

Estimation of social and economic characteristics of immigrants

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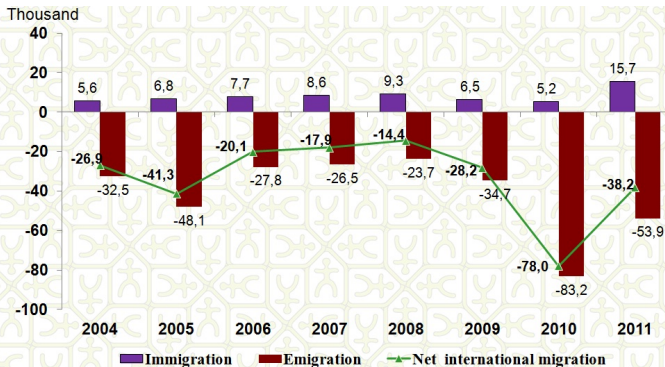
Statistics Lithuania , Mykolas Romeris University

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- LT international migration
- Portrait of immigrant
- Estimation characteristics of immigrants (EU-SILC)
- Simulation study

LT data summary

International migration flows



¹ In 2004–2009, the number of emigrants has been estimated based on the data of the declaration of the place of residence and the results of the Survey on Undeclared Emigration, in 2010–2011 – by data of the declaration of the place of residence.

Immigration is the arrival in a country from another country with the intention to take up permanent residence, or for a period longer than 12 months.

The Portrait of Immigrant, 2011.

- 15.6 thousand persons immigrated to Lithuania.
- 89 per cent of the total number of immigrants (or 14 thousand persons) returned to Lithuania were citizens of Republic of Lithuania.
- The same percent of women and men immigrated.
- Majority (71 per cent) of returning emigrants were citizens of Republic of Lithuania aged 20-39.
- Almost half persons of immigrants were coming back from UK, Ireland, Norway.

Sources of estimation migration



- Population register
- LFS
- EU-SILC

More characteristics of immigrants

- Employment status. (Source: LFS)



- Education. (Source: LFS)



- Quality of life. Social inclusion. (Source: EU-SILC)



- Artificial Population is the modified EU-SILC sample 2010.
- Population size is about 255 thous. persons.
- Simple random stratified sample is used. 7 strata are used.
- Sample size is 2000.
- Replication number is $M = 1000$.

Variables of interest:

- Permanent residents (Res);
- Immigrants, who immigrated before year 2000 (Imm1);
- Immigrants, who immigrated between period 2001-2010 (Imm2);
- Mean disposable income;
- Poverty rate.

Breakdowns:

- Strata: 1,...,7;
- Employment status: employed, non-employed;
- Educational level.

- Horvitz-Thompson Estimator (HT).
- Generalized Regression Estimator (GREG-1).
Auxiliary variables: number of person by sex-age groups in strata.
- Generalized Regression Estimator (GREG-2).
Auxiliary variables: number of person by age groups in strata, number of immigrants by age groups.

Quality measures of estimators

- Absolute relative bias *ARB*

$$ARB(\hat{t}_d) = \frac{\left| \frac{1}{M} \sum_{m=1}^M \hat{t}_d - t_d \right|}{t_d}$$

- Relative root mean squared error *RRMSE*

$$RRMSE(\hat{t}_d) = \frac{\sqrt{\frac{1}{M} \sum_{m=1}^M (\hat{t}_d^m - t_d)^2}}{t_d}$$

Estimation of resident population and immigrants by strata

Estimator	POP	HT		GREG 1		GREG 2	
		ARB,%	RRMSE,%	ARB,%	RRMSE,%	ARB,%	RRMSE,%
				1 strata			
Res	40120	0.029	1.770	2.010	6.579	0.545	1.818
Imm 1	3680	0.388	18.650	1.630	19.329	1.006	18.908
Imm 2	320	9.768	25.788	7.586	25.056	77.709	38.492
				2 strata			
Res	28640	0.004	0.977	1.990	6.392	1.049	1.237
Imm 1	240	18.844	38.939	16.362	37.654	19.621	30.807
Imm 2	380	5.186	23.157	3.095	22.844	78.938	39.646
				3 strata			
Res	13920	0.075	4.040	1.876	7.326	0.684	4.111
Imm 1	3120	0.518	17.654	2.481	18.634	0.012	18.063
Imm 2	120	66.486	57.874	62.843	55.635	66.703	38.832
				4 strata			
Res	8620	0.389	4.458	1.528	7.306	1.048	4.487
Imm 1	1240	2.857	30.173	4.618	30.646	2.154	30.364
Imm 2	80	117.288	92.237	113.811	91.498	56.513	59.768
				5 strata			
Res	8880	0.037	4.170	2.055	7.637	0.257	4.113
Imm 1	1180	0.550	30.577	1.480	30.710	0.835	20.814
Imm 2	40	75.631	46.452	65.475	45.980	24.862	36.545
				6 strata			
Res	60880	0.022	1.482	2.018	6.438	0.614	1.573
Imm 1	6120	0.219	14.272	1.675	15.550	0.927	14.414
Imm 2	540	1.430	47.128	0.552	47.033	79.471	40.039
				7 strata			
Res	78240	0.022	1.252	2.004	6.428	0.577	1.357
Imm 1	7700	0.147	12.320	1.800	13.573	0.751	12.506
Imm 2	640	1.674	43.739	0.379	43.539	49.375	49.853

Estimation of resident population and immigrants by employment status

Estimator	POP	HT		GREG 1		GREG 2	
		ARB,%	RRMSE,%	ARB,%	RRMSE,%	ARB,%	RRMSE,%
				Employed			
Res	91480	46.545	28.875	43.655	30.582	47.507	28.422
Imm 1	9960	28.150	22.821	25.671	24.631	28.970	22.434
Imm 2	920	83.308	64.763	79.549	65.397	63.307	32.104
				Non-employed			
Res	147820	28.806	46.657	30.228	44.647	28.350	47.621
Imm 1	13320	21.078	30.998	22.620	29.829	20.625	31.827
Imm 2	1200	61.801	47.381	62.488	44.208	92.019	44.109

Estimation of resident population and immigrants by highest ISCED attained

Estimator	POP	HT		GREG 1		GREG 2	
		ARB,%	RRMSE,%	ARB,%	RRMSE,%	ARB,%	RRMSE,%
Primary education							
Res	21100	0.104	7.991	2.046	9.966	0.755	8.117
Imm 1	2080	0.103	24.304	1.793	24.879	0.065	24.648
Imm 2	120	13.092	37.977	14.216	30.942	4.345	25.332
Lower secondary education							
Res	35660	0.299	5.678	1.703	8.466	1.160	5.814
Imm 1	3900	0.054	18.597	1.917	19.186	0.187	18.817
Imm 2	260	17.102	35.332	14.964	34.425	94.145	37.607
(Upper) secondary education							
Res	56740	0.252	4.205	2.212	7.610	0.540	4.271
Imm 1	6600	0.116	14.145	2.042	15.320	0.565	14.279
Imm 2	740	0.759	41.211	1.310	40.946	94.962	40.257
Post-secondary non tertiary education							
Res	44480	0.118	5.047	2.115	7.935	0.676	5.099
Imm 1	7000	0.108	13.248	2.021	14.773	0.325	13.453
Imm 2	360	6.390	57.093	4.309	56.175	94.680	49.531
First stage of tertiary education							
Res	45900	0.151	4.775	1.825	7.860	0.971	4.903
Imm 1	3440	0.130	19.200	1.897	19.783	0.405	19.483
Imm 2	640	1.396	43.918	0.676	43.724	94.930	50.186
Second stage of tertiary education							
Res	820	0.069	39.206	1.929	39.125	1.348	39.662
Imm 1	120	67.738	60.749	65.227	69.809	70.291	43.081

Estimation of mean disposable income

Estimator	POP	HT		GREG 1		GREG 2	
		ARB,%	RRMSE,%	ARB,%	RRMSE,%	ARB,%	RRMSE,%
				1 strata			
Res	21771.7	0.035	3.871	0.048	3.869	0.053	3.875
Imm 1	20102.0	0.025	17.728	0.007	17.935	0.038	18.025
Imm 2	13785.4	0.303	42.388	0.125	42.562	0.734	42.393
				2 strata			
Res	20321.2	0.093	4.799	0.091	4.822	0.108	4.818
Imm 1	17557.4	0.415	37.366	0.360	37.402	0.367	37.494
Imm 2	19917.7	0.846	43.344	0.796	43.418	0.805	43.348
				3 strata			
Res	21133.7	0.018	7.143	0.035	7.152	0.027	7.182
Imm 1	19967.6	0.291	11.697	0.270	11.731	0.223	11.774
Imm 2	18744.1	3.096	35.312	3.109	35.346	3.096	35.312
				4 strata			
Res	18973.3	0.125	8.722	0.121	8.735	0.121	8.742
Imm 1	18602.2	0.443	24.708	0.450	24.902	0.433	24.883
Imm 2	13224.4	2.932	48.035	2.799	47.989	2.942	48.029
				5 strata			
Res	16843.1	0.415	6.524	0.405	6.546	0.392	6.574
Imm 1	18310.9	0.041	18.763	0.050	18.711	0.034	18.828
Imm 2	21765.7	2.534	48.802	2.483	48.803	2.534	48.802
				6 strata			
Res	16066.2	0.026	2.827	0.043	2.835	0.044	2.847
Imm 1	17087.0	0.005	8.321	0.006	8.311	0.014	8.340
Imm 2	10450.3	2.813	35.028	2.705	35.080	1.439	37.422
				7 strata			
Res	14825.1	0.338	4.459	0.329	4.479	0.350	4.505
Imm 1	13922.5	0.117	8.230	0.148	8.261	0.175	8.270
Imm 2	13551.6	1.109	35.974	1.181	36.093	0.907	35.662

Estimation of Poverty rate

Estimator	POP	HT		GREG 1		GREG 2	
		ARB,%	RRMSE,%	ARB,%	RRMSE,%	ARB,%	RRMSE,%
				1 strata			
Res	11.0	0.186	15.906	0.162	15.928	0.373	15.961
Imm 1	10.3	3.816	39.804	4.034	39.929	4.148	40.037
Imm 2	43.8	1.831	40.927	2.005	41.001	1.049	41.201
				2 strata			
Res	11.5	1.623	18.987	1.711	19.092	2.270	19.165
Imm 1	8.3	6.290	53.794	6.142	54.362	7.136	53.194
Imm 2	21.1	7.458	34.155	7.197	34.186	7.358	34.132
				3 strata			
Res	15.5	0.001	22.460	0.019	22.492	0.230	22.619
Imm 1	13.5	1.988	54.523	2.074	54.421	1.971	54.541
Imm 2	50.0	3.778	88.763	3.814	88.827	3.778	88.763
				4 strata			
Res	12.5	0.751	32.319	0.627	32.436	0.470	32.430
Imm 1	9.7	0.975	64.494	0.946	64.973	1.017	65.075
Imm 2	25.0	5.166	56.671	5.014	56.855	5.240	56.632
				5 strata			
Res	13.7	1.689	30.020	1.577	29.880	2.018	30.088
Imm 1	13.6	3.652	56.307	3.537	56.293	2.054	56.920
				6 strata			
Res	17.4	0.870	10.078	0.758	10.119	0.436	10.194
Imm 1	14.4	2.095	35.909	1.962	35.793	2.233	36.087
Imm 2	59.3	2.132	46.689	2.015	46.826	1.592	46.959
				7 strata			
Res	28.5	0.342	6.434	0.310	6.458	0.015	6.466
Imm 1	25.5	1.321	21.874	1.390	21.963	1.146	22.010
Imm 2	21.9	0.971	39.121	0.939	39.471	0.456	38.605

THANK YOU FOR YOUR ATTENTION!

