Life Cycle Dynamic Programming under Unemployment Shock

This is the example vignette for function: **snw_vfi_main_bisec_vec** from the **PrjOptiSNW Package.** This function solves for policy function using Exact Vectorized Solution. Value in 2020 with surprise COVID unemployment Shock, with non-covid year Value as the continuation function. The file focuses on the change in value function, asset choice, and consumption choice given a one period unemployment shock (that does not reappear in the future again).

Test SNW_VFI_UNEMP

Solve the Regular Value and Also the Unemployment Value.

First, solve for value without unemployment issue (use the vectorized code that was previously tested):

```
mp_params = snw_mp_param('default_docdense');
mp_controls = snw_mp_control('default_test');
[V_VFI_ss,ap_VFI_ss,cons_VFI_ss,mp_valpol_more_ss] = ...
    snw_vfi_main_bisec_vec(mp_params, mp_controls);
```

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SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:83 of 82, time-this-age:7.9376
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:82 of 82, time-this-age:6.2356
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:81 of 82, time-this-age:6.2155
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:80 of 82, time-this-age:6.3254
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:79 of 82, time-this-age:6.3074
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:78 of 82, time-this-age:6.2427
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:77 of 82, time-this-age:6.1961
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:76 of 82, time-this-age:6.4401
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:75 of 82, time-this-age:6.0576
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:74 of 82, time-this-age:6.3188
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:73 of 82, time-this-age:6.1781
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:72 of 82, time-this-age:6.3078
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:71 of 82, time-this-age:6.4338
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:70 of 82, time-this-age:6.33
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:69 of 82, time-this-age:6.4742
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:68 of 82, time-this-age:6.2434
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:67 of 82, time-this-age:6.196
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:66 of 82, time-this-age:6.3067
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:65 of 82, time-this-age:6.381
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:64 of 82, time-this-age:6.3403
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:63 of 82, time-this-age:6.4496
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:62 of 82, time-this-age:6.1753
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:61 of 82, time-this-age:6.3953
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:60 of 82, time-this-age:6.2145
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:59 of 82, time-this-age:6.3754
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:58 of 82, time-this-age:6.1826
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:57 of 82, time-this-age:6.4472
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:56 of 82, time-this-age:6.3577
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:55 of 82, time-this-age:6.3632
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:54 of 82, time-this-age:6.3623
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:53 of 82, time-this-age:6.477
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:52 of 82, time-this-age:6.4007
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:51 of 82, time-this-age:6.1299
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:50 of 82, time-this-age:6.0888
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:49 of 82, time-this-age:6.0058
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:48 of 82, time-this-age:6.4668
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:47 of 82, time-this-age:6.7856
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:46 of 82, time-this-age:6.6894
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:45 of 82, time-this-age:6.5303
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:44 of 82, time-this-age:6.5652
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SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:43 of 82, time-this-age:6.4601
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:42 of 82, time-this-age:6.5478
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:41 of 82, time-this-age:6.5693
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:40 of 82, time-this-age:6.4817
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:39 of 82, time-this-age:6.1035
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:38 of 82, time-this-age:6.3312
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:37 of 82, time-this-age:6.652
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:36 of 82, time-this-age:6.5706
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:35 of 82, time-this-age:6.3328
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:34 of 82, time-this-age:6.3866
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:33 of 82, time-this-age:6.3876
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:32 of 82, time-this-age:6.5786
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:31 of 82, time-this-age:6.4579
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:30 of 82, time-this-age:6.4423
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:29 of 82, time-this-age:6.5074
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:28 of 82, time-this-age:6.6582
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:27 of 82, time-this-age:6.6605
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:26 of 82, time-this-age:6.7467
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:25 of 82, time-this-age:6.567
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:24 of 82, time-this-age:6.6851
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:23 of 82, time-this-age:6.7011
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:22 of 82, time-this-age:6.3939
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:21 of 82, time-this-age:6.5634
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:20 of 82, time-this-age:6.4832
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:19 of 82, time-this-age:6.4651
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:18 of 82, time-this-age:6.5353
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:17 of 82, time-this-age:6.4967
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:16 of 82, time-this-age:6.387
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:15 of 82, time-this-age:6.345
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:14 of 82, time-this-age:6.577
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:13 of 82, time-this-age:6.7646
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:12 of 82, time-this-age:6.8183
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:11 of 82, time-this-age:6.4142
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:10 of 82, time-this-age:6.342
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:9 of 82, time-this-age:6.4692
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:8 of 82, time-this-age:6.5127
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:7 of 82, time-this-age:6.5417
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:6 of 82, time-this-age:6.5962
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:5 of 82, time-this-age:6.4304
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:4 of 82, time-this-age:6.3748
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:3 of 82, time-this-age:6.2745
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:2 of 82, time-this-age:6.5175
SNW_VFI_MAIN_BISEC_VEC: Finished Age Group:1 of 82, time-this-age:6.3803
Completed SNW_VFI_MAIN_BISEC_VEC;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time=535.1119
----------------------------------------
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
CONTAINER NAME: mp_outcomes ND Array (Matrix etc)
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
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	i	idx	ndim	numel	rowN	colN	sum	mean	std	coefvari
V_VFI	1	1	6	4.37e+07	83	5.265e+05	-8.6673e+08	-19.834	28.177	-1.4206
ap_VFI	2	2	6	4.37e+07	83	5.265e+05	1.4164e+09	32.412	36.8	1.1354
cons_VFI	3	3	6	4.37e+07	83	5.265e+05	2.131e+08	4.8764	8.3268	1.7076

```
xxx TABLE:V_VFI xxxxxxxxxxxxxxxxxx
```

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499
r1	-376.05	-375.66	-373.17	-367.4	-358.05	-6.68	-6.5297	-6.3792	-6.2274
r2	-363.8	-363.41	-360.93	-355.25	-346.25	-6.4892	-6.3437	-6.1974	-6.0495
r3	-351.75	-351.36	-348.9	-343.44	-334.9	-6.2948	-6.1538	-6.0116	-5.8671
r4	-339.81	-339.45	-337.16	-332.06	-324.04	-6.095	-5.9584	-5.82	-5.6786
r5	-328.99	-328.65	-326.51	-321.72	-314.17	-5.9054	-5.7725	-5.6372	-5.4986
r79	-14.033	-14.02	-13.926	-13.689	-13.287	-0.22848	-0.21775	-0.20768	-0.19824

r80	-12.564	-12.55	-12.457	-12.22	-11.818	-0.17427	-0.16611	-0.15842	-0.15117
r81	-10.778	-10.764	-10.671	-10.434	-10.032	-0.11927	-0.11368	-0.10843	-0.10346
r82	-8.4226	-8.4089	-8.3155	-8.0786	-7.6766	-0.06597	-0.06284	-0.059924	-0.057184
r83	-5.0665	-5.0529	-4.9595	-4.7226	-4.3206	-0.020968	-0.019972	-0.019038	-0.018161

xxx TABLE:ap_VFI xxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c526500
r1	0	0	0.0005656	0.0075134	0.022901	114.76	120.42	126.29	132.39	138.81
r2	0	0	0.00051498	0.0065334	0.021549	114.87	120.54	126.42	132.55	138.97
r3	0	0	0.00051498	0.0049294	0.019875	114.98	120.67	126.57	132.72	139.13
r4	0	0	0.00051498	0.0047937	0.019672	115.74	121.44	127.36	133.52	139.94
r5	0	0	0.00048517	0.0046683	0.019484	116.51	122.22	128.16	134.34	140.76
r79	0	0	0	0	0.00051498	81.091	85.68	90.325	94.371	98.41
r80	0	0	0	0	0	76.669	80.55	84.292	88.029	91.682
r81	0	0	0	0	0	68.313	71.52	74.459	77.816	81.096
r82	0	0	0	0	0	50.126	53.467	56.953	58.728	60.587
r83	0	0	0	0	0	0	0	0	0	0

xxx TABLE:cons_VFI xxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c
r1	0.036717	0.037251	0.040426	0.04363	0.048012	9.6396	9.8066	9.9533	10.06	
r2	0.036717	0.037251	0.040477	0.04461	0.049364	9.8014	9.9571	10.088	10.177	1
r3	0.036717	0.037251	0.040477	0.046214	0.051039	9.9664	10.108	10.22	10.287	1
r4	0.038144	0.038678	0.041903	0.047776	0.052666	10.118	10.244	10.339	10.388	1
r5	0.039534	0.040068	0.043323	0.04929	0.054241	10.258	10.369	10.446	10.483	1
r79	0.19737	0.19791	0.20163	0.21175	0.23093	35.811	37.046	38.418	40.587	4
r80	0.19737	0.19791	0.20163	0.21175	0.23145	40.207	42.15	44.426	46.904	4
r81	0.19737	0.19791	0.20163	0.21175	0.23145	48.541	51.158	54.236	57.094	6
r82	0.19737	0.19791	0.20163	0.21175	0.23145	66.71	69.193	71.724	76.164	
r83	0.19737	0.19791	0.20163	0.21175	0.23145	116.82	122.65	128.66	134.88	1

Second, solve for the unemployment value, use the exact-bisec result code, call the snw_vfi_main_bisec_vec.m function with a third input of existing value. xi is the share of income lost during covid year given surprise covid shock, b is the share of income loss that is covered by unemployment insurance. xi=0.5 and b=0 means will lose 50 percent of income given COVID shocks, and the loss will not be covered at all by unemployment insurance.

```
mp_params('xi') = 0.5;
mp_params('b') = 0;
mp_params('a2_covidyr') = mp_params('a2_covidyr_manna_heaven');
[V_VFI_unemp,ap_VFI_unemp,cons_VFI_unemp,mp_valpol_more_unemp] = ...
    snw_vfi_main_bisec_vec(mp_params, mp_controls, V_VFI_ss);
```

```
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 1 of 82, time-this-age:6.2923
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 2 of 82, time-this-age:6.5203
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 3 of 82, time-this-age:6.0245
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 4 of 82, time-this-age:6.5906
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 5 of 82, time-this-age:6.4748
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 6 of 82, time-this-age:6.515
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 7 of 82, time-this-age:6.1144
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 8 of 82, time-this-age:6.2132
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 9 of 82, time-this-age:6.5055
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 10 of 82, time-this-age:6.4562
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 11 of 82, time-this-age:6.0604
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 12 of 82, time-this-age:6.641
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 13 of 82, time-this-age:6.5864
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 14 of 82, time-this-age:6.3514
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 15 of 82, time-this-age:6.3017
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SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 16 of 82, time-this-age:6.2902
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 17 of 82, time-this-age:6.5771
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 18 of 82, time-this-age:6.163
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 19 of 82, time-this-age:6.2954
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 20 of 82, time-this-age:6.162
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 21 of 82, time-this-age:6.0779
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 22 of 82, time-this-age:6.1283
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 23 of 82, time-this-age:6.3978
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 24 of 82, time-this-age:6.4584
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 25 of 82, time-this-age:5.9292
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 26 of 82, time-this-age:6.1225
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 27 of 82, time-this-age:6.4045
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 28 of 82, time-this-age:6.4834
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 29 of 82, time-this-age:6.2843
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 30 of 82, time-this-age:6.2094
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 31 of 82, time-this-age:6.4612
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 32 of 82, time-this-age:6.1629
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 33 of 82, time-this-age:6.4799
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 34 of 82, time-this-age:6.4272
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 35 of 82, time-this-age:6.5508
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 36 of 82, time-this-age:6.1381
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 37 of 82, time-this-age:6.0588
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 38 of 82, time-this-age:6.1133
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 39 of 82, time-this-age:5.9731
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 40 of 82, time-this-age:6.2753
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 41 of 82, time-this-age:6.4228
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 42 of 82, time-this-age:6.0784
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 43 of 82, time-this-age:5.8926
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 44 of 82, time-this-age:6.1351
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 45 of 82, time-this-age:5.9147
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 46 of 82, time-this-age:6.4062
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 47 of 82, time-this-age:6.7344
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 48 of 82, time-this-age:6.278
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 49 of 82, time-this-age:6.2085
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 50 of 82, time-this-age:6.0966
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 51 of 82, time-this-age:6.3449
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 52 of 82, time-this-age:6.2717
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 53 of 82, time-this-age:6.4826
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 54 of 82, time-this-age:6.3431
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 55 of 82, time-this-age:5.9453
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 56 of 82, time-this-age:6.2613
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 57 of 82, time-this-age:6.2364
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 58 of 82, time-this-age:6.0578
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 59 of 82, time-this-age:6.1279
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 60 of 82, time-this-age:6.1238
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 61 of 82, time-this-age:6.2806
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 62 of 82, time-this-age:5.9344
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 63 of 82, time-this-age:6.0212
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 64 of 82, time-this-age:6.3424
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 65 of 82, time-this-age:5.863
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 66 of 82, time-this-age:6.1349
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 67 of 82, time-this-age:5.9904
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 68 of 82, time-this-age:5.9675
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 69 of 82, time-this-age:5.7964
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 70 of 82, time-this-age:6.0091
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 71 of 82, time-this-age:6.0331
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 72 of 82, time-this-age:5.8808
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 73 of 82, time-this-age:6.0943
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 74 of 82, time-this-age:6.0279
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 75 of 82, time-this-age:6.1533
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 76 of 82, time-this-age:6.0662
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 77 of 82, time-this-age:5.7827
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 78 of 82, time-this-age:6.1473
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 79 of 82, time-this-age:6.071
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 80 of 82, time-this-age:6.1187
```

```
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 81 of 82, time-this-age:5.9865
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 82 of 82, time-this-age:6.1363
SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock: Age 83 of 82, time-this-age:7.7853
Completed SNW_VFI_MAIN_BISEC_VEC 1 Period Unemp Shock;SNW_MP_PARAM=default_docdense;SNW_MP_CONTROL=default_test;time
----------------------------------------
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
CONTAINER NAME: mp_outcomes ND Array (Matrix etc)
xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
```

	i	idx	ndim	numel	rowN	colN	sum	mean	std	coefvari
V_VFI	1	1	6	4.37e+07	83	5.265e+05	-8.9196e+08	-20.411	29.203	-1.4307
ap_VFI	2	2	6	4.37e+07	83	5.265e+05	1.3793e+09	31.564	36.675	1.1619
cons_VFI	3	3	6	4.37e+07	83	5.265e+05	2.1007e+08	4.807	8.3263	1.7321

xxx TABLE:V_VFI xxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499
r1	-402.51	-401.01	-392.48	-379.06	-366.5	-6.8096	-6.6548	-6.5005	-6.3459
r2	-390.26	-388.76	-380.23	-366.81	-354.4	-6.618	-6.4683	-6.3187	-6.1683
r3	-378.21	-376.71	-368.18	-354.76	-342.64	-6.4227	-6.278	-6.1329	-5.9865
r4	-365.26	-363.87	-355.91	-343.19	-331.62	-6.2297	-6.0896	-5.9486	-5.8058
r5	-353.53	-352.23	-344.77	-332.67	-321.59	-6.0467	-5.9107	-5.7733	-5.6336
r79	-14.033	-14.02	-13.926	-13.689	-13.287	-0.2305	-0.21962	-0.20938	-0.19976
r80	-12.564	-12.55	-12.457	-12.22	-11.818	-0.17582	-0.16751	-0.15967	-0.15229
r81	-10.778	-10.764	-10.671	-10.434	-10.032	-0.12032	-0.11462	-0.10926	-0.10422
r82	-8.4226	-8.4089	-8.3155	-8.0786	-7.6766	-0.066524	-0.063355	-0.060398	-0.057602
r83	-5.0665	-5.0529	-4.9595	-4.7226	-4.3206	-0.021146	-0.020134	-0.019185	-0.018294

xxx TABLE:ap_VFI xxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c526500
r1	0	0	0	0	0.0092181	110.07	115.71	121.57	127.63	133.94
r2	0	0	0	0	0.008238	110.04	115.69	121.55	127.63	133.96
r3	0	0	0	0	0.0066341	110	115.66	121.54	127.64	133.99
r4	0	0	0	0	0.0058019	110.29	115.97	121.86	127.98	134.34
r5	0	0	0	0	0.004998	110.59	116.28	122.19	128.33	134.7
r79	0	0	0	0	0.00051498	81.091	85.231	89.301	93.347	97.387
r80	0	0	0	0	0	75.865	79.539	83.281	87.018	90.672
r81	0	0	0	0	0	67.78	70.52	73.459	76.816	81.091
r82	0	0	0	0	0	50.126	53.467	56.104	57.737	60.587
r83	0	0	0	0	0	0	0	0	0	0

xxx TABLE:cons_VFI xxxxxxxxxxxxxxxxx

	c1	c2	c3	c4	c5	c526496	c526497	c526498	c526499	c
r1	0.018623	0.019158	0.022901	0.033062	0.04363	9.4621	9.6396	9.8066	9.9533	
r2	0.018623	0.019158	0.022901	0.033062	0.04461	9.6318	9.8014	9.9571	10.088	1
r3	0.018623	0.019158	0.022901	0.033062	0.046214	9.8074	9.9664	10.108	10.22	1
r4	0.019354	0.019888	0.023632	0.033792	0.047776	9.971	10.118	10.244	10.339	1
r5	0.020066	0.020601	0.024344	0.034504	0.04929	10.123	10.258	10.369	10.446	1
r79	0.19737	0.19791	0.20163	0.21175	0.23093	34.787	36.471	38.418	40.587	4
r80	0.19737	0.19791	0.20163	0.21175	0.23145	40.001	42.15	44.426	46.904	4
r81	0.19737	0.19791	0.20163	0.21175	0.23145	48.074	51.158	54.236	57.094	5
r82	0.19737	0.19791	0.20163	0.21175	0.23145	65.719	68.202	71.583	76.164	7
r83	0.19737	0.19791	0.20163	0.21175	0.23145	115.84	121.66	127.68	133.89	1

Difference Between Value and Choices In Unemployment and Future Periods

```
V_VFI_unemp_drop = V_VFI_ss - V_VFI_unemp;
```

```
ap_VFI_unemp_drop = ap_VFI_ss - ap_VFI_unemp;
cons_VFI_unemp_drop = cons_VFI_ss - cons_VFI_unemp;
```

Define Parameter 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 Savings and Shocks

First, analyze Savings Levels and Shocks, Aggregate Over All Others, and do various other calculations.

```
% 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') = 15; % how many shock legends to show
mp_support_graph('cl_colors') = 'jet';
```

MEAN(VAL(A,Z) - VAL(A,Z|unemp)), MEAN(AP(A,Z) - AP(A,Z|unemp)), MEAN(C(A,Z) - C(A,Z|unemp))

Tabulate value and policies along savings and shocks:

```
% Set
% NaN(n_jgrid,n_agrid,n_etagrid,n_educgrid,n_marriedgrid,n_kidsgrid);
ar_permute = [1,4,5,6,3,2];
% Value Function
tb_az_v = ff_summ_nd_array("MEAN(v(A,Z) - v(A,Z|unemp))", V_VFI_unemp_drop, true, ["mean"], 4,
```

```
xxx  MEAN(v(A,Z) - v(A,Z|unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	savings	mean_eta_1	mean_eta_2	mean_eta_3	mean_eta_4	mean_eta_5	mean_eta_6	mean_
1	0	15.757	14.81	13.917	13.077	12.285	11.541	
2	0.00051498	15.342	14.443	13.593	12.79	12.032	11.317	1
3	0.0041199	12.881	12.246	11.633	11.043	10.476	9.9318	9

4	0.013905	8.7359	8.4686	8.1905	7.9067	7.6215	7.3372	7
5	0.032959	5.3366	5.2683	5.1735	5.0615	4.9404	4.8155	4
6	0.064373	3.3921	3.3936	3.3704	3.3277	3.272	3.2095	3

```
% Aprime Choice
tb_az_ap = ff_summ_nd_array("MEAN(AP(A,Z) - AP(A,Z|unemp))", ap_VFI_unemp_drop, true, ["mean"],
```

```
xxx  MEAN(AP(A,Z) - AP(A,Z|unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	savings	mean_eta_1	mean_eta_2	mean_eta_3	mean_eta_4	mean_eta_5	mean_eta_6	mean_
1	0	0	0	0	0	0	0	6.640
2	0.00051498	0	0	0	3.2355e-07	8.8303e-07	1.3402e-06	1.685
3	0.0041199	1.1212e-05	3.4693e-05	5.9476e-05	6.9903e-05	7.1182e-05	6.7854e-05	6.236
4	0.013905	0.0011498	0.0012034	0.0012469	0.001273	0.0012824	0.0012822	0.00
5	0.032959	0.0039015	0.0041225	0.0043159	0.0044467	0.0045114	0.0045318	0.00
6	0.064373	0.0055048	0.0060139	0.0065549	0.0071211	0.0076061	0.0079092	0.00

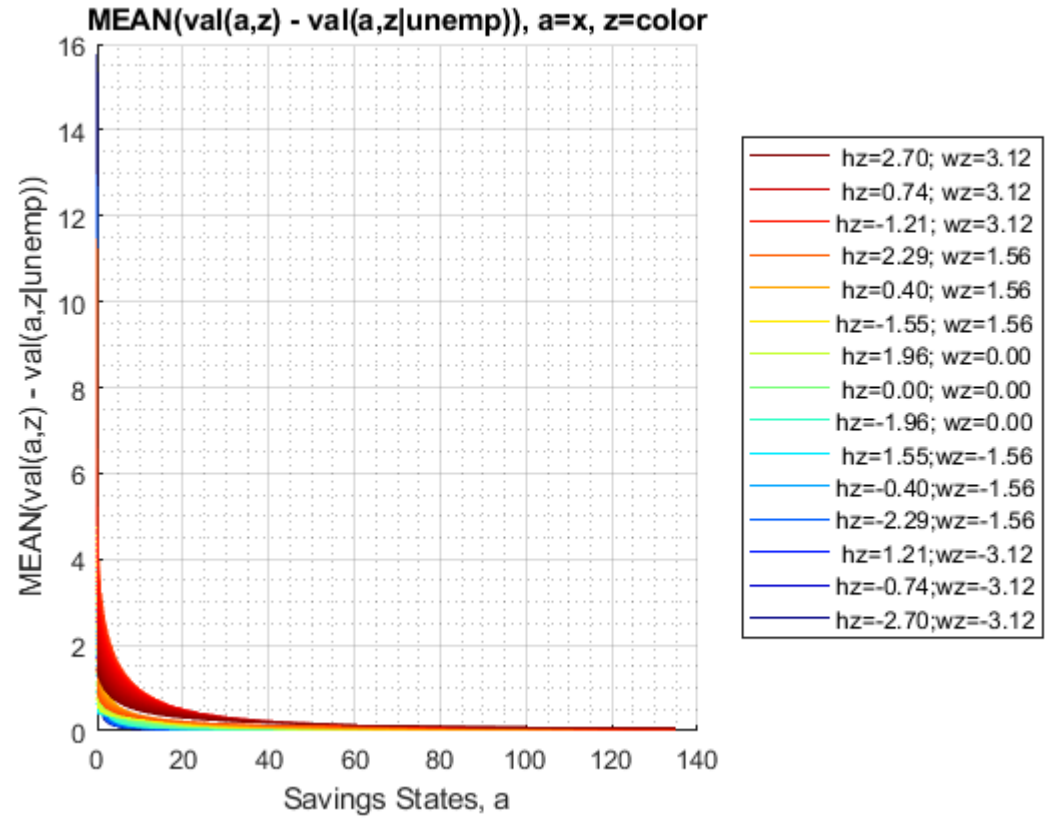
```
% Consumption Choices
tb_az_c = ff_summ_nd_array("MEAN(C(A,Z) - C(A,Z|unemp))", cons_VFI_unemp_drop, true, ["mean"],
```

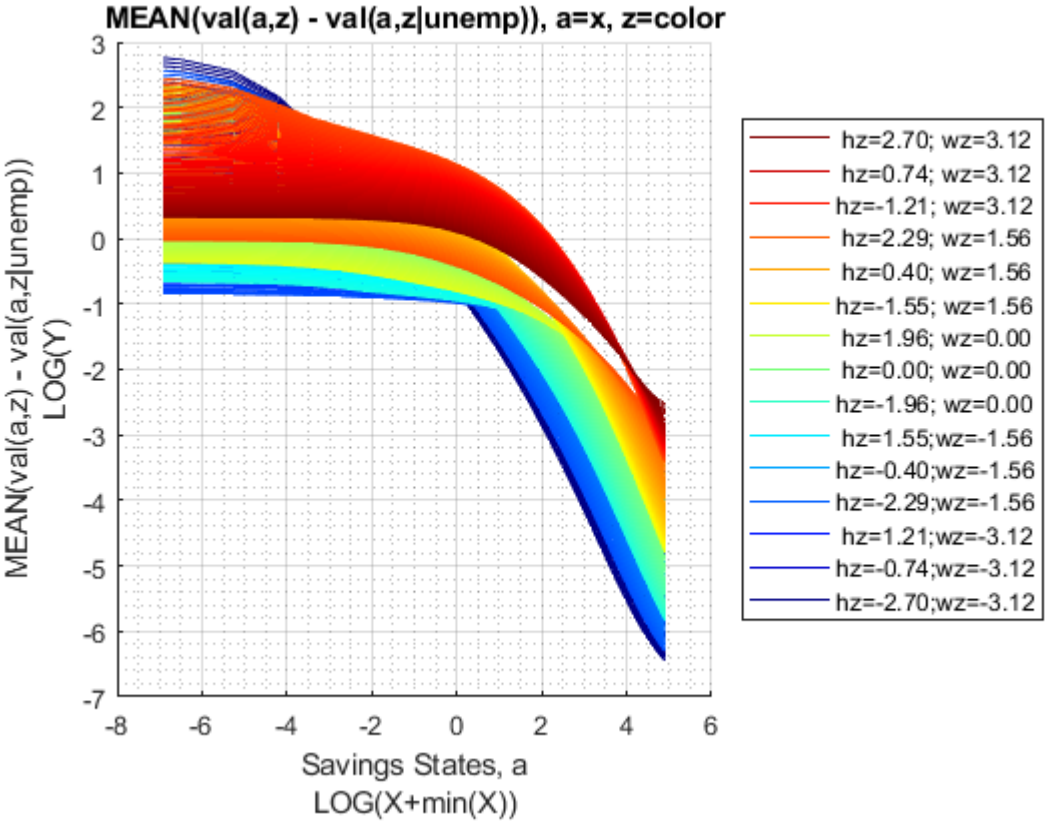
```
xxx  MEAN(C(A,Z) - C(A,Z|unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	savings	mean_eta_1	mean_eta_2	mean_eta_3	mean_eta_4	mean_eta_5	mean_eta_6	mean_
1	0	0.019312	0.020444	0.021649	0.02293	0.024294	0.025745	0.0
2	0.00051498	0.019312	0.020444	0.021648	0.02293	0.024293	0.025743	0.0
3	0.0041199	0.019298	0.020407	0.021586	0.022857	0.02422	0.025674	0.0
4	0.013905	0.018153	0.019231	0.020392	0.021647	0.023001	0.024452	0.0
5	0.032959	0.015388	0.016299	0.017309	0.01846	0.019758	0.021188	0.0
6	0.064373	0.013764	0.014386	0.015048	0.015762	0.01664	0.017787	0.0

Graph Mean Values Change:

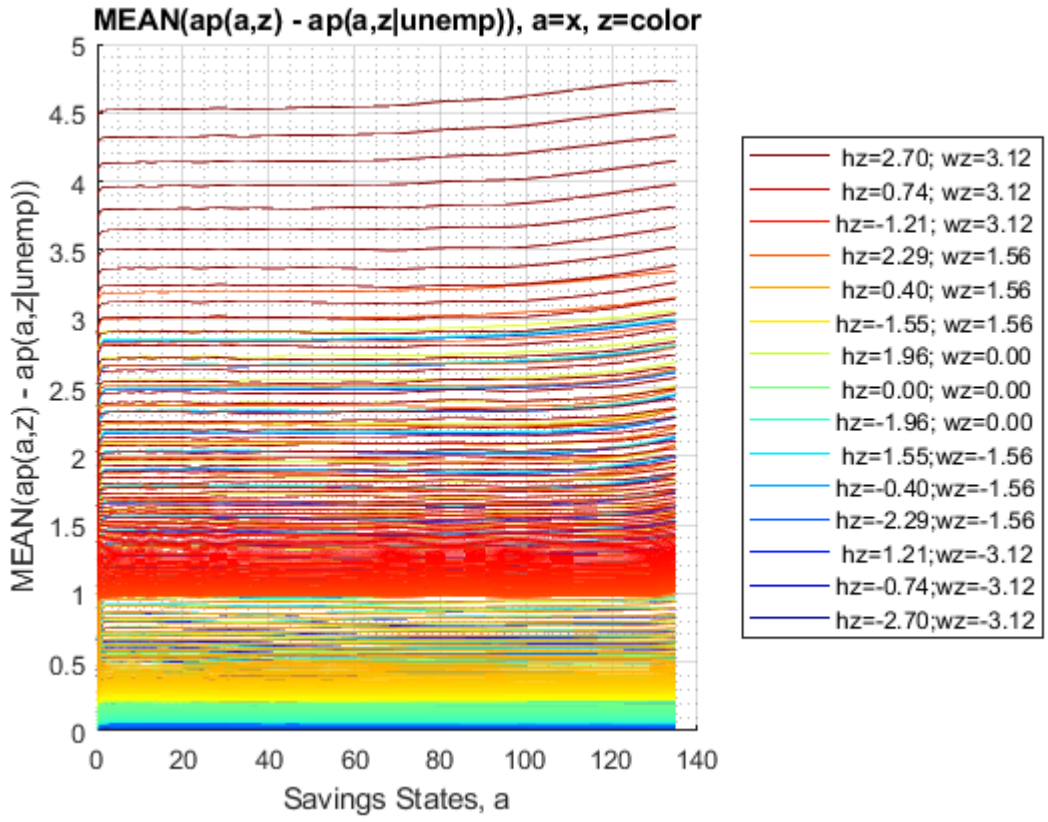
```
mp_support_graph('cl_st_graph_title') = {'MEAN(val(a,z) - val(a,z|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(val(a,z) - val(a,z|unemp))'};
ff_graph_grid((tb_az_v{1:end, 3:end})', ar_st_eta_HS_grid, agrid, mp_support_graph);
```

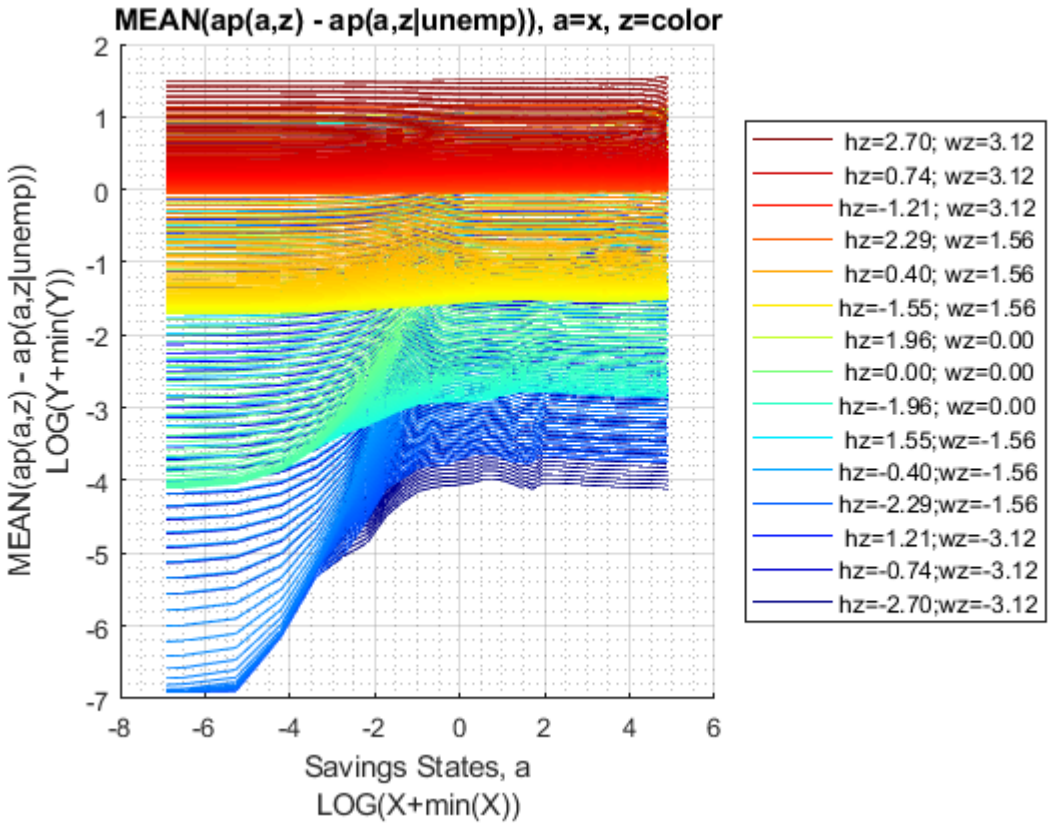




Graph Mean Savings Choices Change:

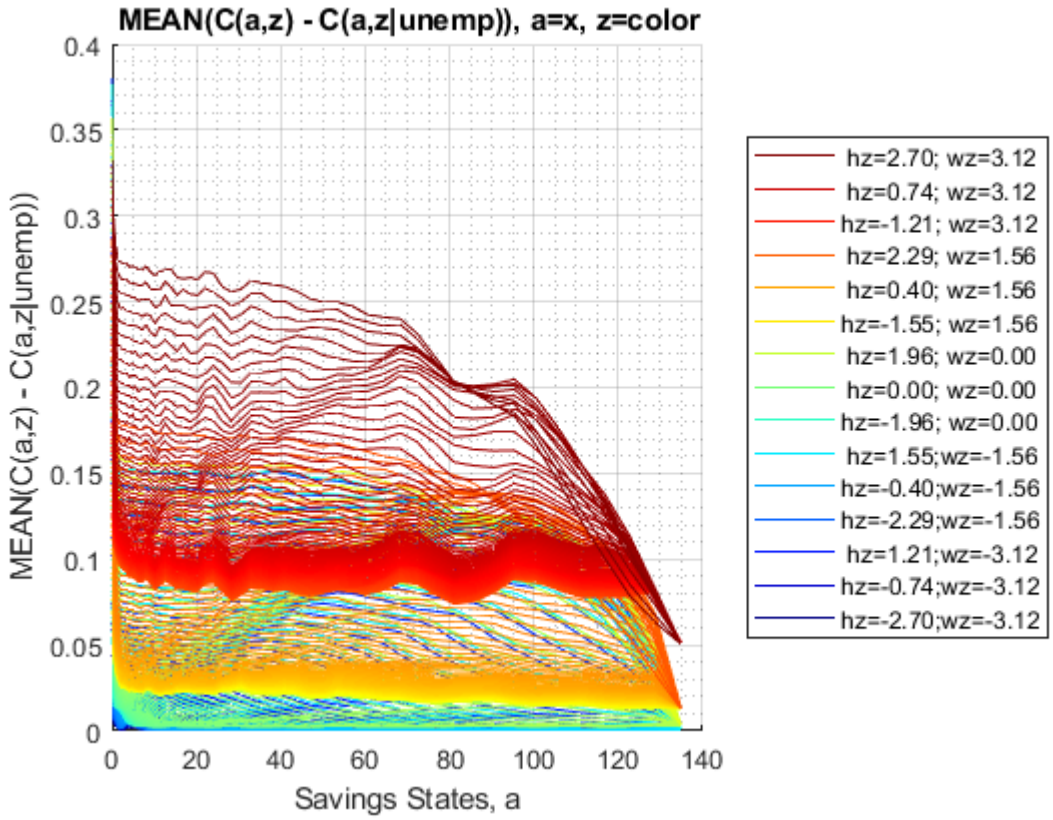
```
mp_support_graph('cl_st_graph_title') = {'MEAN(ap(a,z) - ap(a,z|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(ap(a,z) - ap(a,z|unemp))'};
ff_graph_grid((tb_az_ap{1:end, 3:end})', ar_st_eta_HS_grid, agrid, mp_support_graph);
```

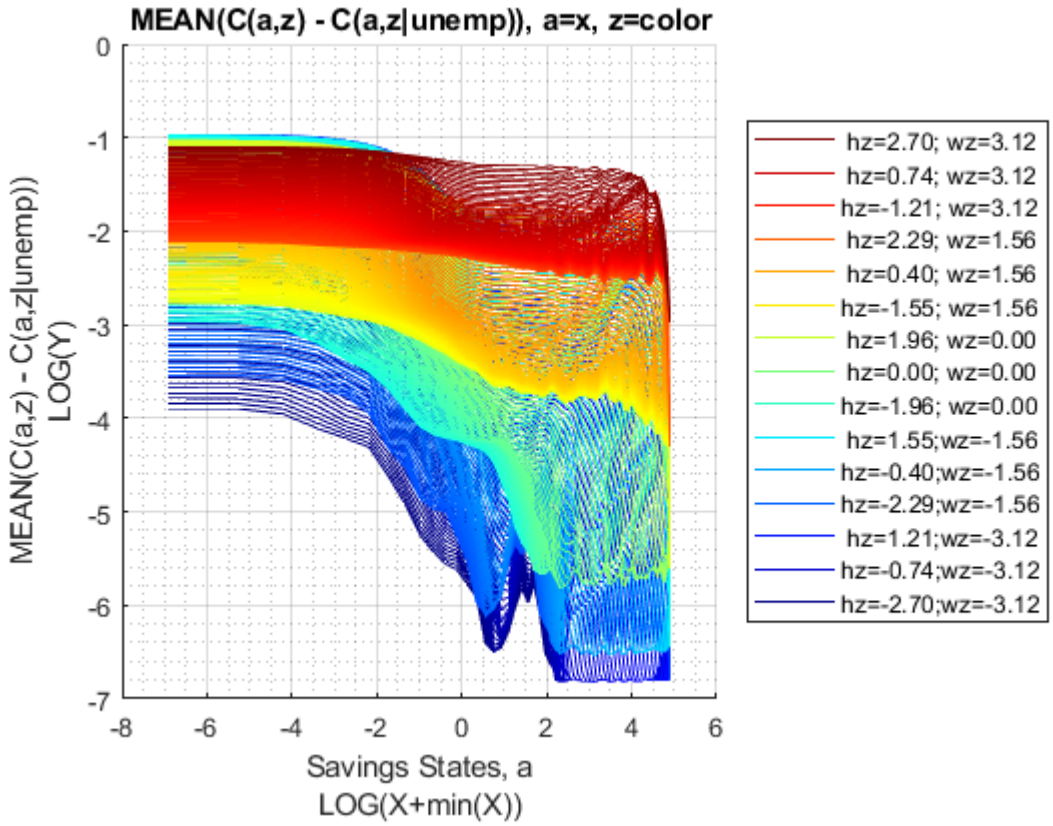




Graph Mean Consumption Change:

```
mp_support_graph('cl_st_graph_title') = {'MEAN(C(a,z) - C(a,z|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(C(a,z) - C(a,z|unemp))'};
ff_graph_grid((tb_az_c{1:end, 3:end})', ar_st_eta_HS_grid, agrid, mp_support_graph);
```





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(V(KM,J) - V(KM,J | unemp)), MEAN(ap(KM,J) - ap(KM,J | unemp)), MEAN(c(KM,J) - c(KM,J | unemp))

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
```

```
tb_az_v = ff_summ_nd_array("MEAN(V(KM,J) - V(KM,J | unemp))", V_VFI_unemp_drop, true, ["mean"],
```

```
xxx  MEAN(V(KM,J) - V(KM,J | unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	kids	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	1	0	0.61725	0.59976	0.58199	0.56601	0.55229	0.54054
2	2	0	0.8282	0.80576	0.78226	0.75802	0.73679	0.71815
3	3	0	0.96839	0.94588	0.92133	0.89232	0.86693	0.84461
4	4	0	1.0956	1.0721	1.0458	1.0127	0.98375	0.95827
5	5	0	1.2019	1.1787	1.1519	1.1158	1.0843	1.0568
6	1	1	0.76869	0.75018	0.73196	0.71662	0.70371	0.69304
7	2	1	0.93097	0.90782	0.88415	0.86307	0.84465	0.82857
8	3	1	1.0192	0.99485	0.96959	0.94589	0.92513	0.90699
9	4	1	1.1177	1.0921	1.0652	1.039	1.016	0.99583
10	5	1	1.1589	1.1352	1.1089	1.0814	1.0577	1.037

```
% Aprime Choice
tb_az_ap = ff_summ_nd_array("MEAN(ap(KM,J) - ap(KM,J | unemp))", ap_VFI_unemp_drop, true, ["mea
```

```
xxx  MEAN(ap(KM,J) - ap(KM,J | unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	kids	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	1	0	0.54442	0.54173	0.53857	0.57709	0.6155	0.65344
2	2	0	0.53845	0.53471	0.53034	0.56817	0.60591	0.64335
3	3	0	0.53193	0.52758	0.5228	0.56021	0.59766	0.63481
4	4	0	0.52782	0.52325	0.51825	0.55544	0.59269	0.62969
5	5	0	0.52378	0.51921	0.5141	0.55117	0.58841	0.62542
6	1	1	1.1324	1.1758	1.22	1.3121	1.4051	1.498
7	2	1	1.0397	1.0754	1.1117	1.1944	1.2779	1.3613
8	3	1	0.97116	1.0022	1.0333	1.1099	1.1873	1.2644
9	4	1	0.89614	0.92283	0.94936	1.0215	1.094	1.166
10	5	1	0.78037	0.79821	0.81602	0.87841	0.94111	1.0036

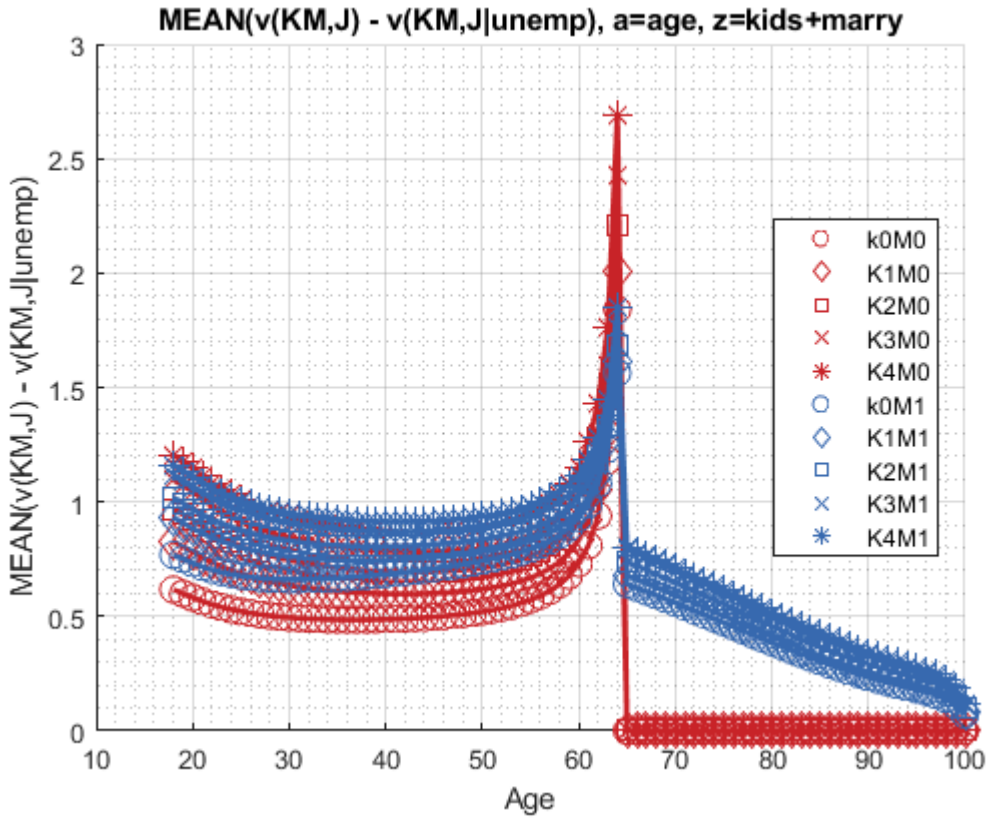
```
% Consumption Choices
tb_az_c = ff_summ_nd_array("MEAN(c(KM,J) - c(KM,J | unemp))", cons_VFI_unemp_drop, true, ["mean
```

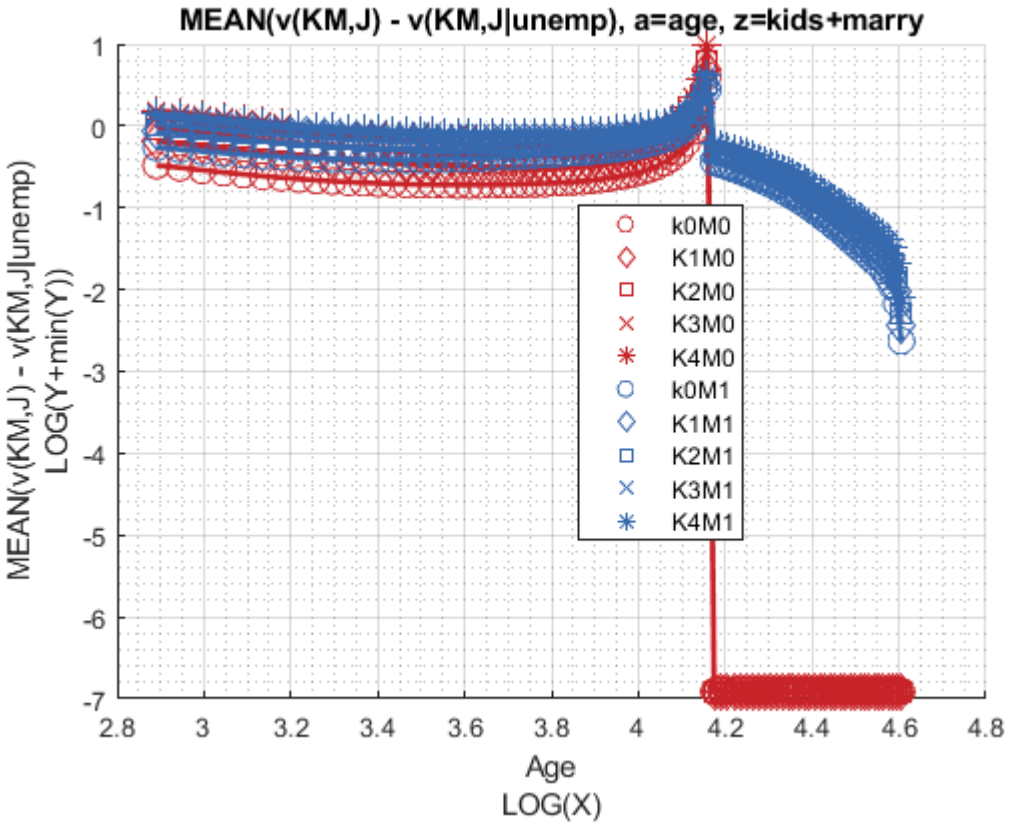
```
xxx  MEAN(c(KM,J) - c(KM,J | unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
```

group	kids	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	1	0	0.049956	0.052643	0.055802	0.056135	0.05627	0.05629
2	2	0	0.05592	0.059662	0.064032	0.065053	0.065864	0.066379
3	3	0	0.062441	0.066796	0.071572	0.073013	0.074107	0.074921
4	4	0	0.066548	0.071126	0.076127	0.077784	0.07908	0.080043
5	5	0	0.070592	0.075167	0.080271	0.082051	0.083363	0.084315
6	1	1	0.091533	0.09707	0.10273	0.10671	0.11016	0.11335
7	2	1	0.087319	0.093037	0.098883	0.10344	0.10744	0.11122
8	3	1	0.089145	0.09428	0.10003	0.10457	0.1086	0.11245
9	4	1	0.095251	0.099402	0.10424	0.10703	0.1095	0.11209
10	5	1	0.1016	0.10608	0.11098	0.11351	0.11573	0.11766

Graph Mean Values Change:

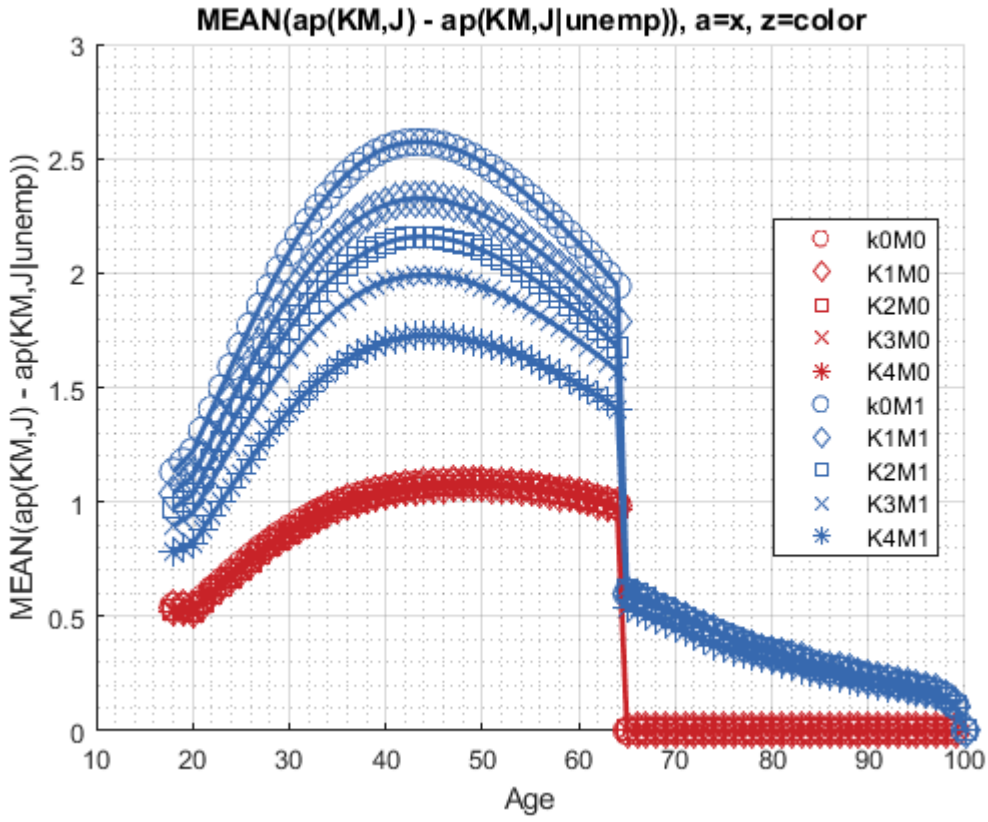
```
mp_support_graph('cl_st_graph_title') = {'MEAN(v(KM,J) - v(KM,J|unemp), a=age, z=kids+marry'};
mp_support_graph('cl_st_ytitle') = {'MEAN(v(KM,J) - v(KM,J|unemp)'};
ff_graph_grid((tb_az_v{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

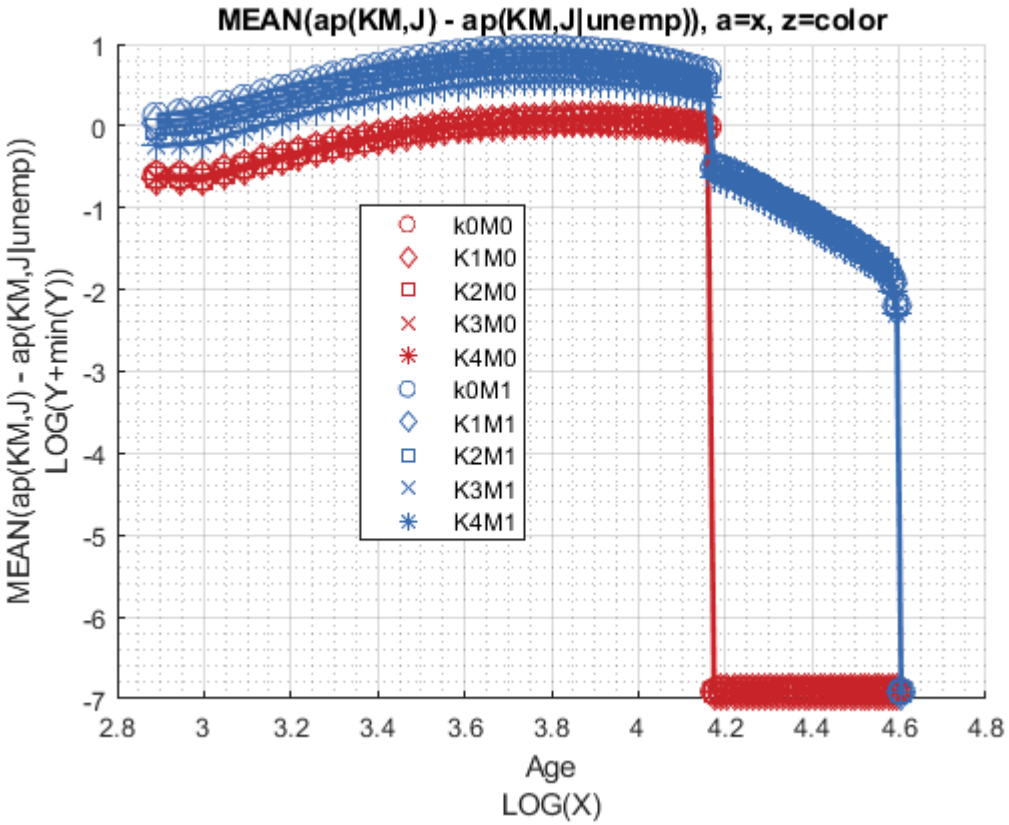




Graph Mean Savings Choices Change:

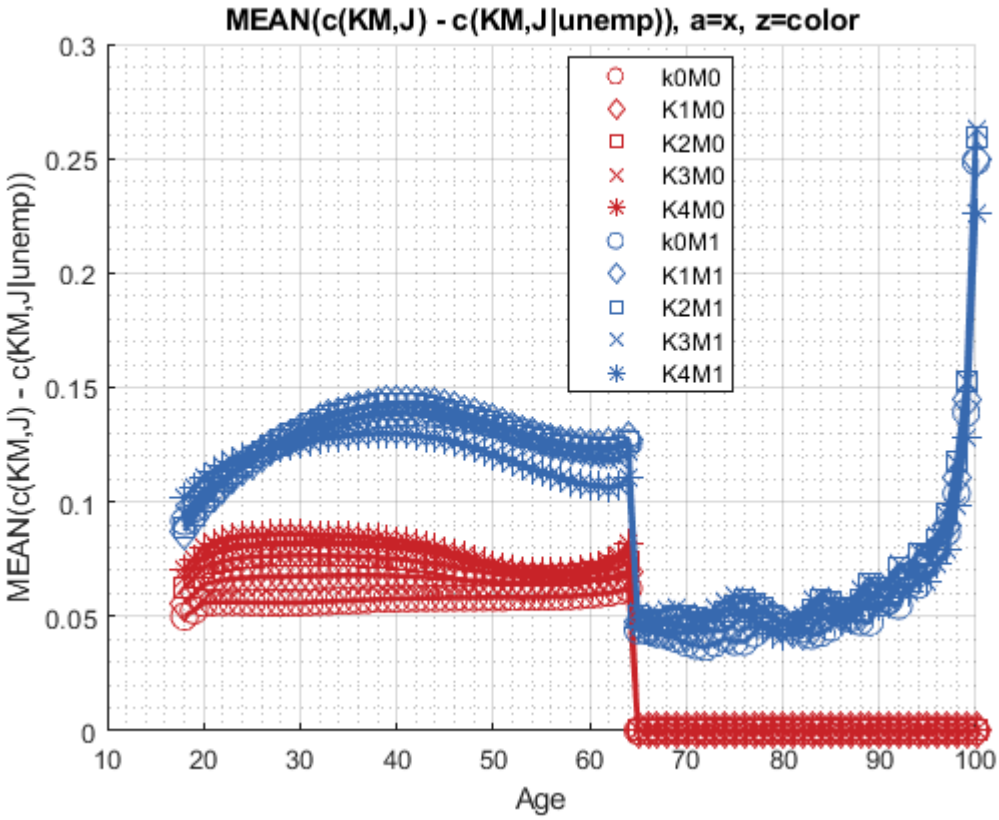
```
mp_support_graph('cl_st_graph_title') = {'MEAN(ap(KM,J) - ap(KM,J|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(ap(KM,J) - ap(KM,J|unemp))'};
ff_graph_grid((tb_az_ap{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

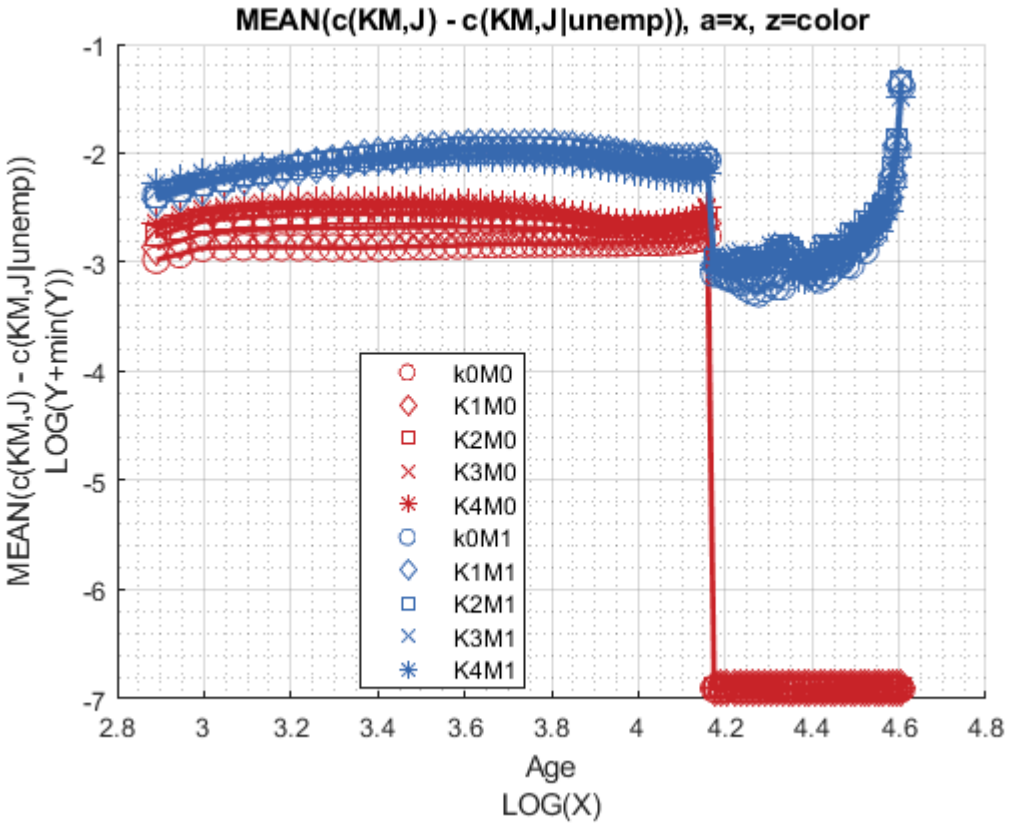




Graph Mean Consumption Change:

```
mp_support_graph('cl_st_graph_title') = {'MEAN(c(KM,J) - c(KM,J|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(c(KM,J) - c(KM,J|unemp))'};
ff_graph_grid((tb_az_c{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```





Analyze Education 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 = ["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(v(EKM,J) - v(EKM,J|unemp)), MEAN(ap(EM,J) - ap(EM,J|unemp)), MEAN(c(EM,J) - c(EM,J|unemp))

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
tb_az_v = ff_summ_nd_array("MEAN(v(EM,J) - v(EM,J|unemp))", V_VFI_unemp_drop, true, ["mean"], 3
```

```
xxx  MEAN(v(EM,J) - v(EM,J|unemp))  xxxxxxxxxxxxxxxxxxxxxxxxxx
    group    edu    marry    mean_age_18    mean_age_19    mean_age_20    mean_age_21    mean_age_22    mean_age_23
    _____    ___    _____    ___________    ___________    ___________    ___________    ___________    ___________

      1       0       0         0.98417        0.96522        0.94504        0.92586        0.90827        0.89213
```

2	1	0	0.90037	0.87569	0.84826	0.8121	0.78137	0.75521
3	0	1	1.0511	1.0316	1.0114	0.99333	0.97709	0.96249
4	1	1	0.9471	0.92052	0.89256	0.86506	0.84177	0.8221

```
% Aprime Choice
tb_az_ap = ff_summ_nd_array("MEAN(ap(EM,J) - ap(EM,J|unemp))", ap_VFI_unemp_drop, true, ["mean"
```

xxx MEAN(ap(EM,J) - ap(EM,J|unemp)) xxxxxxxxxxxxxxxxxxxxxxxxxxx

group	edu	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	0	0	0.54413	0.54211	0.53973	0.56238	0.58448	0.60603
2	1	0	0.52244	0.51648	0.50989	0.56245	0.61559	0.66865
3	0	1	0.93049	0.95921	0.9882	1.0448	1.1013	1.1573
4	1	1	0.99745	1.0306	1.0639	1.1617	1.2608	1.36

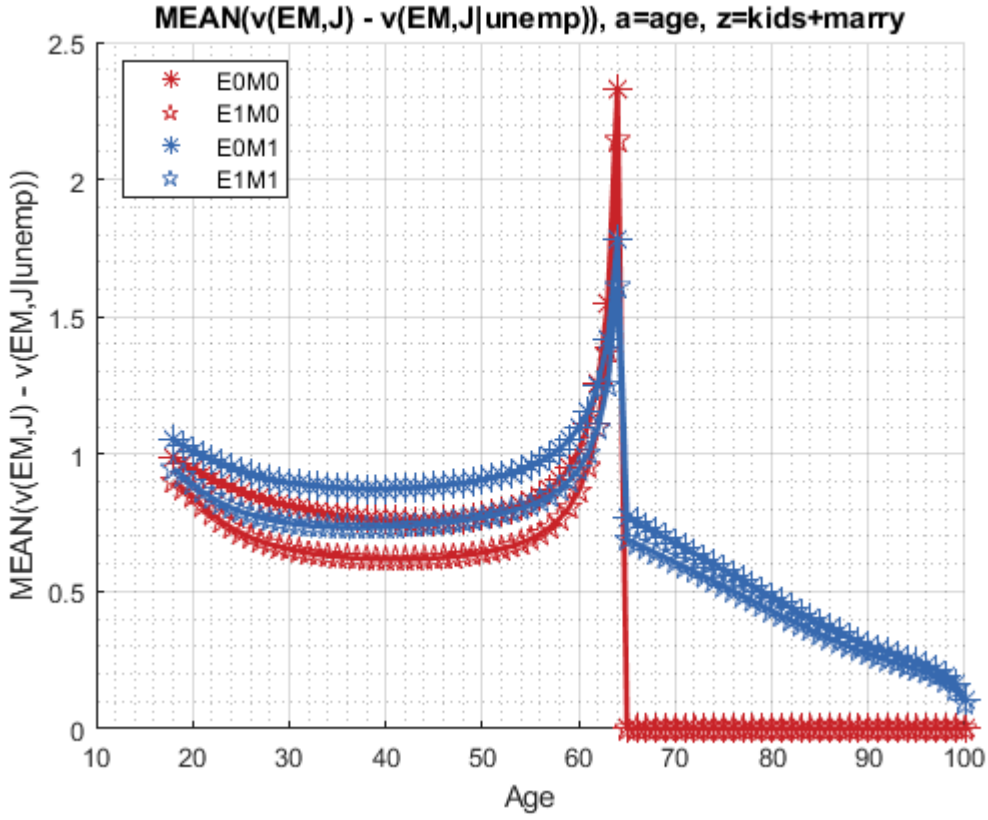
```
% Consumption Choices
tb_az_c = ff_summ_nd_array("MEAN(c(EM,J) - c(EM,J|unemp))", cons_VFI_unemp_drop, true, ["mean"]
```

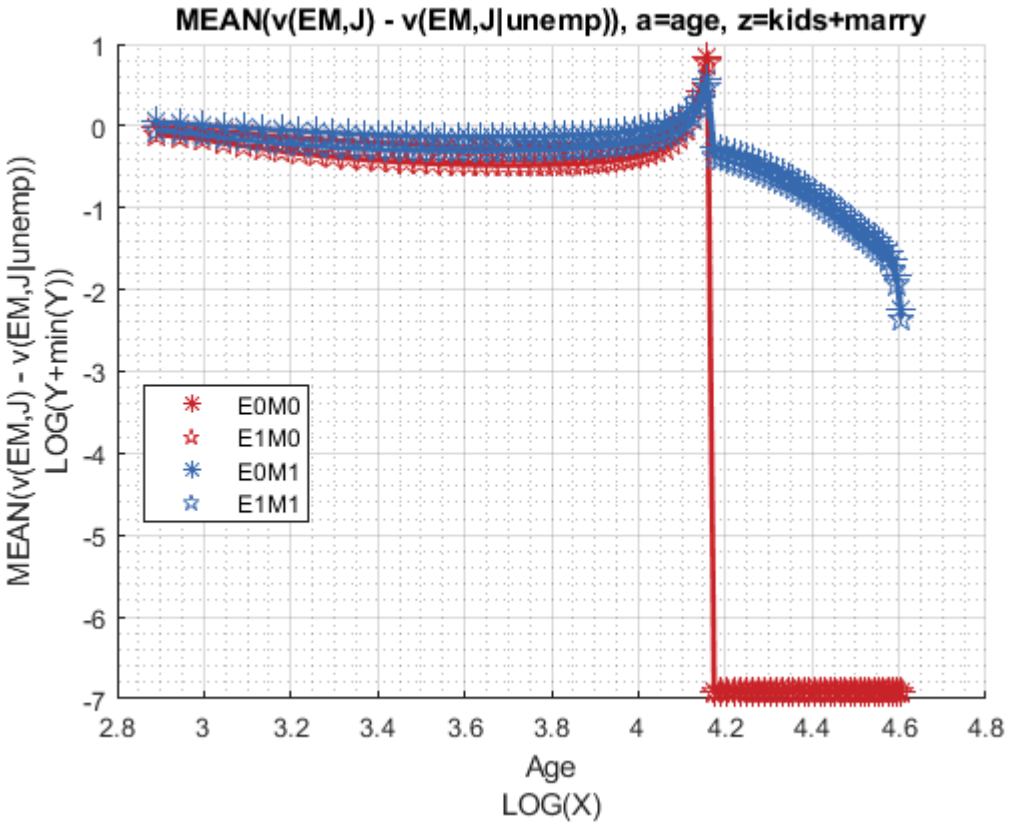
xxx MEAN(c(EM,J) - c(EM,J|unemp)) xxxxxxxxxxxxxxxxxxxxxxxxxxx

group	edu	marry	mean_age_18	mean_age_19	mean_age_20	mean_age_21	mean_age_22	mean_age_23
1	0	0	0.050247	0.052266	0.054642	0.055442	0.05623	0.056944
2	1	0	0.071936	0.077892	0.08448	0.086172	0.087244	0.087835
3	0	1	0.079086	0.082612	0.086438	0.089119	0.091706	0.09429
4	1	1	0.10685	0.11333	0.12031	0.12499	0.12887	0.13241

Graph Mean Values Change:

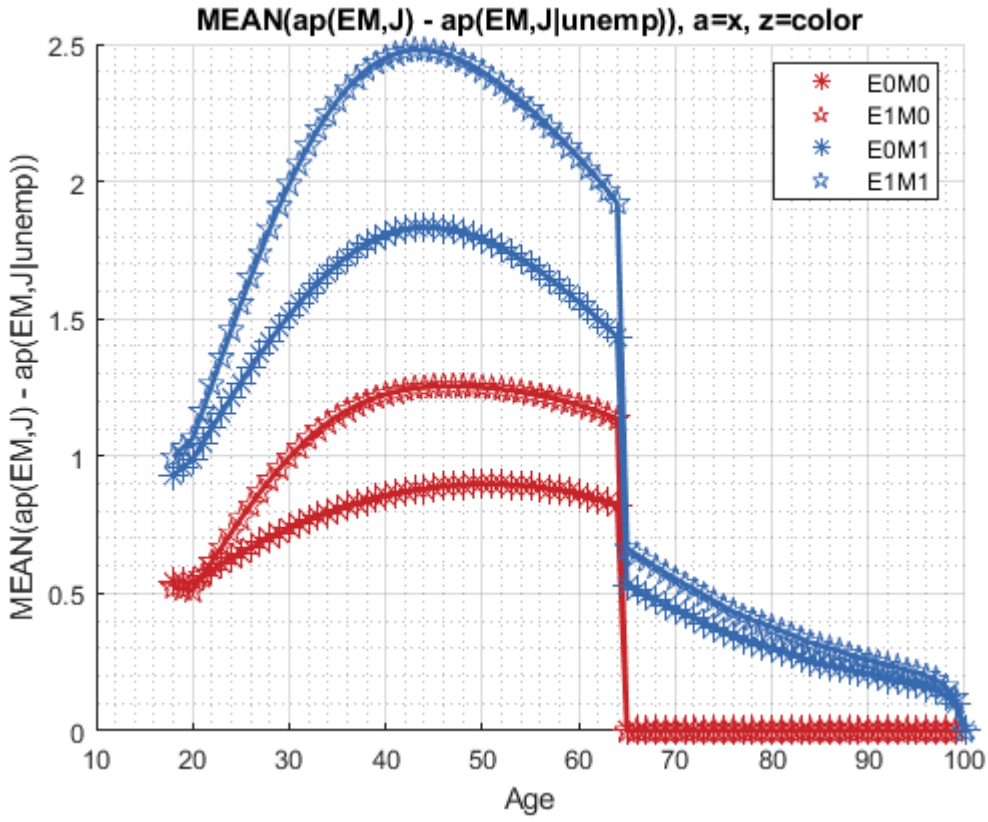
```
mp_support_graph('cl_st_graph_title') = {'MEAN(v(EM,J) - v(EM,J|unemp)), a=age, z=kids+marry'};
mp_support_graph('cl_st_ytitle') = {'MEAN(v(EM,J) - v(EM,J|unemp))'};
ff_graph_grid((tb_az_v{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

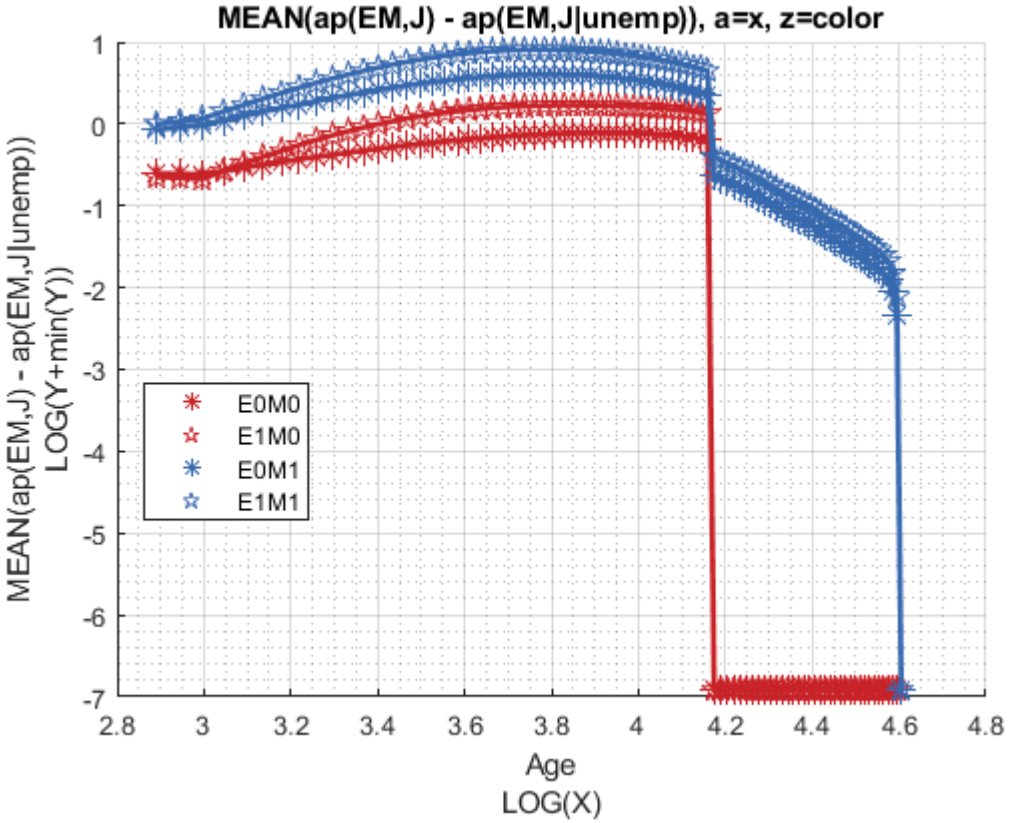




Graph Mean Savings Choices Change:

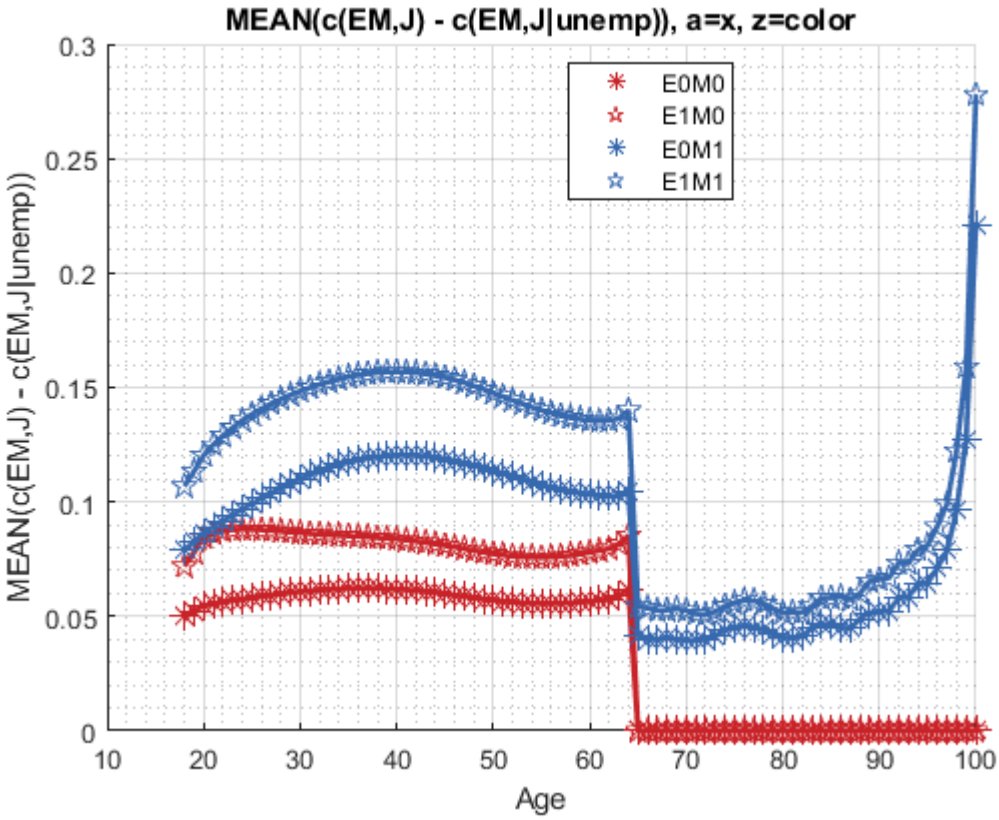
```
mp_support_graph('cl_st_graph_title') = {'MEAN(ap(EM,J) - ap(EM,J|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(ap(EM,J) - ap(EM,J|unemp))'};
ff_graph_grid((tb_az_ap{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```

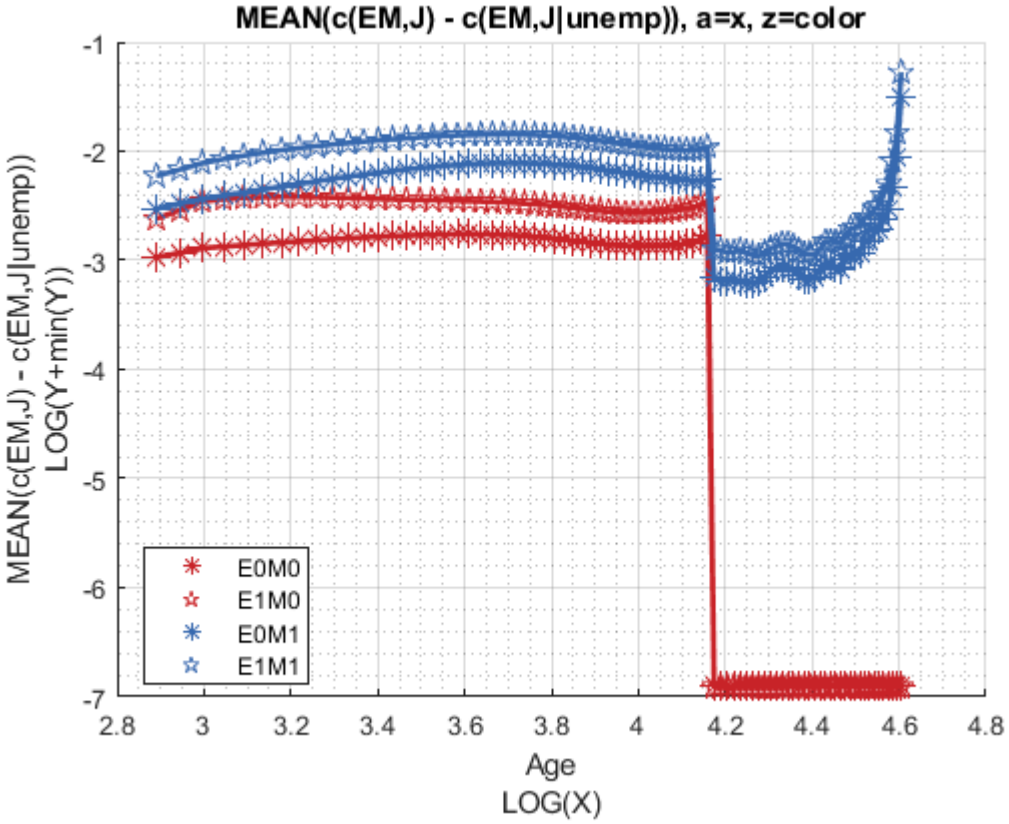




Graph Mean Consumption Change:

```
mp_support_graph('cl_st_graph_title') = {'MEAN(c(EM,J) - c(EM,J|unemp)), a=x, z=color'};
mp_support_graph('cl_st_ytitle') = {'MEAN(c(EM,J) - c(EM,J|unemp))'};
ff_graph_grid((tb_az_c{1:end, 4:end}), ar_row_grid, age_grid, mp_support_graph);
```




MEAN(c(EM,J) - c(EM,J|unemp)), a=x, z=color
MEAN(c(EM,J) - c(EM,J|unemp))
LOG(Y+min(Y))
-1
-2
-3
-4
-5
-6
-7
2.8
3
3.2
3.4
3.6
3.8
4
4.2
4.4
4.6
4.8
Age
LOG(X)
E0M0
E1M0
E0M1
E1M1