Do "Immigrants Increase Unemployment of US Citizens?" An Empirical Examination of Trump's Campaign Rhetoric

University Honors Capstone - **Anna Jensen**

Why Study

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- **Specifically to analyze Trump's campaign rhetoric:**
- **Many different aspects for the argument for and against immigration into the US:**
  - **Negative views:**
    - Immigrants pose a risk to low-skilled natives workers' wages and employment.
    - Behavioral changes of natives including on taxation, interest rates, and wages which alter labor supply, human capital investment, and savings.
    - Immigrants could put pressure on government spending because they use up welfare.
    - Potential to cause unemployment and reduce the aggregate level of US output
  - **Positive views:**
    - Immigrants could be compliments to our own native workforce and combining them would create a more productive society with innovation.
    - Immigration could increase native incomes because of their comparative advantages in manual-intensive tasks, while natives have comparative advantages in communication tasks (when immigrants take the manual intense jobs, natives are forced to put their skills to use and therefore earn higher wages).
    - Immigrants could fill our high skilled/highly educated workers gap
    - Immigrants can increase beneficial trade between their home and host
- **Want to see the real facts, so we can have informed opinions and public policy**

Data

- Annual immigration (IMM), Gross Domestic Product (GDP), Unemployed Persons (UNEP)
- Data goes back to **1870** and up until 2015 (146 years worth of data)

Table-1: Average Annual Values of Immigration and Economic Conditions in USA by Decades (1870-2015) 2

Decades	GDP (PPP, 2011 Prices, Millions)	Percapita Income (PPP, 2011 Prices)	Unemployed Persons (in 000)	Number of Immigrants
1870-1879	186,332.60	4,154.06	818.40	274,213.70
	(21101.11)	(200.2832)	(320.7468)	(118461.5)
1880-1889	297,666.80	5,288.49	823.50	524,856.80
	(25051.27)	(110.2639)	(154.888)	(134461.3)
2000-2009	14,200,000.00	48,216.21	8,265.30	1,029,943.00
	(882013.5)	(1837.183)	(2332.003)	(159887.6)
2010-2015	15,900,000.00	50,303.37	11,741.83	1,032,400.00
	(613787.3)	(1239.032)	(2473.001)	(25823.23)
1870-2015	4,211,688.00	19,104.39	4,427.91	510,692.40
	(4814165)	(14762.54)	(3592.335)	(358499.5)
No. of Obsrvations	146	146	146	146

- Visible increasing trend in all variables of interest over time, except during the anomaly of the Great Depression

Table-2: Descriptive Statistics

	1870 - 2015			1870 - 1929			1951 - 2015		
	GDP (Millions, ln 2011 PPP Prices)	UNEP (in 1000)	IMMG	GDP (Millions, ln 2011 PPP Prices)	UNEP (in 1000)	IMMG	GDP (Millions, ln 2011 PPP Prices)	UNEP (in 1000)	IMMG
Mean	4,211,688	4,427.91	510,692.40	590,997	1,489.95	504,458.60	8,282,321	6,585.06	643,558
Median	2,074,701	2,925	401,660.50	500,447	1,205	439,730	7,003,324	6,770	559,100.50
Maximum	16,784,705	14,825	1,826,595	1,350,544	4,918	1,285,349	16,784,705	14,825	1,826,595
Minimum	157,539.40	437	23,068	157,539.40	437	110,618	2,331,553	1,834	170,434
Std. Dev.	4,814,165	3,592.34	358,499.50	347,106.50	907.33	293,335.60	4,529,382	3,031.62	362,775.90
Skewness	1.23	0.85	0.87	0.58	1.59	0.97	0.41	0.59	0.84
Kurtosis	3.25	2.76	3.38	2.16	6.07	3.16	1.81	3.13	3.26
Jarque-Bera	37.35	17.91	19.4	5.15	49.59	9.66	5.73	3.93	7.91
Probability	0	0	0	0.08	0	0.01	0.06	0.14	0.02
Pairwise Correlation (Pearson)									
GDP	1			1			1		
UNEP	0.711**	1		0.481**	1		0.762***	1	
IMMG	0.588***	0.285**	1	0.105*	0.129**	1	0.827***	0.681**	1
No. of Years	146	146	146	61	61	61	66	66	66

***, **, and * indicate statistical significance at p< 0.01, p<0.05 and p<0.10, respectively.

Fig. 1.1: Economic Conditions and Immigration Patters in the U.S.A. (1870-2015) 3

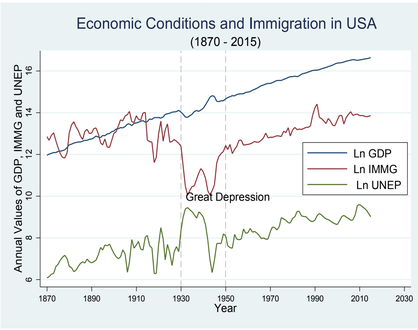


Table-3: Non-Stationarity Test Results (Null Hypothesis: the given variable is non-stationary (i.e., has a unit root)) 4

Variables	ADF Test			ADF-GLS Test			Philips -Perron test		
	SIC Lag	t-Stat	Critical Value (5%)	SIC Lag	t-Stat	Critical Value (5%)	t-Stat	Critical Value (5%)	
Log Levels									
ln(GDP)									
a) Intercept only	1	-0.937	-2.882	1	2.775	-1.943	-1.173	-2.881	
b) Intercept and trend	1	-4.084***	-3.441	1	-2.493	-2.986	-3.281	-3.441	
ln(UEP)									
a) Intercept only	2	-0.604	-1.943	2	-0.604	-1.943	-2.503	-2.881	
b) Intercept and trend	3	-4.776***	-3.442	3	-2.114	-2.988	-3.511	-3.441	
ln(IMG)									
a) Intercept only	0	-2.037	-2.881	0	-2.058	-2.581	-2.249	-2.881	
b) Intercept and trend	0	-2.231	-3.441	0	-2.169	-2.985	-2.439	-3.441	
First Difference									
D.ln(GDP)									
a) Intercept only	0	-9.178***	-2.882	0	-9.013***	-1.943	-9.028***	-2.882	
b) Intercept and trend	0	-9.182***	-3.441	0	-9.234***	-2.986	-9.185***	-3.441	
D.ln(UEP)									
a) Intercept only	1	-10.908***	-2.882	1	-10.857***	-1.943	-10.707***	-2.882	
b) Intercept and trend	1	-10.879***	-3.442	1	-10.903	-2.987	-10.666***	-3.441	
D.ln(IMG)									
a) Intercept only	1	-7.661***	-2.882	0	-8.865***	-1.943	-9.928***	-2.882	
b) Intercept and trend	4	-7.648***	-3.442	0	-9.744***	-2.986	-9.899***	-3.441	

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{i=p} \beta_{1i}\, \Delta GDP_{t-i} + \sum_{i=1}^{i=p} \beta_{2i}\, \Delta UNE_{t-i} + \sum_{i=1}^{i=p} \beta_{3i}\, \Delta IMM_{t-i} + \alpha_1 Z_{t-1} + \epsilon_{1t} \quad (6)$$

$$\Delta UNE_t = \varphi_0 + \sum_{i=1}^{i=q} \varphi_{1i}\, \Delta UNE_{t-i} + \sum_{i=1}^{i=q} \varphi_{2i}\, \Delta GDP_{t-i} + \sum_{i=1}^{i=q} \varphi_{3i}\, \Delta IMM_{t-i} + \lambda_1 Z_{t-1} + \epsilon_{2t} \quad (7)$$

$$\Delta IMM_t = \gamma_0 + \sum_{i=1}^{i=r} \gamma_{1i}\, \Delta IMM_{t-i} + \sum_{i=1}^{i=r} \gamma_{2i}\, \Delta GDP_{t-i} + \sum_{i=1}^{i=r} \gamma_{3i}\, \Delta UNE_{t-i} + \phi_1 Z_{t-1} + \epsilon_{3t} \quad (8)$$

Fig. 2: Economic Conditions and Immigration Patterns in the U.S.A. (1870-2015) *Differenced Series* 5

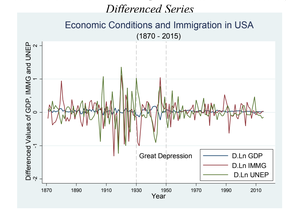


Table-4: Johansen Co-Integration Test 7

Unrestricted Cointegration Rank Test (Trace)
Hypothesized

No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value (5%)	Prob.**
None *	0.185739	36.3345	29.79707	0.0077
At most 1*	0.035882	17.979052	15.49471	0.04677
At most 2	0.021053	2.936266	3.841466	0.0866

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)
Hypothesized

No. of CE(s)	Eigenvalue	Max- Eigen Statistic	Critical Value (5%)	Prob.**
None *	0.185739	28.35544	21.13162	0.004
At most 1*	0.035882	18.042786	14.2646	0.0364
At most 2	0.021053	2.936266	3.841466	0.0866

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table-6: VEC Granger Causality/Block Exogeneity Wald Tests 8

Dependent variable: D(LOG(UNEP))

Excluded	Chi-sq	df	Prob.
D(LOG(IMMG))	12.62538	5	**0.0272**
D(LOG(GDP))	19.57614	5	**0.0015**
All	38.89005	10	**0.000**

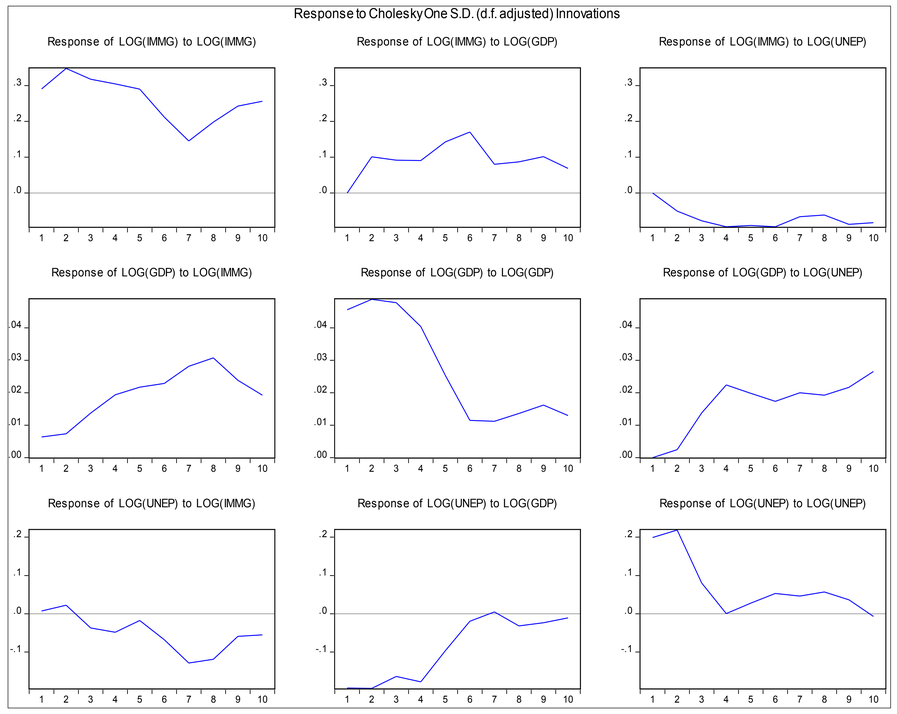
Dependent variable: D(LOG(GDP))

Excluded	Chi-sq	df	Prob.
D(LOG(IMMG))	11.231554	5	**0.0016**
D(LOG(UNEP))	7.495345	5	0.1863
All	13.41479	10	**0.0424**

Dependent variable: D(LOG(IMMG))

Excluded	Chi-sq	df	Prob.
D(LOG(GDP))	7.486527	5	**0.0467**
D(LOG(UNEP))	1.194086	5	0.9454
All	12.76189	10	0.2373

Response to Cholesky One S.D. (d.f. adjusted) Innovations 9



FINAL RESULTS

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I found 2 main things with my results:

1. There exists a long run relationship between US GDP, Unemployment, and Immigration Inflows
2. While we found bidirectional causality between GDP & Immigrant inflow, the relationship between immigration is unidirectional causality from immigration to unemployment
   a. So, looking at a 1 time shock in immigration (a one time increase) reveals a rise in GDP levels and a fall in unemployment. This is contradictory to Trump's campaign rhetoric.

- Results considered preliminary because data on immigrants not broken down by:
  - Broad geographical region, skill level, specific countries of origin\

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