Simulating unemployment insurance in EUROMOD: *Imputing contribution histories*

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Introduction

- OECD project
- Work in progress
- Results embargoed (and incomplete)
- Discuss here the methodological implications

Background

- Unemployment Insurance (UI) reform is currently under way in Greece
- OECD has been appointed to consult the Greek government
- We have been commissioned by the OECD to simulate the impact of the proposed reforms using EUROMOD

UI benefit in Greece is contributory

Contributory record required (days)		UI Duration
Past 14 months (excl. 2 months)	Past 2 years (excl. 2 months)	(in months)
125-149	200	5
150-179	250	6
180-219	300	8
220-249		10
250+		12
210+, if aged 49+	350+	12
125+, if lifetime work days 4050+	200+	12

Note: In the case of first-time claimants, the duration of UI benefit receipt is a function of their contributory record either over the past 14 months or over the last two years (in both cases, excluding the last two months). In the case of repeat claimants, it is a function of their contributory record over the past 14 months (excluding the last two months) alone, subject to an overall ceiling of 400 days of UI benefit receipt over the last four years.

UIB simulation in EUROMOD as things stand

- SILC data
  - Benefit duration under-reported (truncated data)
  - Benefit amount reported as in income year
- Baseline
  - partly simulated in EUROMOD (amount uprated to policy year)
  - partly read off SILC data (receipt and duration)
- Reforms
  - SILC unsuitable for simulating reforms making benefits a function of contributions over a long(er) period

Contribution histories in SILC

- Contribution information imperfect
  - Months of employment in reference year
  - Months of work experience over lifetime
- Impute contribution histories
  - If current benefit duration is contribution-related, duration of receipt as reported in SILC can be used to infer length of contributory record
  - But
    - Truncated data: receiving UIB from 1 September 2018 to 31 May 2019 appears in SILC 2020 as a 5-month (rather than a 9-month) spell
    - Multiple spells: actual duration may be capped if the unemployed person has received UIB before (as in EL)
- How can these obstacles be overcome?

Available options

- Use data from the longitudinal panel in SILC
  - Drawback: small *n*
- Use data from other longitudinal panels (such as SOEP or BHPS)
  - Drawback: not available in all countries
- Use administrative (micro)data from Public Employment Services
  - Drawback: may be confidential in some countries
- Use aggregate administrative data from PES (in table form)
  - Drawback: less granular; need to rely on assumptions

Our approach

- Aggregate administrative data (in the form of summary tables) from *ΔΥΠΑ (*the Greek PES)

- UB claimants by age group and gender:
  - Duration of receipt up to the point of data collection (mid-month)
  - Months of contributions in the two years prior to the unemployment spell (separately for the first and the second years)

- How can this information be incorporated in EUROMOD?

Administrative Data

Distribution of recipients by benefit duration

gender	age	Months	Jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov
female	below 25	0	302	272	247	221	183	286	409	515	411	1900	3325
female	below 25	1	587	558	456	328	320	336	583	728	444	996	4061
female	below 25	2	2220	540	508	390	273	282	303	573	506	390	957
female	below 25	3	1710	1631	416	403	315	236	254	284	383	426	347
female	below 25	4	439	1354	1549	304	287	279	212	228	251	302	395
female	below 25	5	172	372	999	739	206	224	232	199	187	217	252
female	below 25	6	170	147	270	471	232	144	183	189	163	155	194
female	below 25	7	105	154	132	231	267	172	118	169	156	142	136
female	below 25	8	73	76	109	84	135	157	125	78	111	103	105
female	below 25	9	34	69	65	98	61	96	137	110	61	96	94
female	below 25	10	30	28	47	54	65	49	70	93	76	48	70
female	below 25	11	24	18	18	24	28	42	13	39	40	25	31
female	below 25	12	0	0	0	0	0	0	0	0	0	0	0
female	25-34	0	2034	1668	1511	1284	1173	3519	5897	3738	1727	6664	10941
female	25-34	1	3499	3309	2559	2211	1968	2161	13976	7606	2501	3741	13394
female	25-34	2	10932	3114	2847	2231	1857	1684	1991	13817	3799	2153	3583
female	25-34	3	7816	6669	2410	2283	1840	1603	1553	1844	4491	2722	1800
female	25-34	4	2387	5278	5696	1880	1777	1543	1429	1391	1494	2899	2281
female	25-34	5	1237	2058	4014	3138	1344	1475	1332	1318	1200	1264	2025
female	25-34	6	1535	1072	1621	2306	1575	1020	1243	1107	1104	1040	1127
female	25-34	7	1135	1298	981	1473	1619	1261	923	1193	1026	985	911
female	25-34	8	665	855	1026	687	1114	1212	971	715	915	825	822
female	25-34	9	578	618	728	910	567	957	1074	861	627	822	744
female	25-34	10	529	469	492	587	703	493	815	864	731	508	704
female	25-34	11	224	238	286	227	275	308	190	397	348	323	261
female	25-34	12	0	0	0	0	0	0	1	0	0	0	0

Administrative Data

Distribution of recipients by contribution history

gender	age	Months of contributions in months 1-12 prior to becoming unemployed	Months of contributions in months 13-24 prior to becoming unemployed												
			0	1	2	3	4	5	6	7	8	9	10	11	12
female	below 25	0	54	7	9	3	8	15	14	10	7	8	6	9	5
female	below 25	1	6	2	1	1	4	2	3	3	2	5	7	12	7
female	below 25	2	3	1	1	2	8	16	11	13	8	8	8	20	16
female	below 25	3	2	1	1	18	87	73	39	23	13	24	18	30	43
female	below 25	4	2	1	2	12	237	184	106	44	27	18	26	45	46
female	below 25	5	1	1	2	8	92	249	187	46	24	25	30	40	39
female	below 25	6	1	2	1	2	29	95	208	78	33	28	30	43	57
female	below 25	7	0	1	1	3	16	25	49	50	25	27	21	45	59
female	below 25	8	2	0	1	3	16	19	24	24	34	32	32	42	54
female	below 25	9	1	1	2	5	20	23	23	20	25	42	35	63	70
female	below 25	10	1	1	2	6	13	22	23	21	20	25	50	66	79
female	below 25	11	1	1	1	6	16	28	28	21	24	38	77	204	159
female	below 25	12	1	1	7	4	7	17	22	22	39	55	78	203	892
female	25-34	0	181	43	55	36	62	117	155	225	302	225	171	145	94
female	25-34	1	16	3	10	10	15	23	33	42	55	46	45	89	98
female	25-34	2	15	5	8	7	30	62	71	54	60	54	62	109	152
female	25-34	3	15	5	6	35	240	208	139	96	86	93	90	167	211
female	25-34	4	12	4	6	55	1,269	807	343	176	115	111	108	189	276
female	25-34	5	5	4	5	26	405	1,252	840	259	143	118	130	230	261
female	25-34	6	2	2	7	24	158	412	1,182	443	170	146	110	211	304
female	25-34	7	5	3	9	16	76	122	259	513	285	235	132	221	296
female	25-34	8	5	2	4	14	52	88	120	226	788	564	161	232	332
female	25-34	9	4	9	12	19	54	80	109	110	228	951	269	282	383
female	25-34	10	9	9	19	28	59	79	96	89	120	190	489	364	406
female	25-34	11	7	20	25	39	90	123	137	112	162	195	585	2,049	1,056
female	25-34	12	9	22	33	52	93	168	207	263	313	535	752	2,433	10,247

Synthetic dataset

	month														
Duration	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec		start month	month	year
Months	1	2	3	4	5	6	7	8	9	10	11	12				
0	1469	1062	935	835	738	1696	3499	1459	1021	4578	8294	2097		-3	Nov	2017
1	2776	2245	1609	1338	1192	1282	4425	4399	1245	2235	9510	10114		-2	Nov	2017
2	7827	2394	1890	1376	1116	978	1145	4286	2076	1061	2126	9129		-1	Nov	2017
3	5057	4015	1742	1471	1112	919	865	1008	1763	1399	884	1901		0	Dec	2017
4	1236	2722	3116	1273	1108	891	796	754	803	1183	1115	771		1	Jan	2018
5	600	1044	2021	1647	876	868	720	683	621	660	900	955		2	Feb	2018
6	737	502	793	1128	757	568	694	568	556	518	556	710		3	Mar	2018
7	582	633	451	717	777	604	509	656	523	497	455	518		4	Apr	2018
8	410	475	525	333	543	585	474	407	520	426	425	396		5	May	2018
9	435	385	424	471	281	470	523	437	367	468	396	402		6	Jun	2018
10	318	359	318	362	394	247	404	432	376	315	405	358		7	Jul	2018
11	141	159	182	150	160	180	98	195	186	165	153	376		8	Aug	2018
12	0	0	0	0	0	0	0	0	0	0	0	23		9	Sep	2018
13	0	0	0	0	0	0	0	0	0	0	0	0		10	Oct	2018
14	0	0	0	0	0	0	0	0	0	0	0	0		11	Nov	2018
15	0	0	0	0	0	0	0	0	0	0	0	0		12	Dec	2018
														13	Jan	2019
														14	Feb	2019
														15	Mar	2019
														16	Apr	2019
														17	May	2019
														18	Jun	2019
														19	Jul	2019
														20	Aug	2019
														21	Sep	2019
														22	Oct	2019
														23	Nov	2019

- Create dataset of UB claimants

Synthetic dataset

- Create a synthetic panel dataset of 24 months
- Logit regression to impute exit from unemployment spell (and hence allow for actual duration of benefit receipt being shorter than potential duration in case of early re-entry to employment)
- Impute contribution histories (by age group and gender), consistent to duration of benefit receipt, under current rules

Matched dataset

- Match synthetic dataset with SILC
  - By age group, gender, and length of UB receipt
- Introduce contribution history and length of unemployment spell in EUROMOD

EUROMOD UI Simulation Revisited

- Fully simulate UI in Greece
  - Benefit level and duration
  - … based on imputed contribution history
  - … and imputed exit from unemployment spell
- Approximation of the baseline
  - Improved accuracy relative to current module
- Flexibility in analyzing reforms
  - … including those linking benefit to contributions over a long(er) period

EUROMOD UI
Next steps

- In principle, our procedure for imputing contribution histories based on administrative data may be applied to other countries
- … and may be of interest to the respective National Teams

EUROMOD UI Next steps

- Hope to present full results at EUROMOD annual meeting / research workshop 2024!

Thank you!