

The Economics of International Migrations: Labor Market Effects

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Lecture 3

Effects on Income distribution and on Wages of “most vulnerable” workers

- Need to differentiate worker by skill
- Going beyond the “area approach”, i.e. the wage effect of immigrants in a city or state.
- Education and Experience as skills?
- Elasticity of substitution (relative wage elasticity) between skill groups
- Analysis Based on Ottaviano and Peri (2008)
 - All codes and data manipulations are available at my website

The very Debated “Distributional” Question

- **What is the impact of immigrants on real wage inequality of workers in the receiving country?**
 - In particular:
 - Focus on the “Unskilled” = Less Educated
 - In which time horizon? Short run response and long-run adjustment... what adjusts and how fast?
 - Where? At the national level or at the local (city-state) level?

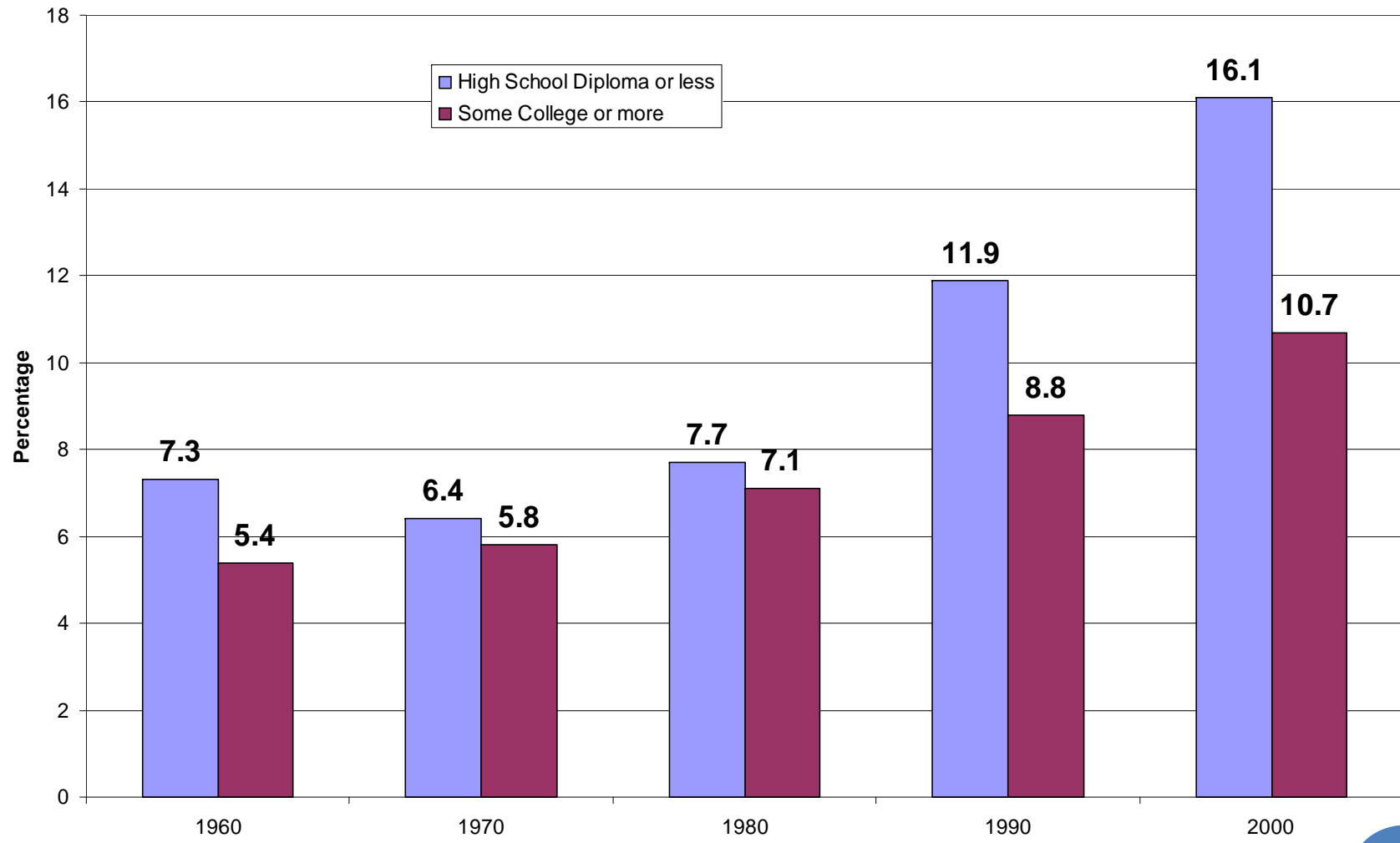
- **The main Idea: A National-Market model, in line with the previous international analysis and with the best Labor literature.**
 - Should have response of physical Capital, productivity and average wage compatible with the previous analysis
 - Should have a model (production function) of reference also compatible with what assumed above

The recent debate in the Literature

- Borjas (2003), - B 2003- Borjas and Katz (2007)-BK 2007- using national Data and an aggregate production function approach obtain:
 - Negative 4 to 5% effect in the long-run on real wage of unskilled (=high school dropouts) 1980-2000.
 - Negative 8 to 9% effect in the short-run on real wage of unskilled.

- Card (2001), (2007), (2009), Cortes (2006), Kugler and Yuskel (2006) Lewis and Card (2007). Using cross-cities or cross-states evidence obtain:
 - Between 0 and negative 1% in the long-run on real (or relative) wages of unskilled (defined sometimes using education and some times using education-occupation combination)
 - No evidence of displacement effect on employment/population.

Percentage of foreign-born in Employment by Education group, 1960-2000



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Issues confusing the academic debate

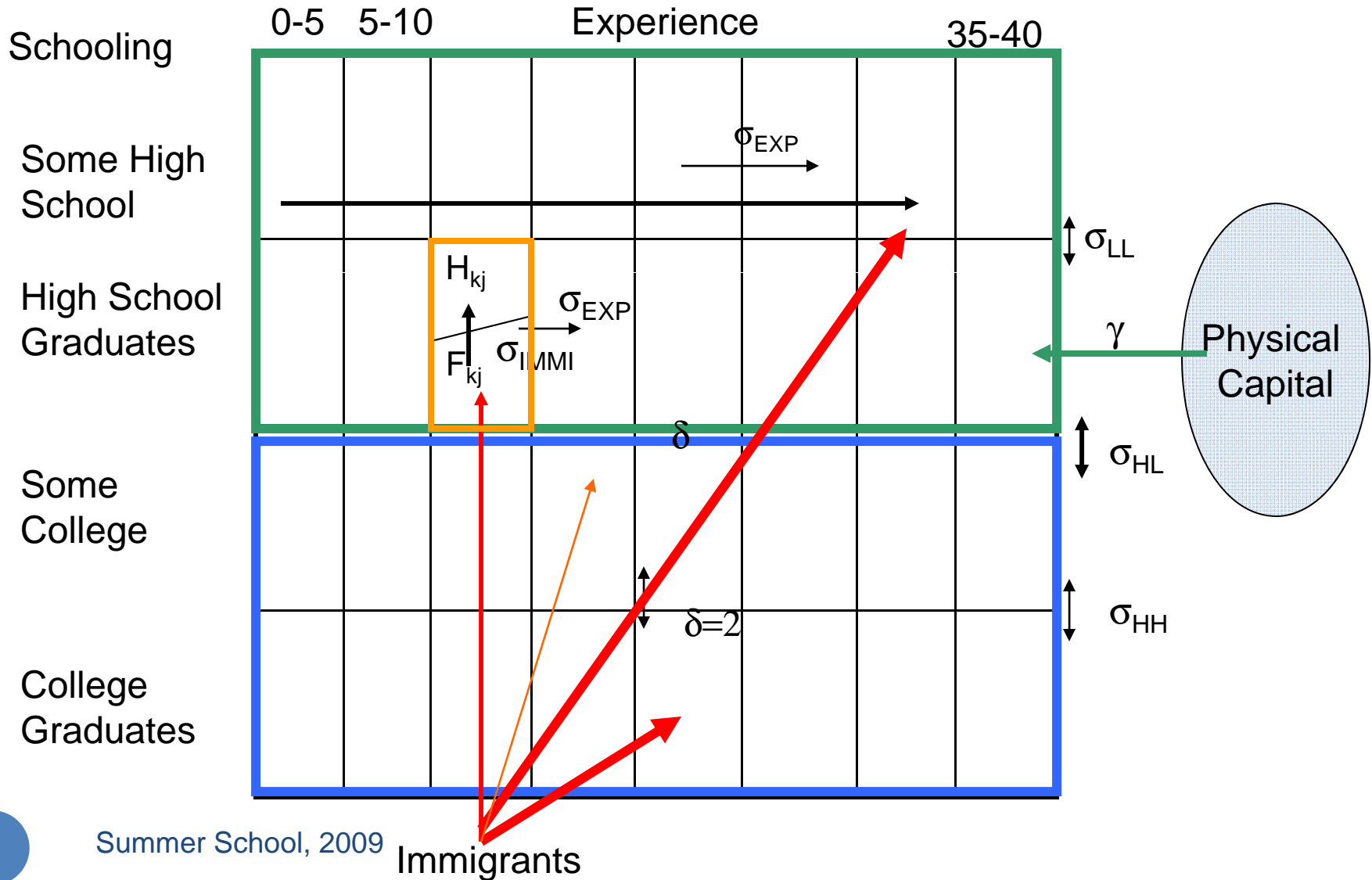
- Do local economies (such as states) internalize most of the effects, or do internal migration, trade and capital movements diffuse most of them? Is the U.S. one labor market?
- Who is included among the unskilled? Is the definition based on education? Or occupation? Are High school graduate unskilled?
- More importantly: if workers are heterogeneous by skill what is the wage effect of immigrants on workers of similar skills? And what is on workers of different skills?
- Ultimately the problem is not a simple “one-parameter” crisp identification strategy issue, but a messy one. We need some economics (model) to make progress, statistics only will not be enough.

Main Results

- Workers with no degree and workers with high school degree turn out to be close substitutes, this dilutes much the competition-effect of immigrants.
- Immigrants and natives with similar education and age have a small but significant degree of imperfect substitution. This reduces even further the competition with natives and explains the relative deterioration of immigrant wages relative to natives
- As Capital (Investment) respond fairly quickly to changes in labor supply, hence the average effect on wages, even in the short run, is small.
- Accounting for all the effects, immigration 1990-2006 decreased wages of native workers with no degree by -0.7% in the short run, while it increased it by 0.3% in the long run. This revises losses of -7.8% in the short run and of -4.7% that one would obtain with the Borjas and Katz (2007) model.

Production structure:

σ_{HL} σ_{LL} σ_{HH} elasticity across schooling groups
 σ_{HL} =elasticity of substitution across experience
 σ_{IMMI} =elasticity of substitution US-Foreign born



Role of the model

- Such a rich skill structure allows estimation of parameters with more observations if some structure is imposed.
- It is impossible to estimate freely own and cross effects: there are 992 cross effects and with data 1960-70-80-90-2000 and 2006 over 32 skill groups there are 192 observations.
- First structure a CES nesting. Estimate the few elasticity in the CES. Then use those and change in supply in each cell to produce the effect on marginal productivity (wages).
- Adjust the average wage to account for capital response.

Model: Production Function

$$Y_t = A_t N_t^\alpha K_t^{1-\alpha}$$

Aggregate Production
combines capital and Labor
(used in Growth since
Solow)

$$N_t = \left[\theta_{Ht} N_{Ht}^{\frac{\sigma_{HL}-1}{\sigma_{HL}}} + \theta_{Lt} N_{Lt}^{\frac{\sigma_{HL}-1}{\sigma_{HL}}} \right]^{\frac{\sigma_{HL}}{\sigma_{HL}-1}}$$

CES of high and low educated, split at High school or less and some college or more. Used in Labor, Katz-Murphy 1992; Growth Caselli and Coleman 2006

$$N_{Ht} = \left[\theta_{SCOt} N_{SCOt}^{\frac{\sigma_{HH}-1}{\sigma_{HH}}} + \theta_{COGt} N_{COGt}^{\frac{\sigma_{HH}-1}{\sigma_{HH}}} \right]^{\frac{\sigma_H}{\sigma_{HH}-1}}$$

$$N_{Lt} = \left[\theta_{SHSt} N_{SHSt}^{\frac{\sigma_{LL}-1}{\sigma_{LL}}} + \theta_{HSGt} N_{HSGt}^{\frac{\sigma_{LL}-1}{\sigma_{LL}}} \right]^{\frac{\sigma_{LL}}{\sigma_{LL}-1}}$$

High educated nest college graduate and some college
Less educated nest some high school and high school diploma
Much less used- Goldin and Katz 2007

Instead of assuming:

$$\sigma_{LL} = \sigma_{HH} = \sigma_{HL}$$

Used by B (2003) and BK (2007)
which implies the restriction:

Model

$$N_{kt} = \left[\sum_{j=1}^8 \theta_{kj} N_{kjt}^{\frac{\sigma_{EXP}-1}{\sigma_{EXP}}} \right]^{\frac{\sigma_{EXP}}{\sigma_{EXP}-1}}$$

Symmetric nest of 8 experience groups (as in Card and Lemieux 2001, Welch 1979)

$$N_{kjt} = \left[\theta_{Dkj} D_{kjt}^{\frac{\sigma_{IMMI}-1}{\sigma_{IMMI}}} + \theta_{Fkj} F_{kjt}^{\frac{\sigma_{IMMI}-1}{\sigma_{IMMI}}} \right]^{\frac{\sigma_{IMMI}}{\sigma_{IMMI}-1}}$$

**Nest between native and immigrants
First introduced by OP (2006)**

Beauty of the model: assuming that immigration does not change the productivity parameters, once we have the elasticity (σ 's) and we know the inflow of immigrants as percentage of their initial labor supply we can calculate the effect on marginal productivity (wage) of each group.

We also need the response of capital and the response to TFP that we take as consistent with the previous analysis

Capital and average wages

- Average wage: $w_t^N = \frac{\partial Y_t}{\partial N_t} = \alpha A_t \left(\frac{K_t}{N_t} \right)^{1-\alpha}$ ← Capital-labor ratio

In any model (Solow, Ramsey, Ramsey in open economy) and for the US data the capital labor ratio grows at a constant rate in the long run at a rate depending only on TFP growth and the real return to capital r is constant

$$w_t^N = \alpha A_t (\kappa_t)^{1-\alpha}$$

Average wage and capital-labor ratio in the long run do not depend on labor supply

$$\frac{\Delta w_t^N}{w_t^L} = (1 - \alpha) \left(\frac{\Delta \kappa_t}{\kappa_t} \right)_{immigration}$$

In the short-run the effect on wages depends on the deviation of capital-labor ratio caused by immigration inflow.

Using the Model

- We derive estimating equations for each of the elasticity σ_{HH} σ_{HL} σ_{HH} σ_{EXP} σ_{IMMI} and using immigration as a supply shock, where possible, we estimate them on data from 1960-70-80-90-2000 Census and 2006 ACS.
- Where limitation of data does not allow a credible estimate
 - we use CPS annual data to estimate elasticity.
 - We use best existing estimates as reference
- We then calculate (simulate) the long-run effects of immigration 1990-2006 on wages of each group and show the large differences in our estimates with B2003 and BK2007.
- We estimate the K/L response using ours and literature estimates of capital adjustment and we simulate the short-run effects.

Data

- IPUMS samples: Census 1% (1960-70), Census 5% (1980-90-2000), ACS 1% (2006).
- Variables:
 - Wages: weekly real wages (CPI adjusted). Average by cell calculated either on full-time workers or weighting individual wages by PERWT times hours worked.
 - Hours worked: sum in each cell over all workers with positive weeks and hours worked.
 - Education: Some high school, High school degree, some college, College degree (using EDUCREC variable)
 - Experience: 1 to 50 divided in groups of 5 years.
 - Immigrants: non-citizens or naturalized citizens.
- Data Appendix describes all definitions in detail. At my website I posted all codes and detailed explanation for calculating cell averages and running regressions.

Immigration and native wages 1990-2006

Column 1: Education	Column 2: Experience	Column 3: Percentage change in hours worked in the group due to new immigr ants 1990-2006	Column 4: Percentage change in weekly wages, Natives, 1990-2006
No High School Degree	1 to 5 years	8.5%	0.7%
	6 to 10 years	21.0%	-1.5%
	11 to 15 years	25.9%	0.6%
	16 to 20 years	31.0%	1.6%
	21 to 25 years	35.7%	1.3%
	26 to 30 years	28.9%	-1.6%
	31 to 35 years	21.9%	-8.8%
	36 to 40 years	14.3%	-10.1%
	All Experience groups	23.6%	-3.1%
	High School Degree	1 to 5 years	6.7%
6 to 10 years		7.7%	-1.6%
11 to 15 years		8.7%	-1.4%
16 to 20 years		12.1%	1.8%
21 to 25 years		13.0%	0.6%
26 to 30 years		11.8%	-0.9%
31 to 35 years		11.0%	-2.0%
36 to 40 years		9.3%	-4.0%
All Experience groups		10.0%	-1.2%
High School Degree or Less		All Experience groups	13.2%

Column 1: Education	Column 2: Experience	Column 3: Percentage change in hours worked in the group due to new immigrants 1990-2006	Column 4: Percentage change in weekly wages, Natives, 1990-2006
Some College Education	1 to 5 years	2.6%	-5.4%
	6 to 10 years	2.6%	-2.0%
	11 to 15 years	3.9%	0.1%
	16 to 20 years	6.2%	0.6%
	21 to 25 years	8.4%	-2.5%
	26 to 30 years	12.0%	-3.1%
	31 to 35 years	12.3%	-3.8%
	36 to 40 years	12.7%	-3.0%
	All Experience groups	6.0%	-1.9%
	College Degree	1 to 5 years	6.8%
6 to 10 years		12.2%	6.5%
11 to 15 years		13.7%	14.2%
16 to 20 years		12.2%	17.3%
21 to 25 years		17.5%	9.1%
26 to 30 years		24.4%	4.3%
31 to 35 years		26.1%	1.7%
36 to 40 years			
All Experience groups		14.6%	9.3%
Some College and More		All Experience groups	10.0%

Estimates of σ_{IMMI}

From the Model

$$\ln(w_{Fbkjt}/w_{Dbkjt}) = \ln\left(\frac{\theta_{Fkj}}{\theta_{Dkj}}\right) - \frac{1}{\sigma_{IMMI}} \ln(F_{kbjt}/D_{kbjt})$$

Implemented

$$\ln(w_{Fbkjt}/w_{Dbkjt}) = I_{kj} - \frac{1}{\sigma_{IMMI}} \ln(F_{kbjt}/D_{kbjt}) + u_{kbjt}$$

- Recall that education-experience-year specific demand factors are eliminated by the ratio.
- Include progressively more dummies to allow for changes in relative productivity over time, or over time and new immigrants, or over time new immigrants and across education group.
- 192 observations;
- When all effects are introduced we have 104 dummies.

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Evidence on Imperfect substitution Native-Immigrants

- Ottaviano and Peri (2006) estimate $1/\sigma_{\text{IMMI}}$ around 0.10-0.15, Borjas Grogger and Hanson (2008) revise it to 0, eliminating young part-time workers from the sample.
- Manacorda et al. (2007) on UK estimate the parameter around 0.15
- D'Amuri et al (2009), Felbermayr et al (2008) on Germany estimate the parameter around 0.06
- There is previous extensive evidence that the impact of immigrants for a skill group is larger on previous immigrants than on natives (Card 2001, literature review by Longhi Nykamp and Poot 2007).

Figure 5
Correlation between relative Immigrant-Native wages and hours worked.

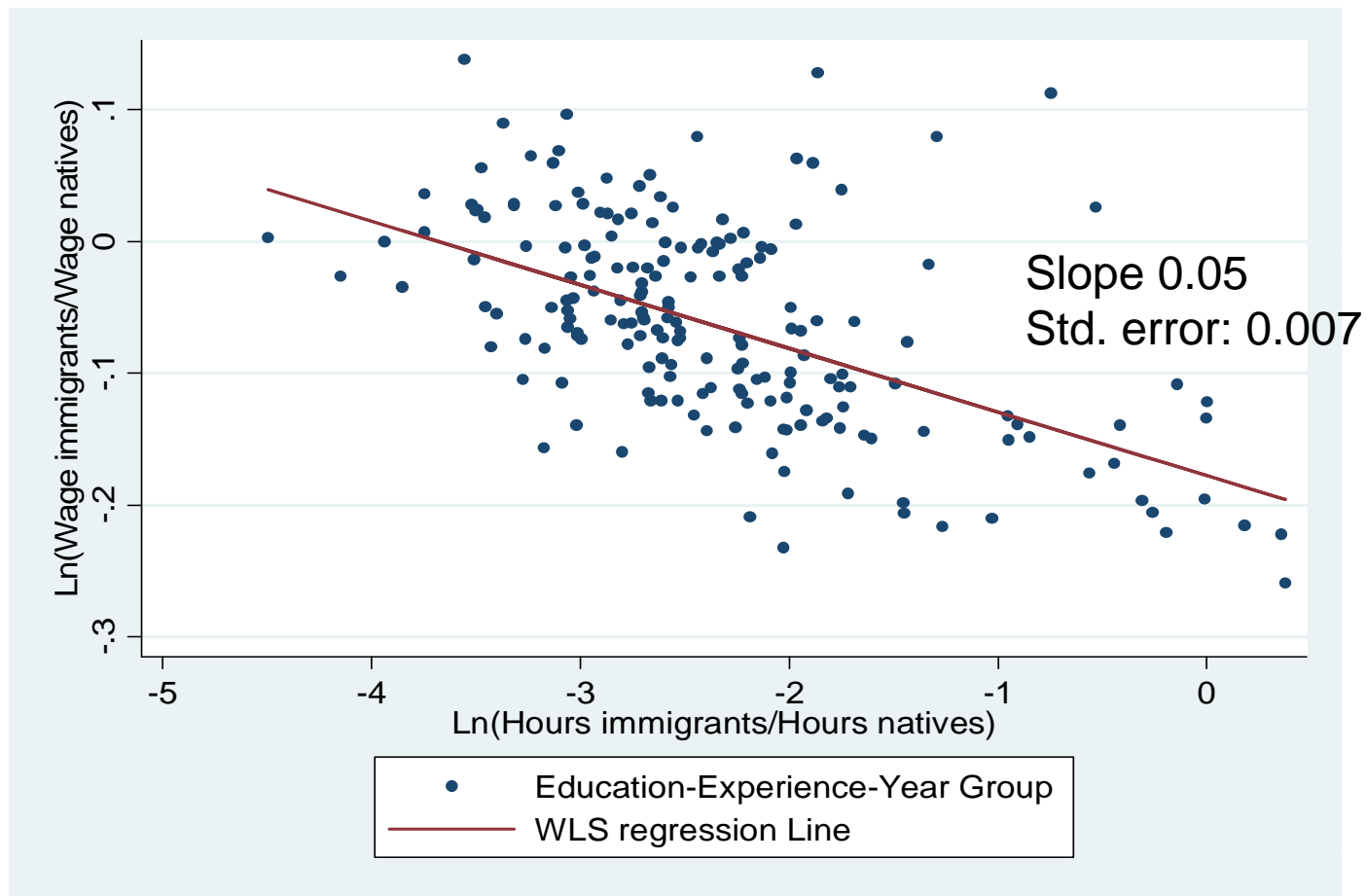


Figure 6

Partial correlation between relative Immigrant-Native wages and hours worked

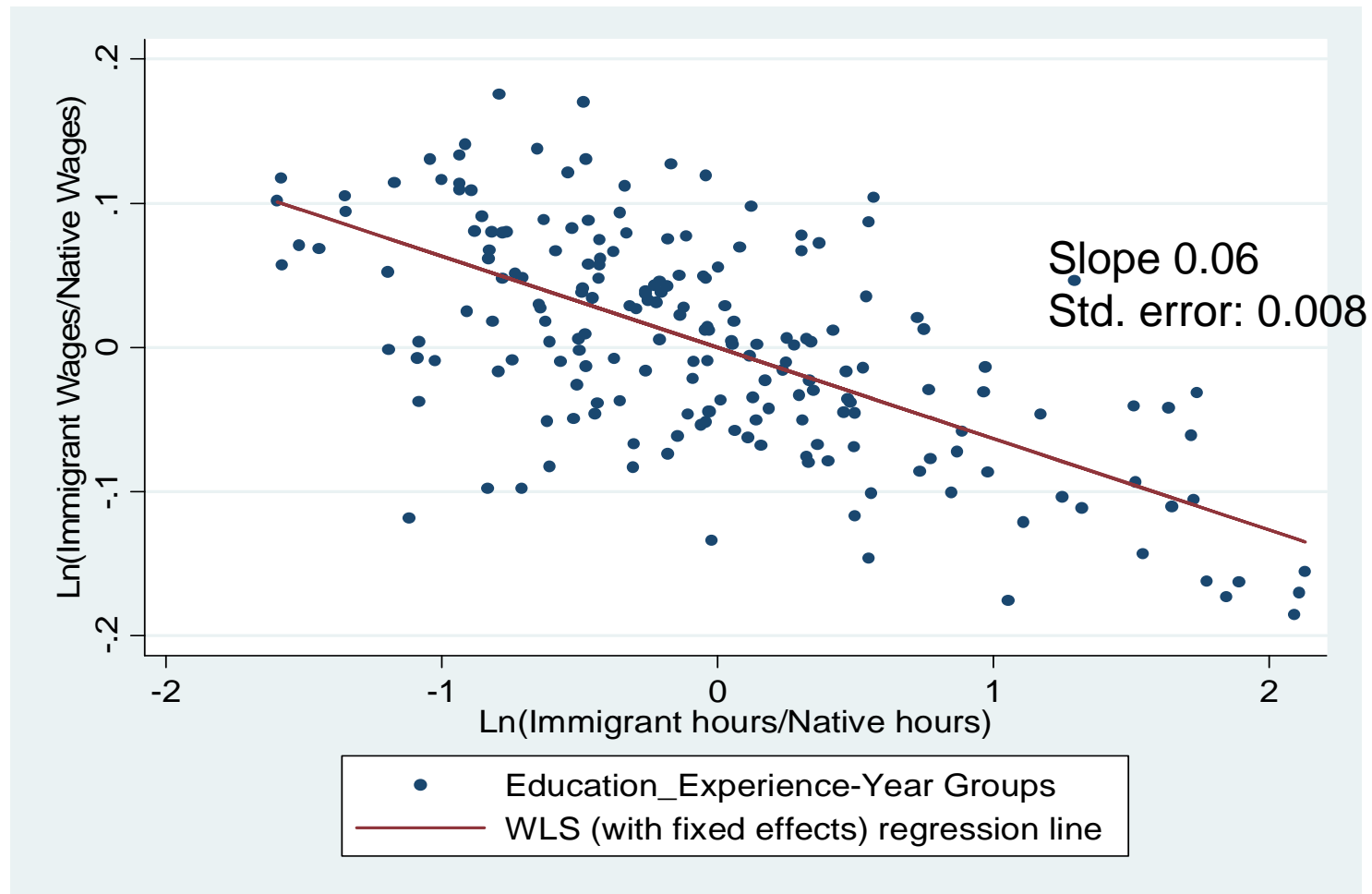


Table 2
Estimates of $(-1/\sigma)$, National Census and ACS, U.S. data 1960-2006
All people who worked for wages except the self-employed, weighted by hours worked

Specification	(1) No Fixed Effects	(2) Basic	(3) Add Time Effects	(4) Add Time by Experience effects	(5) Add Time by Education effects	(6) BGH (2008) Table 4 Column (3)	Number of Observations
Sample:							
Men	-0.048*** (0.008)	-0.063*** (0.009)	-0.028** (0.013)	-0.068*** (0.012)	0.009 (0.027)	0.009 (0.034)	192
Women	-0.043*** (0.008)	-0.057*** (0.012)	-0.073*** (0.017)	-0.095*** (0.010)	-0.058* (0.030)	-0.044** (0.022)	192
Pooled Men and Women	-0.032*** (0.009)	-0.042*** (0.010)	-0.024* (0.015)	-0.066*** (0.010)	-0.015 (0.035)	-0.011 (0.031)	192
IV (using relative employment) Pooled M-W	-0.035*** (0.007)	-0.043** (0.010)	-0.027* (0.014)	-0.066*** (0.010)	-0.038 (0.039)	-0.024 (0.032)	192
1970-2006 Pooled M-W	-0.032*** (0.009)	-0.042*** (0.010)	-0.039** (0.016)	-0.062*** (0.012)	-0.036 (0.039)	n.a	160
Less Educated Workers Only Pooled M-W	-0.040*** (0.009)	-0.052*** (0.010)	-0.015 (0.026)	-0.032*** (0.010)	-0.072* (0.037)	n.a	96
Young workers Only Pooled M-W	-0.016 (0.011)	-0.022** (0.012)	-0.063*** (0.023)	-0.071*** (0.017)	-0.041 (0.049)	n.a	96
Included fixed effects:							
Education by Experience effects (32 in total)	No	Yes	Yes	Yes	Yes	Yes	
Year Effects (6 in total)	No	No	Yes	Yes	Yes	Yes	
Year by Experience Effects (48 in total)	No	No	No	Yes	Yes	Yes	
Year by Education Fixed effects (24 in total)	No	No	No	No	Yes	Yes	

24 in total) Summer School, 2009

Reasonable estimates of $1/\sigma_{\text{IMMI}}$

- All in all there seem to be evidence compatible with small but significant imperfect substitution, with $1/\sigma_{\text{IMMI}}=0.05$ and $\sigma_{\text{IMMI}}=20$.
 - Does this make a difference relative to perfect substitution? For native workers small, but for old immigrants it is relevant.

Estimates of σ_{EXP}

From the Model

$$\ln(\bar{W}_{kjt}) = \ln\left(\alpha A_t^{\frac{1}{\alpha}} \kappa_t^{\frac{1-\alpha}{\alpha}}\right) + \frac{1}{\sigma_{HL}} \ln(N_t) + \ln \theta_{bt} - \left(\frac{1}{\sigma_{HL}} - \frac{1}{\sigma_{bb}}\right) \ln(N_{bt}) + \ln \theta_{kt} - \left(\frac{1}{\sigma_{bb}} - \frac{1}{\sigma_{EXP}}\right) \ln(N_{kt}) + \ln \theta_{kj} - \frac{1}{\sigma_{EXP}} \ln(N_{kjt})$$

Implemented

$$\ln(\bar{W}_{kjt}) = I_t + I_{kt} + I_{kj} - \frac{1}{\sigma_{EXP}} \ln(\hat{N}_{kjt}) + e_{kjt}$$

- Using Immigrants in the group as IV
 - Notice: no experience-year term in the dummies
- Previous literature has estimated this coefficient
 - Card and Lemieux (2001) range between -0.107 and -0.237 -- Males
 - Welch (1979) Range between -0.080 and -0.218 -- Males

Table 4
Estimates of $(-1/\sigma_{EXP})$, National Census and ACS U.S. data 1960-2006

	(1) Basic Specification (use $\sigma_{IMMI}=20$ to construct N_{kit})	(2) Basic Specification (assuming $\sigma_{IMMI}=\infty$)	(3) Add Time by Experience fixed effects	Number of Observations
Sample:				
Men	-0.16*** (0.05)	-0.16*** (0.06)	-0.05 (0.04)	192
Women	-0.05 (0.05)	-0.05 (0.05)	-0.03 (0.04)	192
Pooled Men and Women	-0.14*** (0.04)	-0.14** (0.04)	-0.02 (0.03)	192
Pooled Men and Women Employment as Measure of Labor Supply	-0.13*** (0.05)	-0.13** (0.05)	-0.03 (0.03)	192
Pooled Men and Women 1970-2006	-0.07*** (0.03)	-0.07*** (0.03)	-0.01 (0.03)	160
Included fixed effects:				
Education by Experience Effects (32 in total)	Yes	Yes	Yes	
Year by Education Fixed Effects (24 in total)	Yes	Yes	Yes	
Year by Experience Effects (48 in total)	No	No	Yes	

Estimates of σ_{HL} , σ_{HH} σ_{LL}

Implemented on yearly CPS data

$$\ln(w_{Ht}/w_{Lt}) = I_t - \frac{1}{\sigma_{HL}} \ln(N_{Ht}/N_{Lt}) + u_t$$

$$\ln(w_{HSGt}/w_{SHSt}) = I_{Lt} - \frac{1}{\sigma_{LL}} \ln(N_{HSGt}/N_{SHSt}) + u_{Lt}$$

$$\ln(w_{COGt}/w_{SCOt}) = I_{Ht} - \frac{1}{\sigma_{HH}} \ln(N_{COGt}/N_{CODt}) + u_t$$

- Using trend to capture relative demand, same aggregation, correcting for relative effectiveness as KM (and GK). 44 observations.
- Keep in mind, as GK 2008 show, that the relative supply plus trend explain most of the changes 1900-2006 in college-high school wage premium.
 - Checks: using change in supply of “hispanic” (proxy of immigrants) as instruments for employment (foreign-born available since 1996 only).

Table 6
Estimates of $(-1/\sigma_{HL})$, $(-1/\sigma_{HH})$, and $(-1/\sigma_{LL})$ CPS, U.S. data 1963-2006,
Katz and Murphy (1992) method

	(1) Estimates of $-1/\sigma_{HL}$	(2) Estimates of $-1/\sigma_{LL}$	(3) Estimates of $-1/\sigma_{HH}$	Number of Observations
Pooled Men and Women With "Some College" split between H and L	-0.54*** (0.06) [0.07]	-0.029 (0.018) [0.021]	-0.16* (0.08) [0.10]	44
Pooled Men and Women With "Some College" in H	-0.32*** (0.06) [0.08]			44
Pooled Men and Women Employment as a Measure of Labor Supply	-0.66*** (0.07) [0.09]	-0.039 (0.020) [0.024]	-0.08 (0.09) [0.11]	44
Pooled Men and Women 1970-2006	-0.52*** (0.06) [0.08]	0.021 (0.028) [0.025]	-0.13 (0.08) [0.09]	36

$$\sigma_{LL} = \sigma_{HH} = \sigma_{HL}$$

Restriction overwhelmingly rejected.
 Any value of $\sigma_{LL} > 0.10$ is rejected

Table 7
Simulated Wage Effects of Immigrants, 1990-2006:
Long Run Effects

	Parameters From the Existing Labor Literature			Parameters from Existing Labor Literature and σ_{IMMI} from Our Estimates			Parameters from Our Estimates			Borjas and Katz (2007) Parameters
	(1) Low	(2) High	(3) Typical	(4) Low	(5) High	(6) Typical	(7) Low	(8) High	(9) Typical	(10)
σ_{HL}	1.4	2	1.5	1.4	2	1.5	1.4	2	2	2.4
σ_{HH}	∞	∞	∞	∞	∞	∞	10	10	10	2.4
σ_{LL}	∞	∞	∞	∞	∞	∞	10	50	20	2.4
σ_{EXP}	3.3	10	5	3.3	10	5	6.2	7.7	7	3
σ_{IMMI}	∞	∞	∞	15	30	20	20	20	20	∞
% Real Wage Change of US-Born Workers Due to Immigration, 1990-2006										
Less than HS	-0.6%	-0.5%	-0.5%	+1.0%	+0.5%	+0.7%	-0.3	+0.6	+0.3	-4.7%
HS graduates	-0.3%	-0.2%	-0.3%	+0.3%	+0.1%	+0.2%	+0.4	+0.3	+0.4	+0.9%
Some CO	+0.1%	+0.1%	+0.1%	+0.6%	+0.3%	+0.5%	+1.0	+0.1	+0.9	+2.2%
CO graduates	+0.1%	+0.1%	+0.1%	+1.1%	+0.6%	+0.9%	+0.5	+0.5	+0.5%	-1.7%
Average US-born	0.0%	0.0%	0.0%	+0.8%	+0.4%	+0.6	+0.6%	+0.6	+0.6%	+0.1%
% Real Wage Change of Foreign-Born Workers Due to Immigration, 1990-2006										
Less than HS	-0.6%	-0.5%	-0.5%	-6.1%	-3.0%	-4.6%	-5.6%	-4.7%	-4.9%	-4.7%
HS graduates	-0.3%	-0.2%	-0.3%	-9.8%	-5.1%	-7.4%	-7.2%	-7.3%	-7.0%	+0.9%
Some CO	+0.1%	+0.1%	+0.1%	-6.1%	-3.1%	-4.5%	-4.0%	-4.1%	-4.0%	+2.2%
CO graduates	+0.1%	+0.1%	+0.1%	-9.2%	-5.0%	-7.6%	-8.0%	-8.0%	-8.1%	-1.7%
Average Foreign-born	+0.0%	0.0%	0.0%	-8.6%	-4.3%	-6.4%	-6.6%	-6.5%	-6.4%	-0.8%
Overall average	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Capital adjustment in the short-run

- Immigrants entered the country in flows always less than 0.5% of the employment in each year.
 - Investment adjusted continuously.
 - K/L is trend stationary and K/Y stationary
 - Our international analysis shows no sign of changes in K/L even in the short-run
-
- Show the short-run estimates being conservative, i.e. speed of adjustment of $\gamma=0.10$, 10% per year. Evaluate the ongoing effect on K/L using the actual yearly inflows of immigrants.

Figure 1

U.S. Capital-Output Ratio 1960-2006

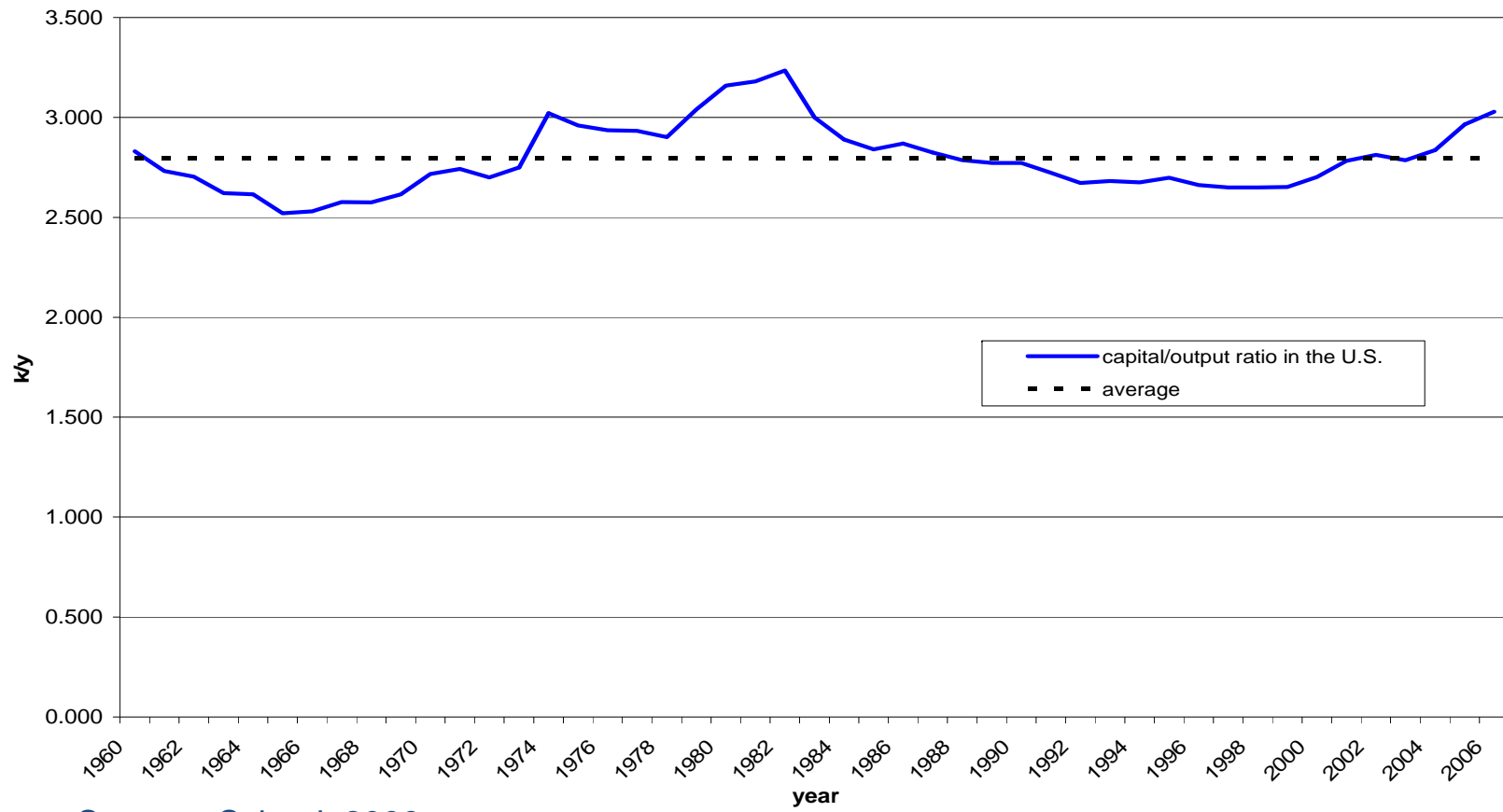


Figure 2
Log Capital-Labor Ratio and Trend 1960-2006

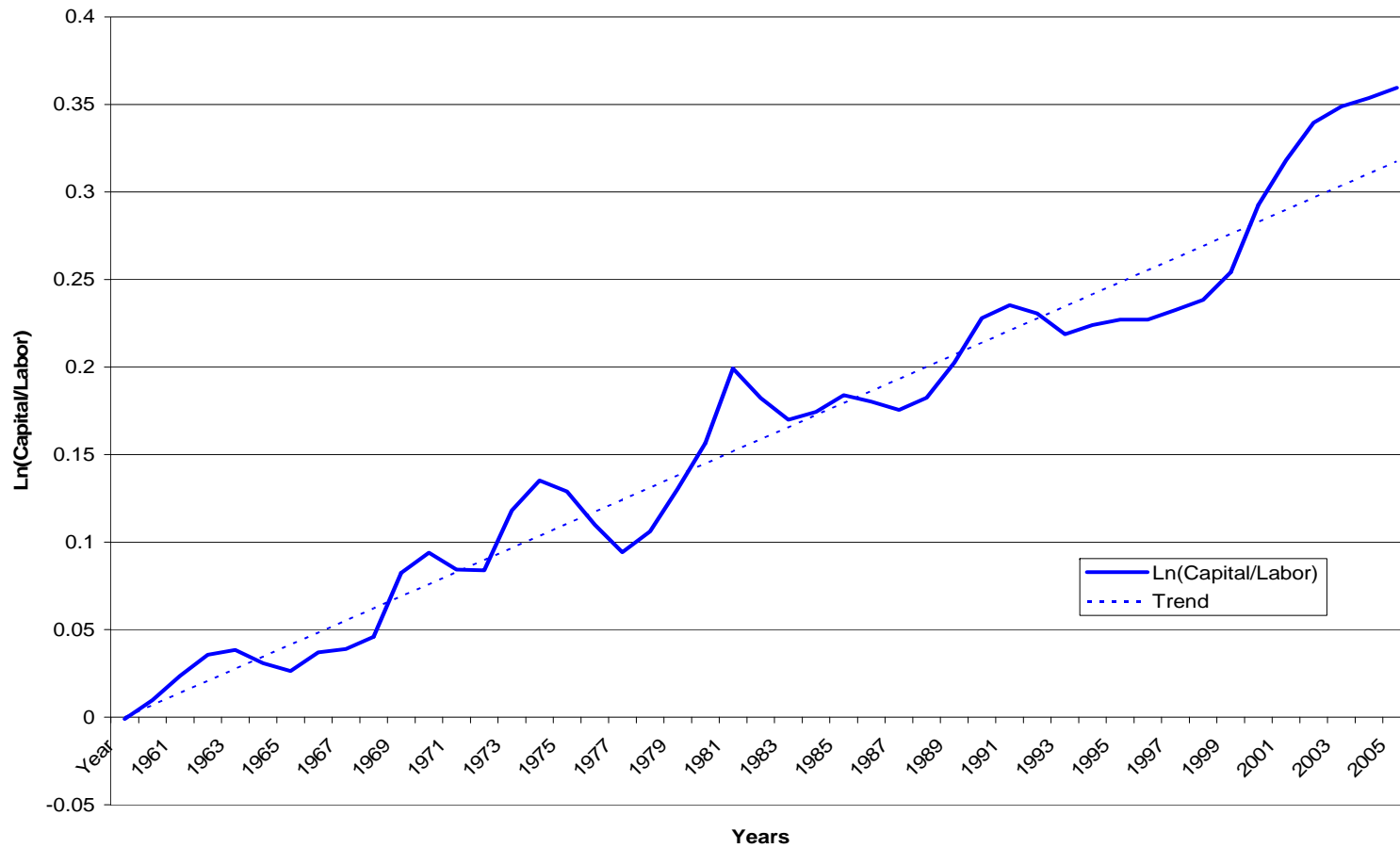


Table 8
Simulated Wage Effects of Immigrants, 1990-2006:
Short Run Effects, assuming speed of adjustment on 0.10

	1 As of 2007 (short run)	2 As of 2012 (medium run)	3 Long Run	4 Fixed K (Traditional Short Run)	5 Short Run in Borjas and Katz (2007) and Borjas (2003)
% Real Wage Change of US-Born Workers Due to Immigration, 1990-2006					
Less than HS	-0.7%	-0.3%	0.3%	-2.8%	-7.8%
HS graduates	-0.6%	-0.2%	0.4%	-2.7%	-2.2%
Some CO	0.0%	0.4%	0.9%	-2.1%	-0.9%
CO graduates	-0.5%	-0.1%	0.5%	-2.6%	-4.7%
Average, US-Born	-0.4%	0.0%	0.6%	-2.5%	-3.0%
% Real Wage Change of Foreign-Born Workers Due to Immigration, 1990-2006					
Less than HS	-6.0%	-5.6%	-4.9%	-8.1%	-7.8%
HS graduates	-8.2%	-7.8%	-7.0%	-10.3%	-2.2%
Some CO	-5.1%	-4.7%	-4.0%	-7.2%	-0.9%
CO graduates	-9.0%	-8.6%	-8.1%	-11.1%	-4.7%
Average Foreign-born	-7.5%	-7.1%	-6.4%	-9.6%	-3.0%
Overall Average: Native and US-Born	-1.1%	-0.6%	0.0%	-3.2%	-3.2%

In summary

- National model allows to:
 - Relate Immigration effects to the literature on baby-boom effects, technological change effects, effect of Computers
 - To understand the deterioration of immigrants' relative wages in a skill group.
 - To guide analysis in other countries.
- It is fundamental, however, to put a correct value on σ_{HL} and σ_{LL} . Also very important is the speed of adjustment of capital.
- Also the emphasis on σ_{EXP} and σ_{IMMI} has been excessive. Although the evidence on the last parameter seems that it is significantly different from infinity and equal to 20.

Table A3:
Relative Weekly Wages of Foreign-Born/ US-Born Workers by group, 1960-2006
Pooled Male and Female

High School Graduates	1 to 5	0.98	1.01	0.95	0.98	0.98	0.95
	6 to 10	0.94	0.98	0.92	0.94	0.92	0.86
	11 to 15	0.93	0.99	0.92	0.92	0.91	0.84
	16 to 20	1.03	0.98	0.91	0.96	0.91	0.83
	21 to 25	1.01	0.98	0.92	0.97	0.89	0.86
	26 to 30	1.07	1.02	0.92	0.92	0.92	0.85
	31 to 35	1.04	1.05	0.92	0.94	0.93	0.83
	36 to 40	1.04	1.00	0.96	0.96	0.91	0.89
	All Experience Levels	1.02	1.00	0.93	0.95	0.92	0.86

Decrease by 16%

Table A1:
Percentage of Total Hours Worked by Foreign-Born by Group 1960-2006
Pooled Male and Female

High School Graduates	1 to 5	1.5%	2.5%	3.2%	6.7%	11.6%	13.5%
	6 to 10	1.9%	2.7%	3.8%	6.9%	14.1%	17.4%
	11 to 15	2.3%	3.2%	4.6%	6.5%	13.3%	20.6%
	16 to 20	3.3%	3.3%	4.5%	7.0%	10.9%	18.5%
	21 to 25	3.0%	3.5%	5.0%	7.4%	9.7%	14.9%
	26 to 30	4.7%	4.1%	4.8%	6.9%	9.7%	11.8%
	31 to 35	6.7%	3.5%	5.0%	7.0%	9.6%	11.7%
	36 to 40	11.2%	4.9%	5.2%	6.6%	8.3%	11.4%
	All Experience Levels	3.5%	3.3%	4.3%	6.9%	10.9%	14.9%

Increase 4 times

Our preferred calculations say

- Immigrants 1990-2006, had a negative effect on real wages of workers with no high school of at most -0.7% as of 2007. Once capital fully adjusts (which may only take one year) such effect turns into a small benefit of 0.3%.
- Even rejecting the very plausible estimate of imperfect substitution between natives and immigrants the long-run effect of immigration on workers with no degree was -0.5%.
- The overall average wage of US workers had a 0.6% real gain in the long-run when we account for plausible level of imperfect substitution native-immigrants. Long-term immigrants, however suffered a wage loss of 6% due to immigration 1990-2006.