

A General Method for Estimating the Number of Unauthorised Immigrants Using Standard Data Sources

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- Does one need special data sources to estimate the size of the unauthorised immigrant population?
- Are there simple indicators which might tell us something about its size?
- Can we do better than simple indicators?

First, something on stocks and flows

- Stock-to-flow ratios, under certain conditions, provide a measure of the expected duration of presence of persons in the stock

- Example:

outflow rate=50%						
year	population at beginning of year	inflow	outflow	population at end of year	average duration	
1	0	100	0	100	1,000000000	
2	100	100	50	150	1,333333333	
3	150	100	75	175	1,571428571	
4	175	100	87,5	187,5	1,733333333	
5	187,5	100	93,75	193,75	1,838709677	
6	193,75	100	96,875	196,875	1,904761905	
7	196,875	100	98,4375	198,4375	1,944881890	
8	198,4375	100	99,21875	199,21875	1,968627451	
9	199,21875	100	99,60938	199,609375	1,982387476	
10	199,609375	100	99,80469	199,8046875	1,990224829	

stock-to-flow ratio after ten years = 1,99805 = average years spent in the stock

What about stock-to-flow ratios for immigrants?

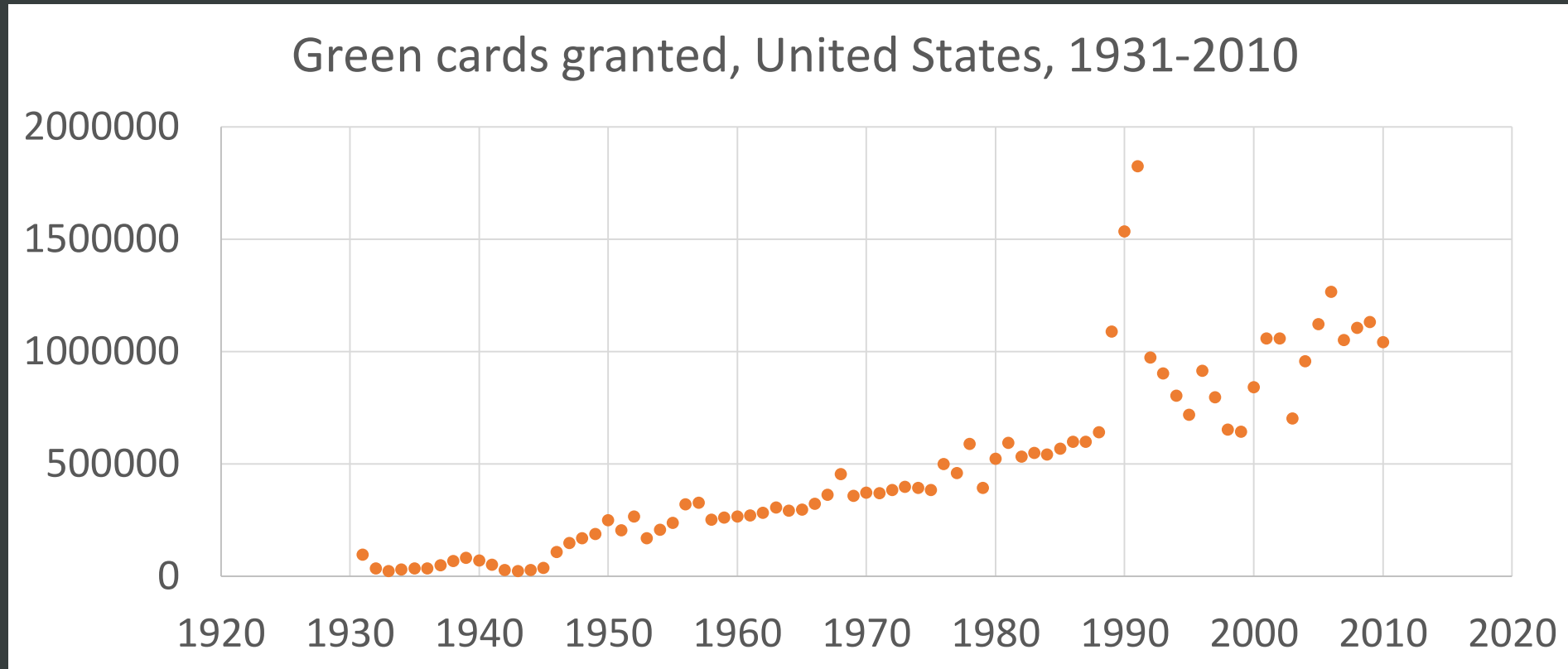
- If S (stock) includes the unauthorised population, then S / F , where F is the flow of authorised immigrants, will be inflated compared to S/F , where both S and F cover only the authorised.

Indicators of migration data coverage

	Census-stock-to-permanent-flow ratio (in years)	Ratio of change in census stocks 2000- 2010 to sum of permanent inflows 2000- 2010
Argentina	17	0,7
Barbados	89	2,0
Canada	27	0,6
Costa Rica	43	1,6
United States	37	0,9
Spain	14	0,9
Sweden	14	0,5

Source: International Migration in the Americas (OECD/OAS)

A look at authorised immigration for the United States



- Source: DHS Yearbook of Immigration Statistics, Table 1
- Stock of immigrants 2010 = 39 955 854 \leftrightarrow Sum of green cards 1931-2010 = 38 637 335

First, a back-of-the-envelope estimate of the number of unauthorised immigrants

- 38 637 335 green cards were granted from 1931 to 2010
- In 2010 there were 39 955 854 immigrants in the US
- Some persons with green cards have left the country or have deceased, and some immigrants are unauthorised,
- OECD work suggests that something 2/3 to 3/4 of permanent immigrants in settlement countries like the US and Canada stay on.
- Neglecting deaths, that means that some 25 758K to 28 978K green card holders are still there, or that the number of unauthorised immigrants is between 10 978K and 14 197K.
- « Official estimate » for the US for 2010 => 11 384K

Problem: How do we obtain the stocks of authorised migrants when we know the inflows?

Some demographic accounting, using real US data on green cards for inflows

- Remember this?

Annual outflow rate=1,48%

year	Immigrant population at beginning of year	inflow	outflow	Immigrant population at end of year
2001	31 100 000	1 058 902	460 280	31 698 622
2002	31 698 622	1 059 356	469 140	32 288 838
2003	32 288 838	703 542	477 875	32 514 506
2004	32 514 506	957 883	481 215	32 991 174
2005	32 991 174	1 122 257	488 269	33 625 162
2006	33 625 162	1 266 129	497 652	34 393 638
2007	34 393 638	1 052 415	509 026	34 937 027
2008	34 937 027	1 107 126	517 068	35 527 085
2009	35 527 085	1 130 818	525 801	36 132 102
2010	36 132 102	1 042 625	534 755	36 639 972

But actual stock in 2010 was 39 955 854.

So increase in unauthorised over the decade = 3 315 882

The estimation methodology

- What we know :
 1. The authorised inflows => from administrative statistics
 2. The total number of immigrants (both authorised and unauthorised) => from census
 3. The average duration of residence of all immigrants (both authorised and unauthorised) => from census
- What we need to know:
 - The outflow (deaths + emigration) rates of authorised immigrants
 - If we had this, then we could estimate the unauthorised immigrant population without even having to use the information in 3. above
 - But we don't have this, so we will have to do something a bit more complicated
- Essentially, we obtain estimates by solving a system of 2 equations, for fixed values of the ratio of the average duration of the unauthorised relative to the authorised ($=r$).
- The system of equations yields estimates for a) the proportion of unauthorised immigrants and b) the outflow rate of authorised immigrants.

Results for the United States

r	Unauthorised immigrant population
0	5 295 815
0,25	6 263 165
0,5	7 606 706
0,55	7 906 243
0,75	9 528 539
1	12 264 939

- Estimates for extreme values of r (with $r=0$ or 1) are implausible
- $r=0.55$ corresponds to observed value of relative duration (tabulated by Jeff Passel)
- Not particularly great agreement with « official » figure (11 384K)
- Maybe stick with back-of-the-envelope estimation?

Why the poor agreement?

- Grants of green cards are not entries.
- Certain currently legal immigrants arrived earlier than the year when they received their green cards, because of
 - Regularisations
 - Adjustments (green cards granted to persons already present in the country)
- The effect of these is to bias the estimates downwards
- What is the precise impact of regularisations and adjustments?

The impact of regularisations and adjustments

- Assign 4 years to green card recipients from 1989-1991 (regularisations years)
- Add 3 years to durations for all immigrants to account for adjustments (this is approximately the additional duration required to achieve observed average duration values of authorised and unauthorised tabulated by Passel).
- Look at values for $r=0,55$:

Initial estimate	Modified to account for regularisations	Modified to account for adjustments
7 906	8 467	11 174

- The fact that green cards do not measure entries does indeed appear to be the problem.

Full range of estimates for US (incorporating impact of regularisations and adjustments)

r	Unauthorised population
0	7 786 391
0,25	9 079 116
0,5	10 808 190
0,55	11 174 690
0,75	13 046 416
1	15 816 882

Now for another country using the same methodology → United Kingdom

- International Passenger Survey (IPS) flows 1964 to 2011
 - Backdated from 1964 to 1931 using US trend data (???)
 - Results

r	Unauthorised immigrant population 2011
0	537 408
0,25	616 958
0,5	720 710
0,75	861 127
1	1 053 692

- Compare with LSE 2009 estimate range → 417K to 863K

Is the methodology more generally applicable to other countries?

- Need a data source which covers (in principle) the unauthorised → census.
- Need flow data which reflect real entries → presence of regularisations/changes of status in flows results in downward bias in estimate of unauthorised → regularisations/changes in status need to be reassigned to the year of entry
- Does not require 80 years of entry data => the same methodology can be applied to stock and duration data starting from a recent date in the past => for example, one could estimate the unauthorised who arrived within the past twenty years, with inflow data for the 20 years and stock and duration-of-residence data for persons present less than 20 years.
- One methodology applicable to all countries, using standard data sources
- Does not yield a single point estimate, but can provide a good indication of the size of the unauthorised immigrant population.

Complications and questions

- The method assumes a constant outflow rate for authorised immigrants over the estimation period → this assumption can be relaxed
- The estimator requires census data => only one observation every ten years (?)
 - May be updatable annually using lfs trend data for census-based statistics, as long as LFS covers unauthorised immigrants
- Estimates can be produced by certain characteristics (age, gender, nationality) provided the census and flow data can be disaggregated
- Can one bring in additional information that would allow one to make a point estimate?
 - Not clear yet if this could be possible
- Is this a good time to be putting estimates of the unauthorised immigrant population in the public domain?

Thank you for your attention.