2020 V and C with Unemployment

This is the example vignette for function: **snw_a4chk_unemp_bisec_vec** from the **PrjOptiSNW Package**.
This function solves for the V(states, check) for individuals working. Dense solution. Bisection, most time for the test here taken to genereate the income matrixes. But these can be generated out of the check loops.

Test SNW_A4CHK_UNEMP_BISEC_VEC Defaults

Solve for Value/Policy in non-COVID years, then solve for covid year value/policy given covid shocks. COVID lasts one period.

```
mp_params = snw_mp_param('default_docdense', false, 'tauchen', true);
mp_controls = snw_mp_control('default_test');
mp_controls('bl_print_vfi') = false;
mp_controls('bl_timer') = true;
[V_ss,~,cons_ss,~] = snw_vfi_main_bisec_vec(mp_params, mp_controls);
```

```
Completed SNW_VFI_MAIN_BISEC_VEC;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time=494.5675
----------------------------------------
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
CONTAINER NAME: mp_outcomes ND Array (Matrix etc)
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

	i	idx	ndim	numel	rowN	colN	sum	mean	std	coefvari
V_VFI	1	1	6	4.37e+07	83	5.265e+05	-1.5339e+08	-3.5101	26.119	-7.441
ap_VFI	2	2	6	4.37e+07	83	5.265e+05	1.4159e+09	32.402	36.798	1.1357
cons_VFI	3	3	6	4.37e+07	83	5.265e+05	2.1402e+08	4.8975	8.3294	1.7007

```
xxx TABLE:V_VFI xxxxxxxxxxxxxxxxxxx
```

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c52650
r1	-346.51	-346.12	-343.63	-337.86	-328.51	21.702	21.852	22.003	22.154	22.30
r2	-334.38	-333.99	-331.51	-325.83	-316.83	21.724	21.869	22.015	22.163	22.31
r3	-322.45	-322.06	-319.6	-314.14	-305.6	21.745	21.885	22.027	22.171	22.31
r4	-310.63	-310.27	-307.99	-302.88	-294.87	21.767	21.903	22.041	22.182	22.32
r5	-299.94	-299.6	-297.46	-292.67	-285.12	21.775	21.907	22.042	22.18	22.32
r79	-9.9437	-9.9325	-9.8557	-9.6597	-9.3232	2.5394	2.5501	2.5602	2.5696	2.578
r80	-8.9023	-8.8911	-8.8143	-8.6183	-8.2818	2.3039	2.3121	2.3198	2.327	2.333
r81	-7.6363	-7.6251	-7.5484	-7.3524	-7.0159	2.0068	2.0124	2.0176	2.0226	2.027
r82	-5.9673	-5.9561	-5.8793	-5.6833	-5.3468	1.5958	1.5989	1.6018	1.6046	1.607
r83	-3.5892	-3.578	-3.5012	-3.3052	-2.9687	0.97904	0.98004	0.98097	0.98185	0.9826

```
xxx TABLE:ap_VFI xxxxxxxxxxxxxxxxxxx
```

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c526500
r1	0	0	0.0005656	0.0075134	0.022901	114.75	120.41	126.27	132.38	138.8
r2	0	0	0.00051498	0.0065334	0.021549	114.86	120.53	126.41	132.54	138.95
r3	0	0	0.00051498	0.0049294	0.019875	114.97	120.65	126.56	132.7	139.12
r4	0	0	0.00051498	0.0047937	0.019672	115.73	121.42	127.34	133.51	139.92
r5	0	0	0.00048517	0.0046683	0.019484	116.5	122.21	128.15	134.32	140.74
r79	0	0	0	0	0	81.091	85.68	90.335	94.378	98.419
r80	0	0	0	0	0	76.669	80.563	84.304	88.04	91.693
r81	0	0	0	0	0	68.313	71.534	74.475	77.832	81.11
r82	0	0	0	0	0	50.126	53.467	56.953	58.745	60.587
r83	0	0	0	0	0	0	0	0	0	0

```
xxx TABLE:cons_VFI xxxxxxxxxxxxxxxxxxx
```

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	
r1	0.036717	0.037251	0.040426	0.04363	0.048012	9.6491	9.817	9.9649	10.073	1
r2	0.036717	0.037251	0.040477	0.04461	0.049364	9.8118	9.9685	10.101	10.191	1
r3	0.036717	0.037251	0.040477	0.046214	0.051039	9.9779	10.12	10.234	10.302	1
r4	0.038144	0.038678	0.041903	0.047776	0.052666	10.131	10.258	10.354	10.405	1
r5	0.039534	0.040068	0.043323	0.04929	0.054241	10.272	10.384	10.463	10.5	
r79	0.2179	0.21844	0.22216	0.23228	0.25197	35.858	37.092	38.455	40.627	4
r80	0.2179	0.21844	0.22216	0.23228	0.25197	40.253	42.183	44.459	46.938	
r81	0.2179	0.21844	0.22216	0.23228	0.25197	48.587	51.19	54.266	57.123	6
r82	0.2179	0.21844	0.22216	0.23228	0.25197	66.755	69.238	71.77	76.192	8
r83	0.2179	0.21844	0.22216	0.23228	0.25197	116.87	122.69	128.71	134.92	1

```
welf_checks = 2; % 2 checks is $200 dollar of welfare checks
xi=0.5; % xi=0 full income loss from covid shock, xi=1, no covid income losses
b=0; % b=0 means no UI benefits compensating COVID, b=1 if full income replacement
TR = 100/58056;
mp_params('TR') = TR;
mp_params('xi') = xi;
mp_params('b') = b;
mp_params('a2_covidyr') = mp_params('a2_covidyr_manna_heaven');
% mp_params('a2_covidyr') = mp_params('a2_covidyr_tax_fully_pay');
[V_unemp_2020,~,cons_unemp_2020,~] = snw_vfi_main_bisec_vec(mp_params, mp_controls, V_ss);
```

Completed SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time
----
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
CONTAINER NAME: mp_outcomes ND Array (Matrix etc)
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

	i	idx	ndim	numel	rowN	colN	sum	mean	std	coefvari
V_VFI	1	1	6	4.37e+07	83	5.265e+05	-1.7805e+08	-4.0743	27.116	-6.6554
ap_VFI	2	2	6	4.37e+07	83	5.265e+05	1.3789e+09	31.553	36.673	1.1622
cons_VFI	3	3	6	4.37e+07	83	5.265e+05	2.1097e+08	4.8277	8.3289	1.7252

xxx TABLE:V_VFI xxxxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c52650
r1	-372.97	-371.47	-362.94	-349.52	-336.96	21.573	21.728	21.882	22.036	22.19
r2	-360.84	-359.34	-350.81	-337.39	-324.98	21.595	21.745	21.894	22.044	22.19
r3	-348.91	-347.41	-338.88	-325.46	-313.34	21.617	21.762	21.906	22.052	22.20
r4	-336.09	-334.7	-326.73	-314.01	-302.44	21.633	21.772	21.913	22.056	22.20
r5	-324.48	-323.18	-315.72	-303.62	-292.54	21.634	21.77	21.907	22.046	22.18
r79	-9.9437	-9.9325	-9.8557	-9.6597	-9.3232	2.5374	2.5482	2.5584	2.568	2.57
r80	-8.9023	-8.8911	-8.8143	-8.6183	-8.2818	2.3024	2.3107	2.3185	2.3259	2.332
r81	-7.6363	-7.6251	-7.5484	-7.3524	-7.0159	2.0057	2.0114	2.0168	2.0218	2.026
r82	-5.9673	-5.9561	-5.8793	-5.6833	-5.3468	1.5952	1.5984	1.6014	1.6042	1.606
r83	-3.5892	-3.578	-3.5012	-3.3052	-2.9687	0.97886	0.97987	0.98082	0.98171	0.9825

xxx TABLE:ap_VFI xxxxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c526500
r1	0	0	0	0	0.0092181	110.06	115.71	121.55	127.62	133.93
r2	0	0	0	0	0.008238	110.03	115.68	121.54	127.62	133.95
r3	0	0	0	0	0.0066341	109.99	115.65	121.53	127.63	133.97
r4	0	0	0	0	0.0058019	110.28	115.95	121.84	127.96	134.33
r5	0	0	0	0	0.004998	110.58	116.27	122.17	128.31	134.69
r79	0	0	0	0	0	81.091	85.229	89.297	93.341	97.382
r80	0	0	0	0	0	75.865	79.539	83.28	87.016	90.669

```
      r81      0     0     0     0              0   67.781    70.521    73.462    76.819    81.091
      r82      0     0     0     0              0   50.126    53.467    56.108    57.742    60.587
      r83      0     0     0     0              0        0         0         0         0         0
```

xxx TABLE:cons_VFI xxxxxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	
	_____	_____	_____	_____	_____	_____	_____	_____	_____	
r1	0.018623	0.019158	0.022901	0.033062	0.04363	9.4708	9.6491	9.817	9.9649	1
r2	0.018623	0.019158	0.022901	0.033062	0.04461	9.6414	9.8118	9.9685	10.101	1
r3	0.018623	0.019158	0.022901	0.033062	0.046214	9.8179	9.9779	10.12	10.234	1
r4	0.019354	0.019888	0.023632	0.033792	0.047776	9.9825	10.131	10.258	10.354	1
r5	0.020066	0.020601	0.024344	0.034504	0.04929	10.135	10.272	10.384	10.463	
r79	0.2179	0.21844	0.22216	0.23228	0.25197	34.82	36.506	38.455	40.627	4
r80	0.2179	0.21844	0.22216	0.23228	0.25197	40.033	42.183	44.459	46.938	
r81	0.2179	0.21844	0.22216	0.23228	0.25197	48.106	51.19	54.266	57.123	5
r82	0.2179	0.21844	0.22216	0.23228	0.25197	65.751	68.234	71.611	76.192	7
r83	0.2179	0.21844	0.22216	0.23228	0.25197	115.87	121.69	127.71	133.93	1

```
[V_U_2020, C_U_2020] = snw_a4chk_unemp_bisec_vec(welf_checks, V_unemp_2020, cons_unemp_2020, mp
```

Completed SNW_A4CHK_UNEMP_BISEC_VEC;welf_checks=2;TR=0.0017225;xi=0.5;b=0;SNW_MP_PARAM=default_docdense;SNW_MP_CONTR
----
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
CONTAINER NAME: mp_container_map ND Array (Matrix etc)
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

	i	idx	ndim	numel	rowN	colN	sum	mean	std
	_	___	____	_____	____	_____	_____	_____	_____
C_U	1	1	6	4.37e+07	83	5.265e+05	2.11e+08	4.8283	8.3291
C_U_minus_C_unemp	2	2	6	4.37e+07	83	5.265e+05	28536	0.000653	0.00093526
V_U	3	3	6	4.37e+07	83	5.265e+05	-1.7705e+08	-4.0516	27.005
V_U_minus_V_unemp	4	4	6	4.37e+07	83	5.265e+05	9.9227e+05	0.022707	0.19894
mn_MPC_unemp	5	5	6	4.37e+07	83	5.265e+05	8.2833e+06	0.18955	0.27149

```
mn_V_U_gain_check = V_U_2020 - V_unemp_2020;
mn_MPC_U_gain_share_check = (C_U_2020 - cons_unemp_2020)./(welf_checks*mp_params('TR'));
```

Dense Param Results Define Frames

Define the matrix dimensions names and dimension vector values. Policy and Value Functions share the same ND dimensional structure.

```
% Grids:
age_grid = 18:100;
agrid = mp_params('agrid')';
eta_H_grid = mp_params('eta_H_grid')';
eta_S_grid = mp_params('eta_S_grid')';
ar_st_eta_HS_grid = string(cellstr([num2str(eta_H_grid', 'hz=%3.2f;'), num2str(eta_S_grid', 'wz
edu_grid = [0,1];
marry_grid = [0,1];
kids_grid = (1:1:mp_params('n_kidsgrid'))';
% NaN(n_jgrid,n_agrid,n_etagrid,n_educgrid,n_marriedgrid,n_kidsgrid);
cl_mp_datasetdesc = {};
cl_mp_datasetdesc{1} = containers.Map({'name', 'labval'}, {'age', age_grid});
cl_mp_datasetdesc{2} = containers.Map({'name', 'labval'}, {'savings', agrid});
cl_mp_datasetdesc{3} = containers.Map({'name', 'labval'}, {'eta', 1:length(eta_H_grid)});
cl_mp_datasetdesc{4} = containers.Map({'name', 'labval'}, {'edu', edu_grid});
cl_mp_datasetdesc{5} = containers.Map({'name', 'labval'}, {'marry', marry_grid});
```

```
cl_mp_datasetdesc{6} = containers.Map({'name', 'labval'}, {'kids', kids_grid});
```

Analyze Difference in V and C with Check

The difference between V and V with Check, marginal utility gain given the check.

```
% Generate some Data
mp_support_graph = containers.Map('KeyType', 'char', 'ValueType', 'any');
mp_support_graph('cl_st_xtitle') = {'Savings States, a'};
mp_support_graph('st_legend_loc') = 'eastoutside';
mp_support_graph('bl_graph_logy') = true; % do not log
mp_support_graph('it_legend_select') = 21; % how many shock legends to show
mp_support_graph('cl_colors') = 'jet';
```

MEAN(MN_V_GAIN_CHECK(A,Z))

Tabulate value and policies along savings and shocks:

```
% Set
ar_permute = [1,4,5,6,3,2];
% Value Function
st_title = ['MEAN(MN_V_U_GAIN_CHECK(A,Z)), welf_checks=' num2str(welf_checks) ', TR=' num2str(m
tb_az_v = ff_summ_nd_array(st_title, mn_V_U_gain_check, true, ["mean"], 4, 1, cl_mp_datasetdesc
```

xxx MEAN(MN_V_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

group	savings	mean_eta_1	mean_eta_2	mean_eta_3	mean_eta_4	mean_eta_5	mean_eta_6	mean_
1	0	3.2686	2.9159	2.6002	2.318	2.0659	1.8409	1
2	0.00051498	3.1944	2.8537	2.5482	2.2745	2.0295	1.8104	1
3	0.0041199	2.1813	1.9865	1.807	1.6419	1.4903	1.3515	1
4	0.013905	1.1867	1.1068	1.0303	0.95751	0.88872	0.82387	0.
5	0.032959	0.63834	0.60394	0.56828	0.53293	0.499	0.46692	0.
6	0.064373	0.3948	0.3767	0.35673	0.33594	0.31526	0.29537	0.

```
% Consumption
st_title = ['MEAN(MN_MPC_U_GAIN_CHECK(A,Z)), welf_checks=' num2str(welf_checks) ', TR=' num2str
tb_az_c = ff_summ_nd_array(st_title, mn_MPC_U_gain_share_check, true, ["mean"], 4, 1, cl_mp_dat
```

xxx MEAN(MN_MPC_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

group	savings	mean_eta_1	mean_eta_2	mean_eta_3	mean_eta_4	mean_eta_5	mean_eta_6	mean_
1	0	0.99768	0.99768	0.99768	0.99768	0.99768	0.99768	0.99
2	0.00051498	0.99725	0.99724	0.99724	0.99724	0.99724	0.99724	0.99
3	0.0041199	0.98364	0.98364	0.98364	0.98363	0.98363	0.98363	0.98
4	0.013905	0.92512	0.92706	0.92993	0.93279	0.93529	0.93727	0.93
5	0.032959	0.75	0.75394	0.7625	0.77537	0.78838	0.79768	0.81
6	0.064373	0.65793	0.65806	0.65821	0.65844	0.66126	0.66765	0.67

Graph Mean Values:

```
st_title = ['MEAN(MN\_V\_U\_GAIN\_CHECK(A,Z)), welf\_checks=' num2str(welf_checks) ', TR=' num2
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_V\_U\_GAIN\_CHECK(a,z))'};
ff_graph_grid((tb_az_v{1:end, 3:end})', ar_st_eta_HS_grid, agrid, mp_support_graph);
```
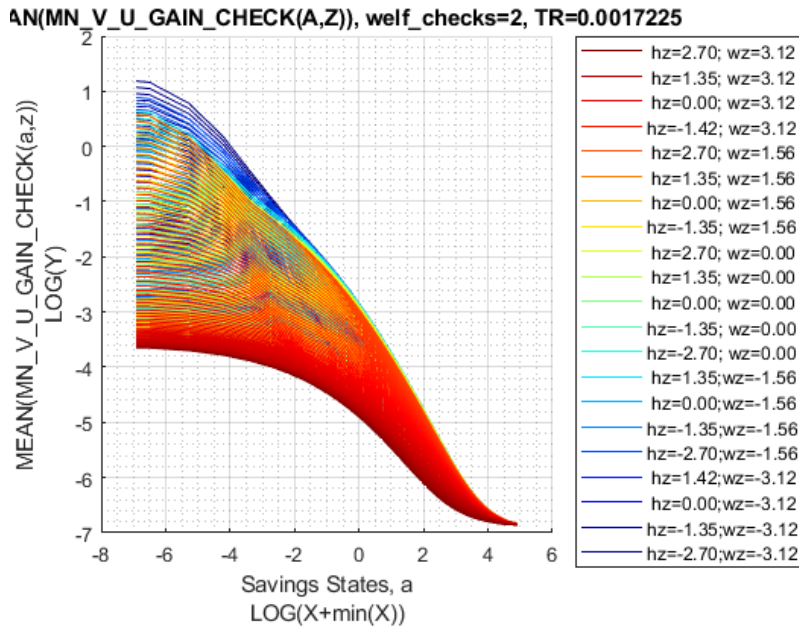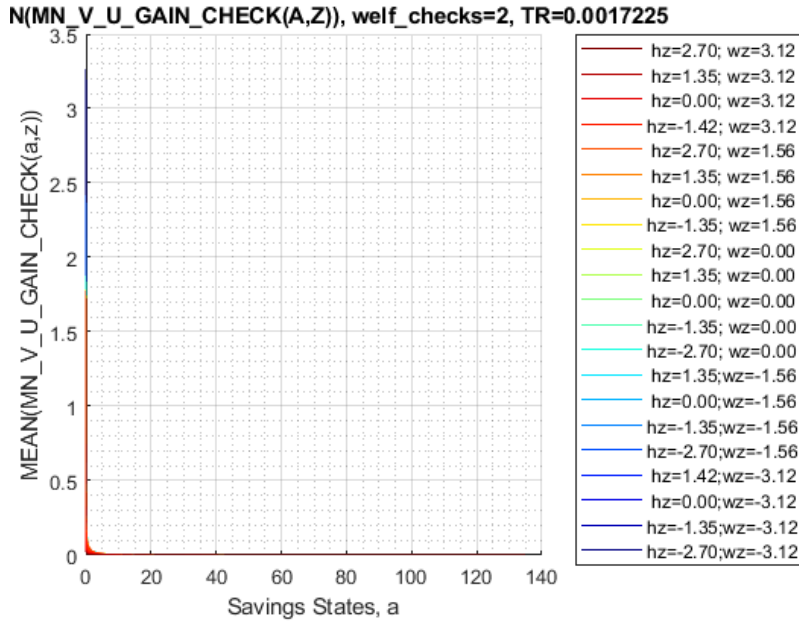
4

N(MN_V_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225

AN(MN_V_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225
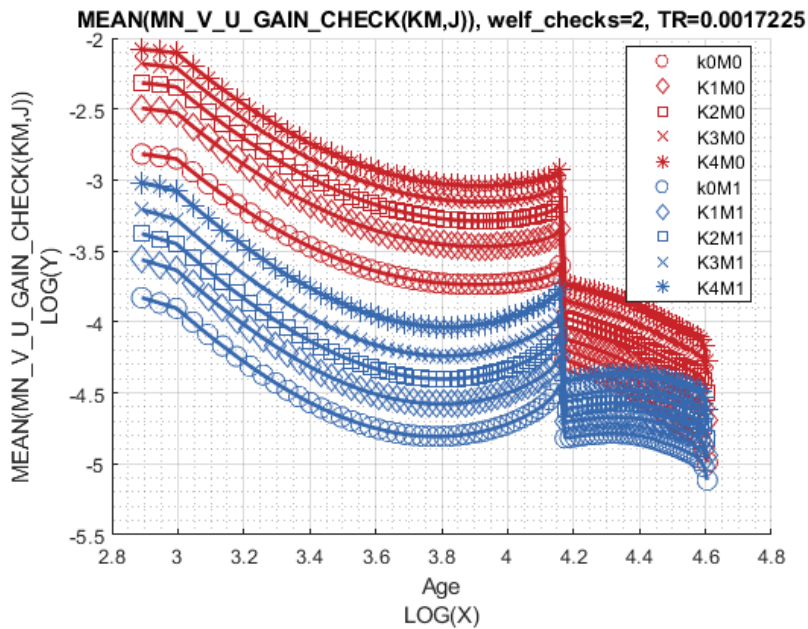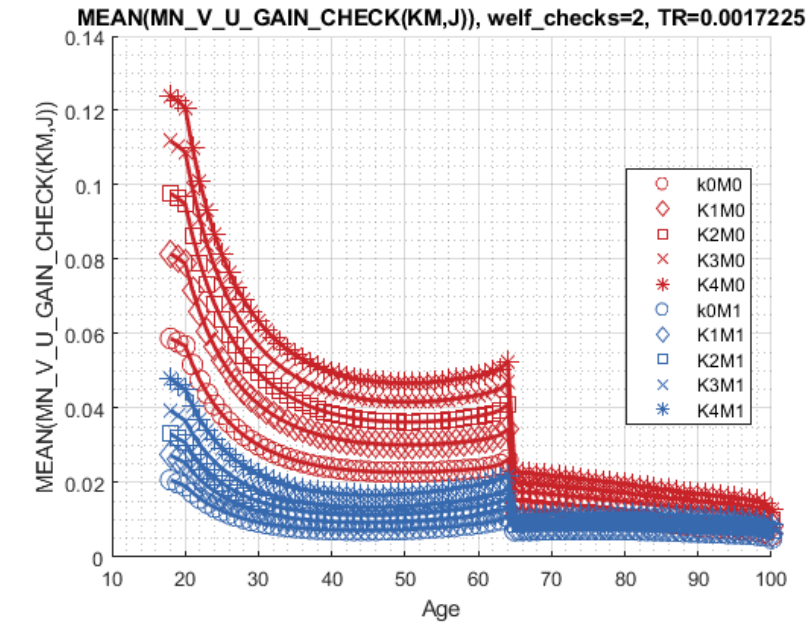

Graph Mean Consumption (***MPC: Share of Check Consumed***):

```
st_title = ['MEAN(MN\_MPC\_U\_GAIN\_CHECK(A,Z)), welf\_checks=' num2str(welf_checks) ', TR=' nu
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_MPC\_U\_GAIN\_CHECK(a,z))'};
ff_graph_grid((tb_az_c{1:end, 3:end})', ar_st_eta_HS_grid, agrid, mp_support_graph);
```

Figure title: MN_MPC_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225

Figure title: N(MN_MPC_U_GAIN_CHECK(A,Z)), welf_checks=2, TR=0.0017225
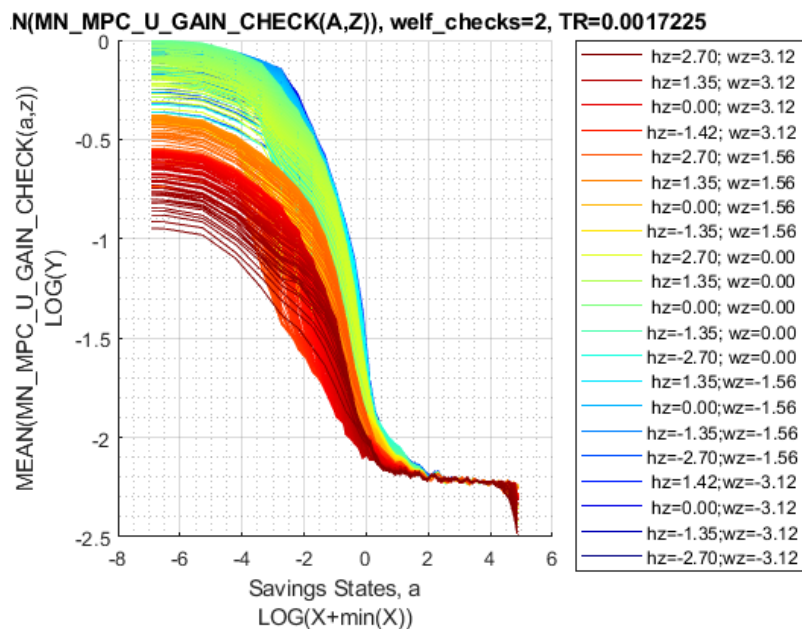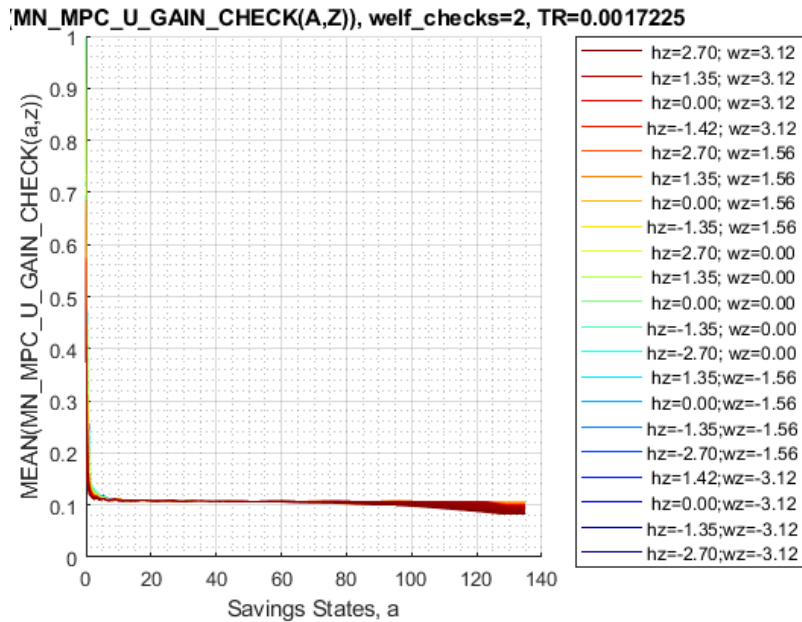
Analyze Kids and Marriage and Age

Aggregating over education, savings, and shocks, what are the differential effects of Marriage and Age.

```
% Generate some Data
mp_support_graph = containers.Map('KeyType', 'char', 'ValueType', 'any');
ar_row_grid = [...
    "k0M0", "K1M0", "K2M0", "K3M0", "K4M0", ...
    "k0M1", "K1M1", "K2M1", "K3M1", "K4M1"];
mp_support_graph('cl_st_xtitle') = {'Age'};
mp_support_graph('st_legend_loc') = 'best';
mp_support_graph('bl_graph_logy') = true; % do not log
mp_support_graph('st_rounding') = '6.2f'; % format shock legend
mp_support_graph('cl_scatter_shapes') = {...
```

```
      'o', 'd' ,'s', 'x', '*', ...
      'o', 'd', 's', 'x', '*'};
  mp_support_graph('cl_colors') = {...
      'red', 'red', 'red', 'red', 'red'...
      'blue', 'blue', 'blue', 'blue', 'blue'};
```

MEAN(VAL(KM,J)), MEAN(AP(KM,J)), MEAN(C(KM,J))

Tabulate value and policies:

```
% Set
% NaN(n_jgrid,n_agrid,n_etagrid,n_educgrid,n_marriedgrid,n_kidsgrid);
ar_permute = [2,3,4,1,6,5];
% Value Function
st_title = ['MEAN(MN_V_U_GAIN_CHECK(KM,J)), welf_checks=' num2str(welf_checks) ', TR=' num2str(
tb_az_v = ff_summ_nd_array(st_title, mn_V_U_gain_check, true, ["mean"], 3, 1, cl_mp_datasetdesc
```

```
xxx  MEAN(MN_V_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    group    kids    marry    mean_age_18    mean_age_19    mean_age_20    mean_age_21    mean_age_22    mean_age_23
    _____    ____    _____    _____    _____    _____    _____    _____    _____

      1       1       0         0.05876        0.057807       0.056772       0.051707       0.047488       0.043946
      2       2       0        0.081525        0.080267       0.078856       0.071726       0.065777       0.060773
      3       3       0        0.097699         0.09639       0.094869         0.0863        0.079154       0.073146
      4       4       0         0.11184         0.11044        0.10878        0.098969       0.090785       0.083905
      5       5       0         0.12393         0.12252         0.1208        0.10994         0.10089        0.09328
      6       1       1        0.020733        0.019926       0.019164        0.01732        0.015771       0.014467
      7       2       1         0.02739         0.02635        0.025367       0.022922       0.020867       0.019139
      8       3       1        0.033087        0.031892       0.030749        0.02779        0.025312       0.023223
      9       4       1        0.039391        0.038018        0.03669        0.033174       0.030229       0.027743
     10       5       1        0.047955        0.046442       0.044963       0.040683       0.037108       0.034102
```

```
% Consumption Function
st_title = ['MEAN(MN_MPC_U_GAIN_CHECK(KM,J)), welf_checks=' num2str(welf_checks) ', TR=' num2st
tb_az_c = ff_summ_nd_array(st_title, mn_MPC_U_gain_share_check, true, ["mean"], 3, 1, cl_mp_dat
```

```
xxx  MEAN(MN_MPC_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225   xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
    group    kids    marry    mean_age_18    mean_age_19    mean_age_20    mean_age_21    mean_age_22    mean_age_23
    _____    ____    _____    _____    _____    _____    _____    _____    _____

      1       1       0         0.13845         0.14295        0.14757        0.14693        0.14633        0.14524
      2       2       0         0.15131         0.15536        0.15963        0.16001        0.16023        0.16032
      3       3       0          0.1601         0.16368        0.16762        0.16817        0.16857        0.16886
      4       4       0         0.16455         0.16795        0.17175        0.17234        0.17279        0.17314
      5       5       0         0.16853         0.17166        0.17526        0.17576        0.17614         0.1764
      6       1       1         0.13988         0.14409        0.14573        0.14586        0.14644        0.14483
      7       2       1          0.1441         0.14787        0.14961        0.15012        0.15078        0.14967
      8       3       1         0.15004         0.15388        0.15527        0.15614        0.15695        0.15596
      9       4       1         0.15447         0.15723        0.15901        0.15929        0.16005        0.15928
     10       5       1         0.16131         0.16321        0.16694        0.16691        0.16454        0.16448
```

Graph Mean Values:

```
st_title = ['MEAN(MN\_V\_U\_GAIN\_CHECK(KM,J)), welf\_checks=' num2str(welf_checks) ', TR=' num
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_V\_U\_GAIN\_CHECK(KM,J))'};
ff_graph_grid((tb_az_v{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```
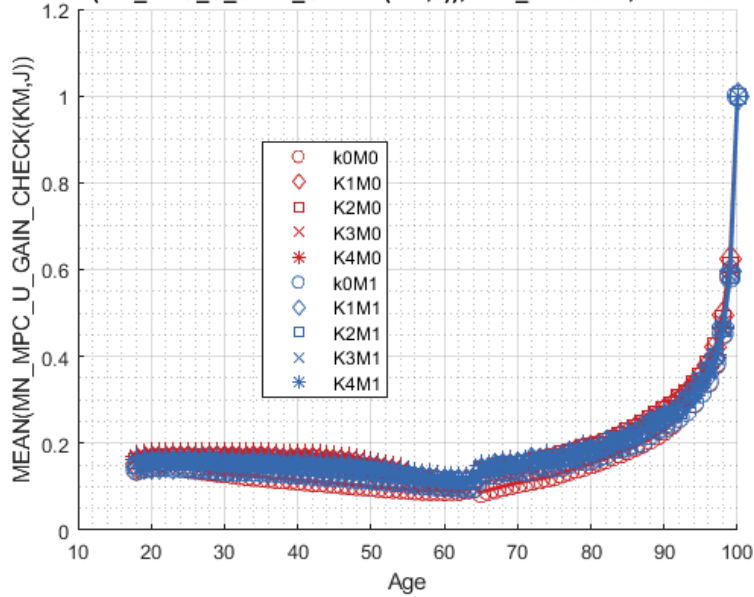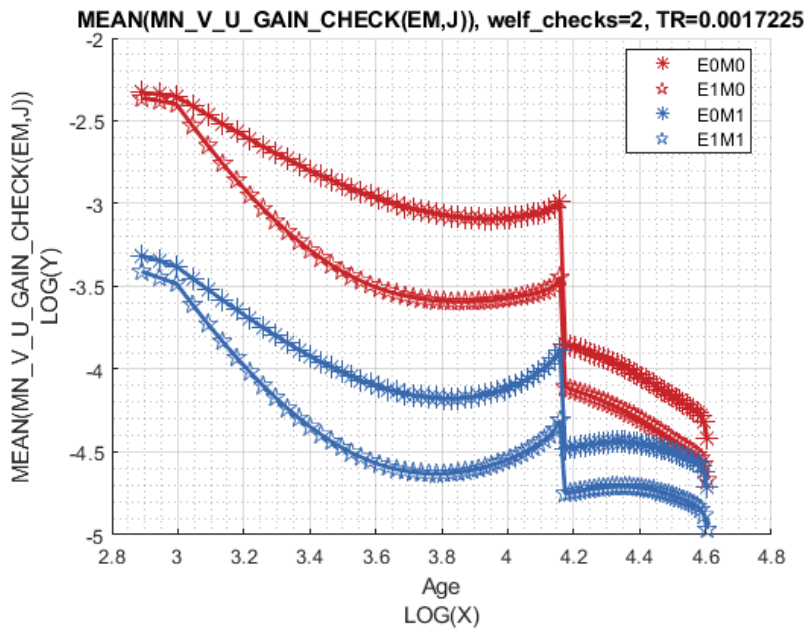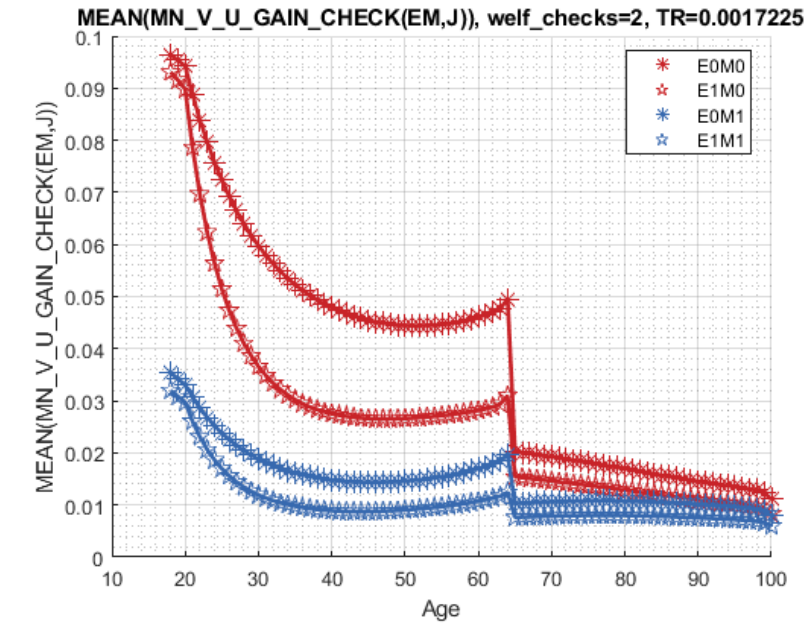
MEAN(MN_V_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225

MEAN(MN_V_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225

Graph Mean Consumption (***MPC: Share of Check Consumed***):

```
st_title = ['MEAN(MN\_MPC\_U\_GAIN\_CHECK(KM,J)), welf\_checks=' num2str(welf_checks) ', TR=' n
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_MPC\_U\_GAIN\_CHECK(KM,J))'};
ff_graph_grid((tb_az_c{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

MEAN(MN_MPC_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225

MEAN(MN_MPC_U_GAIN_CHECK(KM,J)), welf_checks=2, TR=0.0017225
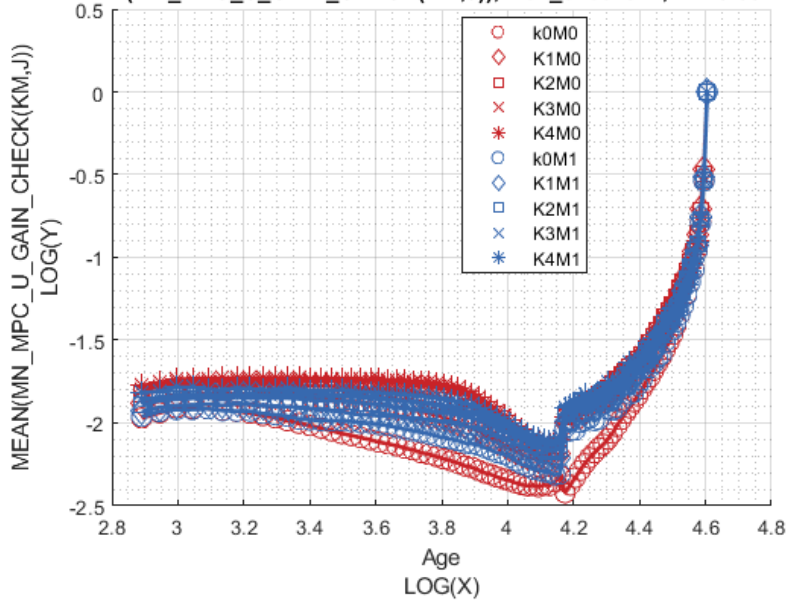
Analyze Education and Marriage

Aggregating over education, savings, and shocks, what are the differential effects of Marriage and Age.

```
% Generate some Data
mp_support_graph = containers.Map('KeyType', 'char', 'ValueType', 'any');
ar_row_grid = ["E0M0", "E1M0", "E0M1", "E1M1"];
mp_support_graph('cl_st_xtitle') = {'Age'};
mp_support_graph('st_legend_loc') = 'best';
mp_support_graph('bl_graph_logy') = true; % do not log
mp_support_graph('st_rounding') = '6.2f'; % format shock legend
mp_support_graph('cl_scatter_shapes') = {'*', 'p', '*','p' };
mp_support_graph('cl_colors') = {'red', 'red', 'blue', 'blue'};
```

MEAN(VAL(EM,J)), MEAN(AP(EM,J)), MEAN(C(EM,J))

Tabulate value and policies:

```
% Set
% NaN(n_jgrid,n_agrid,n_etagrid,n_educgrid,n_marriedgrid,n_kidsgrid);
ar_permute = [2,3,6,1,4,5];
% Value Function
st_title = ['MEAN(MN_V_U_GAIN_CHECK(EM,J)), welf_checks=' num2str(welf_checks) ', TR=' num2str(
tb_az_v = ff_summ_nd_array(st_title, mn_V_U_gain_check, true, ["mean"], 3, 1, cl_mp_datasetdesc
```

xxx MEAN(MN_V_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225 xxxxxxxxxxxxxxxxxxxxxxxxxxxxx

group	edu	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	0	0	0.096397	0.095384	0.094239	0.088786	0.083945	0.079635
2	1	0	0.093102	0.091587	0.089794	0.078671	0.069692	0.062385
3	0	1	0.035401	0.034205	0.033063	0.030696	0.028627	0.026812
4	1	1	0.032021	0.030846	0.029711	0.02606	0.023088	0.020657

```
% Consumption
st_title = ['MEAN(MN_MPC_U_GAIN_CHECK(EM,J)), welf_checks=' num2str(welf_checks) ', TR=' num2st
tb_az_c = ff_summ_nd_array(st_title, mn_MPC_U_gain_share_check, true, ["mean"], 3, 1, cl_mp_dat
```

xxx MEAN(MN_MPC_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225 xxxxxxxxxxxxxxxxxxxxxxxxxxxxx

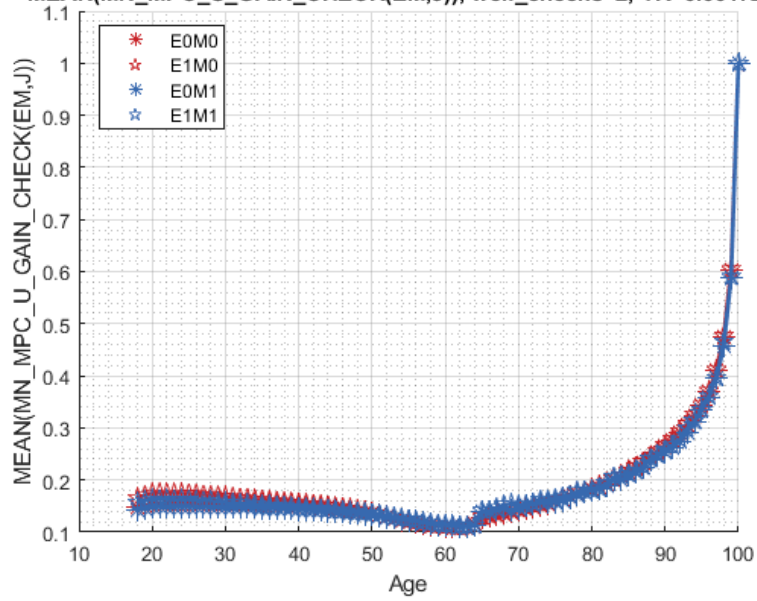| group	edu	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	0	0	0.14718	0.15045	0.15381	0.15404	0.15431	0.15443
2	1	0	0.166	0.1702	0.17493	0.17525	0.17532	0.17515
3	0	1	0.14287	0.14583	0.14746	0.14781	0.14772	0.14734
4	1	1	0.15705	0.16068	0.16316	0.16351	0.16378	0.16235

Graph Mean Values:

```
st_title = ['MEAN(MN\_V\_U\_GAIN\_CHECK(EM,J)), welf\_checks=' num2str(welf_checks) ', TR=' num
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_V\_U\_GAIN\_CHECK(EM,J))'};
ff_graph_grid((tb_az_v{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

MEAN(MN_V_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225

MEAN(MN_V_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225

Graph Mean Consumption (**MPC: Share of Check Consumed**):

```
st_title = ['MEAN(MN\_MPC\_U\_GAIN\_CHECK(EM,J)), welf\_checks=' num2str(welf_checks) ', TR=' n
mp_support_graph('cl_st_graph_title') = {st_title};
mp_support_graph('cl_st_ytitle') = {'MEAN(MN\_MPC\_U\_GAIN\_CHECK(EM,J))'};
ff_graph_grid((tb_az_c{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

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MEAN(MN_MPC_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225

MEAN(MN_MPC_U_GAIN_CHECK(EM,J)), welf_checks=2, TR=0.0017225