNW_FIND_TAX_RATE finished -
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
SNW_FIND_TAX_RATE: Number of a2-adjustments (for taxation) used to balance the government budget= 101
SNW_FIND_TAX_RATE info A;a2_new=18.2678;a2_guess_orig(mana-heaven)=1.5286;a0_new=0.258;a0_guess_orig=0.258
SNW_FIND_TAX_RATE info B;Y_inc_agg=61.7582;Y_inc_agg_COVID=58.8608;GPD_COVID_CHANGE=0.046915;Y_inc_agg_per_capita=1.
SNW_FIND_TAX_RATE info C;Covid_checks_per_capita=0.02996;Covid_checks_share_of_GDP=0.022215
SNW_FIND_TAX_RATE info D;UI_benefits=1.9702;SS_spend=2.1597;Gov_cons=10.8544;Covid_checks=1.372;Tax_revenues_aux=16.
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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```