High-Tech Immigrant Entrepreneurship in the U.S.

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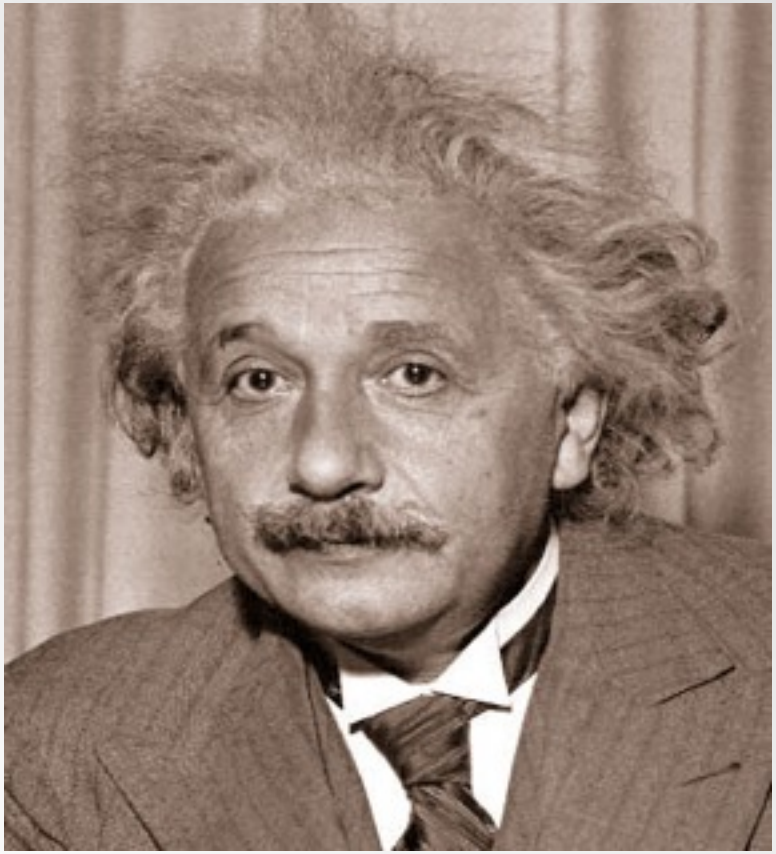
Immigrants and Natives: Complements or Substitutes?



"It's the H1-b visa train… picking up low wage slaves wherever it goes!"

Source: freedomfolks.com

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Policy Context 1: U.S. Immigration Policy

Legal permanent residence (~1M/year, all types)

- Employer sponsorship
- 140K annual cap

Temporary work (~2M admissions/year, all types):

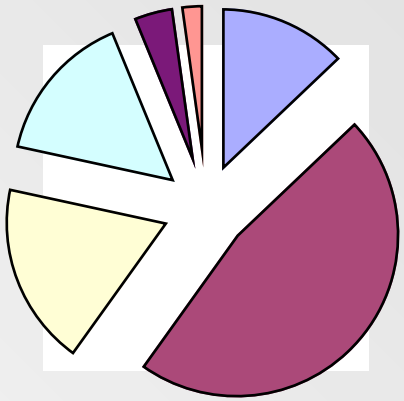
- Multiple employer-sponsored "non-immigrant" visas
- H-1B has been the biggest, but now 65K+ annual cap
- Many (1/2 of H-1Bs?) "adjust" to permanent status

Foreign students (~1.4M admissions/year):

- No formal "adjustment" path, but many (2/3 of STEM PhDs?) stay
- Visa snags have been alleviated (?)

Legal Permanent Residents, 2007

1.1 million total



Refugees and asylees:
Family members - immediate
Family members – preference
Employment-based
Diversity-lottery
Other/missing data

Source: migrationinformation.org

Policy Context 2: Competition for Talent

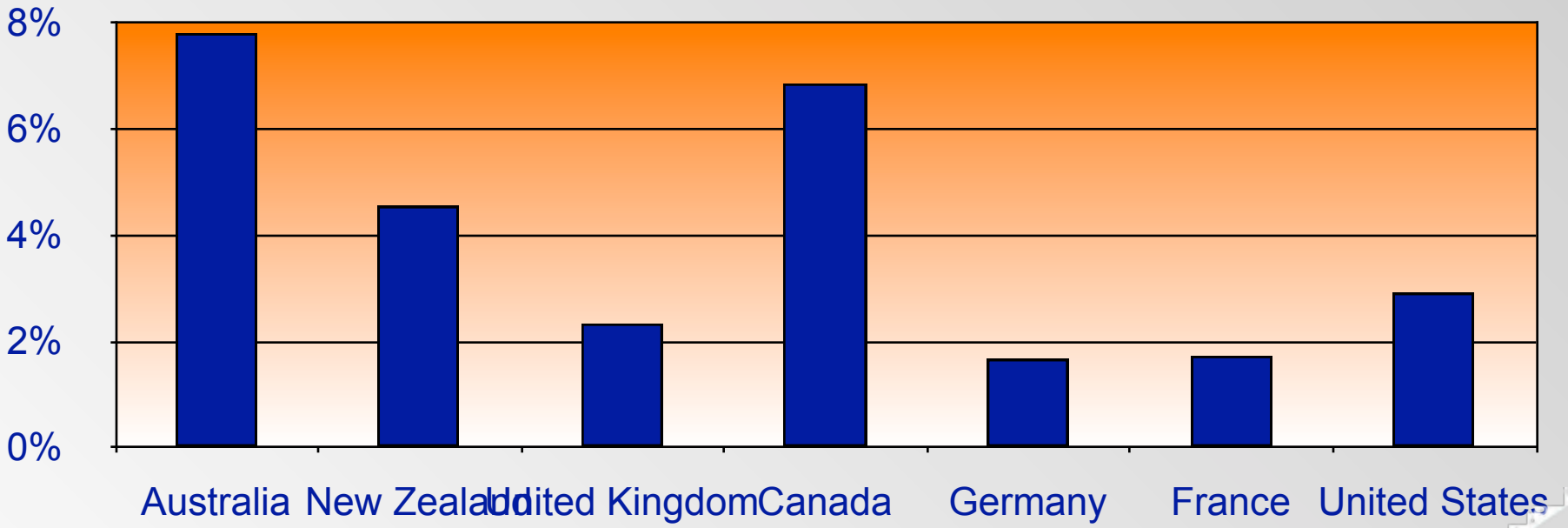
Policies to enhance immigration, retention, and return:

- Admission schemes ("point" systems, preferences for locally educated students, spousal work programs, etc.)
- Economic incentives (tax breaks, salary subsidies, etc.)
- Institutional development (higher education, high-tech industry, etc.)

Some recent examples:

- UK: 5-tier scheme, including point system, for permanent admission; S&E grad students scheme
- France: "Skills and talents" visa; college graduates permitted to look for work
- Hong Kong: ASMTP, QMAS, and IANG programs for mainland professionals and students
- EU: "Blue card" proposal

Highly-Educated Foreign-Born/Total Population



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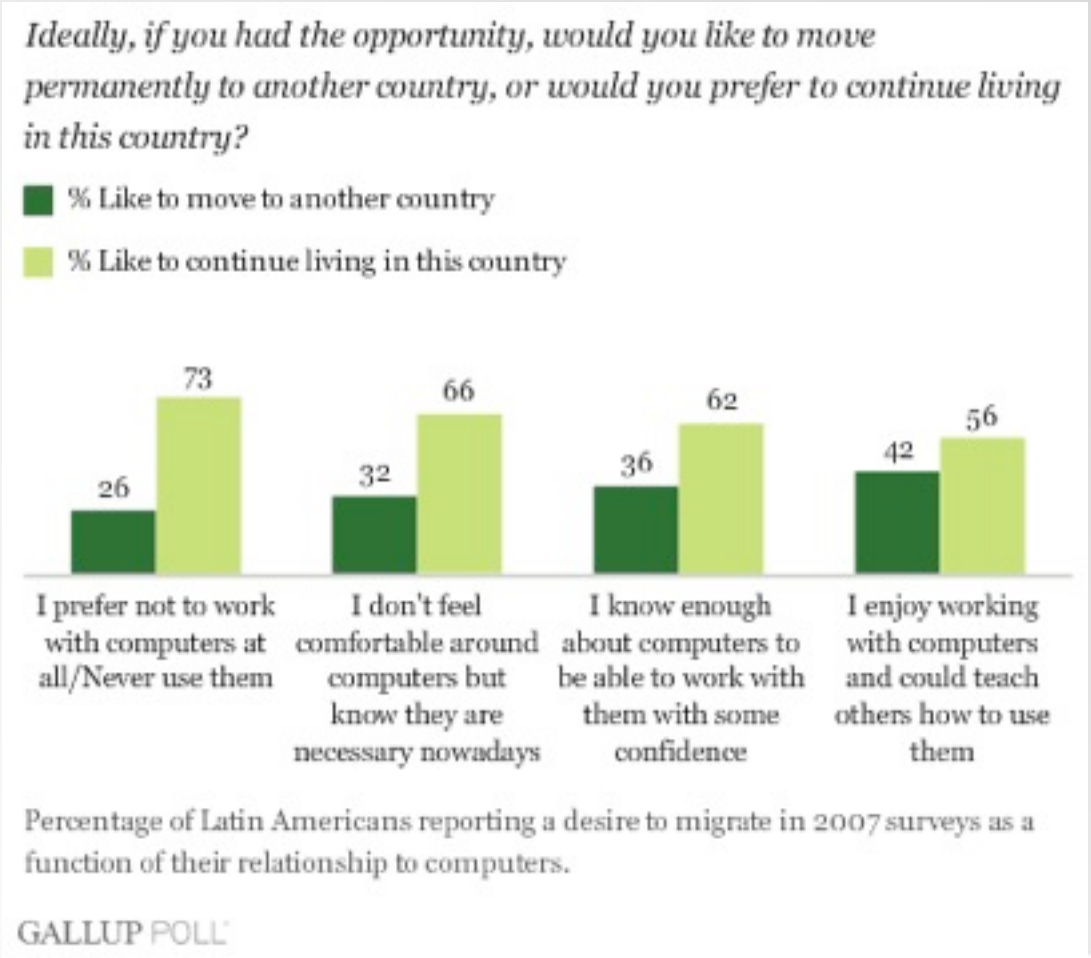
Policy Context 3: Migration and Development

Conventional wisdom: "Brain drain"

Emerging alternatives:

- "Brain circulation"
  - Global knowledge networks
  - Return migration (temporary or permanent)
- "Brain gain"
  - Induced investment in education

Latin American Public Opinion: Emigration Desire by Familiarity with Computers



Entrepreneurship and Growth: Theory

Existing businesses fail to recognize all opportunities. (March and Simon)

Existing businesses fail to exploit all promising opportunities. (Schumpeter, Rosenberg)

Entrepreneurs compete with existing businesses, open new markets, and create process and product innovations.

CRE "Paradigm"

A variation on Shane and Venkataraman's DEE

Creation of entrepreneurial opportunities: a societal function

Recognition of entrepreneurial opportunities: an individual (or team) function

Exploitation of entrepreneurial opportunities: a societal and individual (or team) function

CRE Applied: Natives v. Immigrants

Creation : Social diversity creates opportunities?

Recognition of opportunities:

- "Alertness" (Kirzner)
- Educational attainment (esp. in STEM fields)
- Professional experience (esp. in STEM occupations)
- Diversity (Florida, Ottaviano and Peri)
- Language proficiency
- Glass ceiling – technical career ladders

Exploitation of opportunities:

- Opportunity costs
- Risk aversion
- Access to resources through networks

Bottom line: Theory predicts both over- and under-representation of immigrants in high-

Immigrant Entrepreneurship by National Origin

Table 7
Number of New Business Owners per Month by Immigrant Group
Matched Current Population Survey (1996-2007)

	New business owners		Business formation rate	
Group	Number per month	Percent of U.S. total	Percent	Number per 100,000
U.S. total	484,864	100.00	0.28	284
U.S.-born total	403,763	83.27	0.27	273
Immigrant total	81,100	16.73	0.35	349
Mexico	23,094	4.76	0.34	340
El Salvador	3,178	0.66	0.47	472
Cuba	3,098	0.64	0.42	425
Korea	2,870	0.59	0.57	575
India	2,619	0.54	0.29	292
Dominican Republic	2,417	0.50	0.47	467
Guatemala	1,758	0.36	0.52	518
Jamaica	1,691	0.35	0.40	401
Vietnam	1,678	0.35	0.24	245
Canada	1,652	0.34	0.35	354

Notes: 1) The sample consists of non-business owners who do not own a business in the first survey month. The total sample size is 7,789,698. 2) Business formation is defined as those individuals who report starting a business in the second survey month with 15 or more hours worked per week. 3) The reported immigrant groups represent the largest 10 groups based on the number of new businesses. Source: Author's calculations from matched 1996-2007 CPS microdata.

Source: Fairlie 2008

High-Tech Immigrant Entrepreneurship

Saxenian (1999) identifies the question, demonstrates its importance in Silicon Valley (24%?), and links it to globalization.

2007 estimates (varying definitions and methods):

- National Venture Capital Association: 25%
- Wadhwa et al.: 25%
- Massachusetts Biotechnology Association: 26%
- Kauffman Firm Survey: 16%
- Panel Study of Entrepreneurial Dynamics: 15%

This study: 16%

Founding High-Impact, High-Tech Firms: Entrepreneurship That Matters

High-impact firms (Acs et al. 2007):

- Double in size over a four year period
- Comprise 2-3% of all firms (~300-400K)
- Account for almost all employment and revenue growth

Not necessarily start-ups…but:

- 70+% of firms in our sample are < 20 years old
- 80+% of founders in our sample are still owners

Not necessarily high-tech…but:

- High-tech firms generate more spillovers
- High-tech firms have larger long-term impacts than others

High-Impact Firms and the U.S. Economy

Period	No. HIFs	Job Change	Rev Change ($1000's)
1994-1998	352,114	11,460,747	$1,959,171,057
1998-2002	299,973	11,736,316	$2,650,904,371
2002-2006	376,605	9,009,760	$2,034,844,936

Source: Corporate Research Board, American Corporate Statistical Library (2007).

Population Sampled

Original source: Dun & Bradstreet

Through: American Corporate Statistical Library

High-impact firms, 2002-2006 (doubled in employment and revenue): ~375K

In 50 high-tech sectors: ~25K firms (~30% manfg., 70% svcs.)

Survey Method

National random sample

CATI system for administration and callback

Short instrument to increase response (53%):

- Validate D&B data
- Innovation indicators
- Founder demographics

Completed surveys: ~1300

Findings - Descriptive

IFCs and NFCs are similar in terms of sector and age, but not location.

At least one foreign-born owner: ~16%

- Most have been in the U.S. for more than 20 years
- ~ 77% are citizens
- ~ 67% received most recent education in US
- ~ 85% hold undergrad degree; 55% hold graduate degree

Location by Nativity

Founders by Nativity and Education

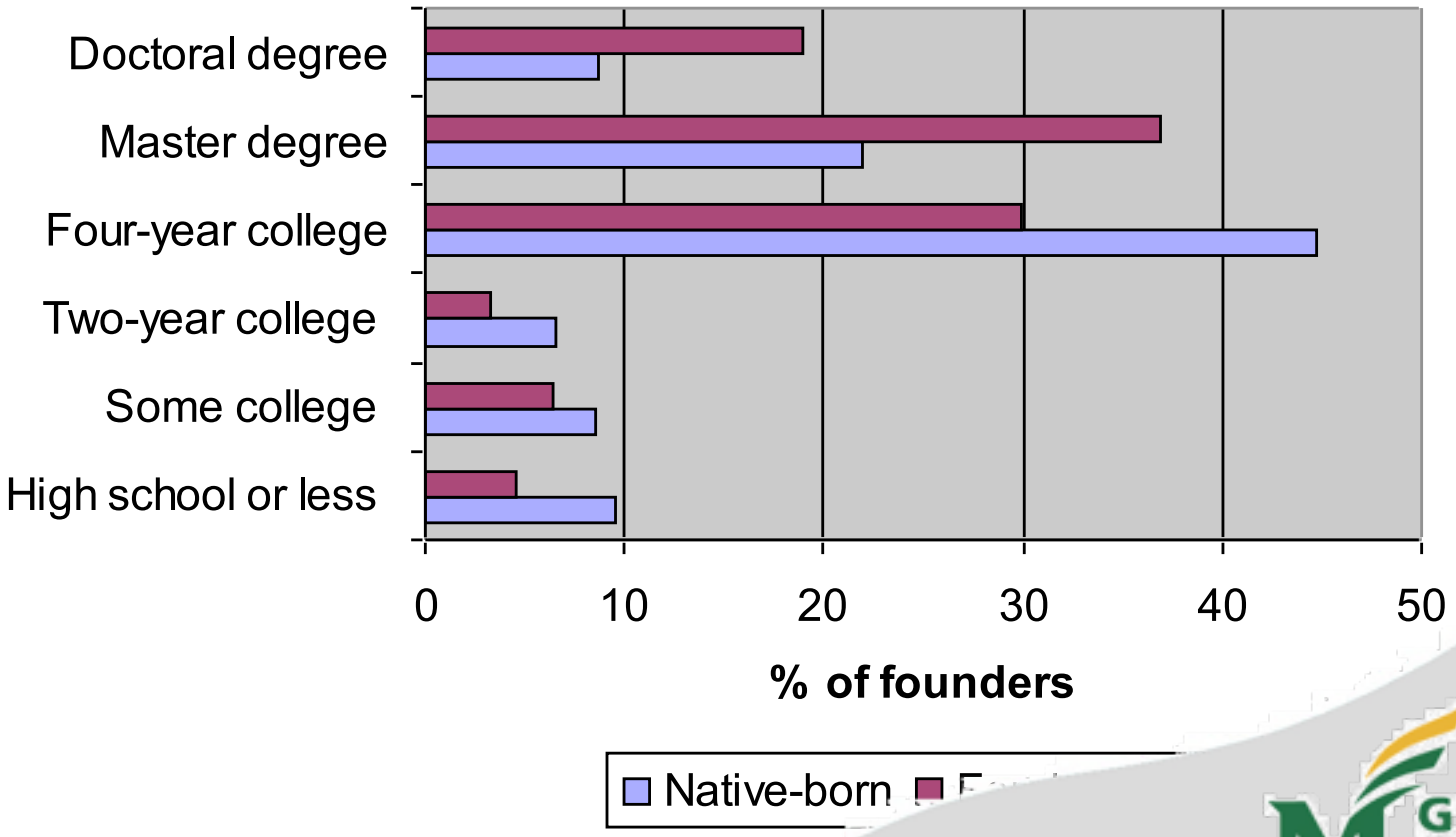
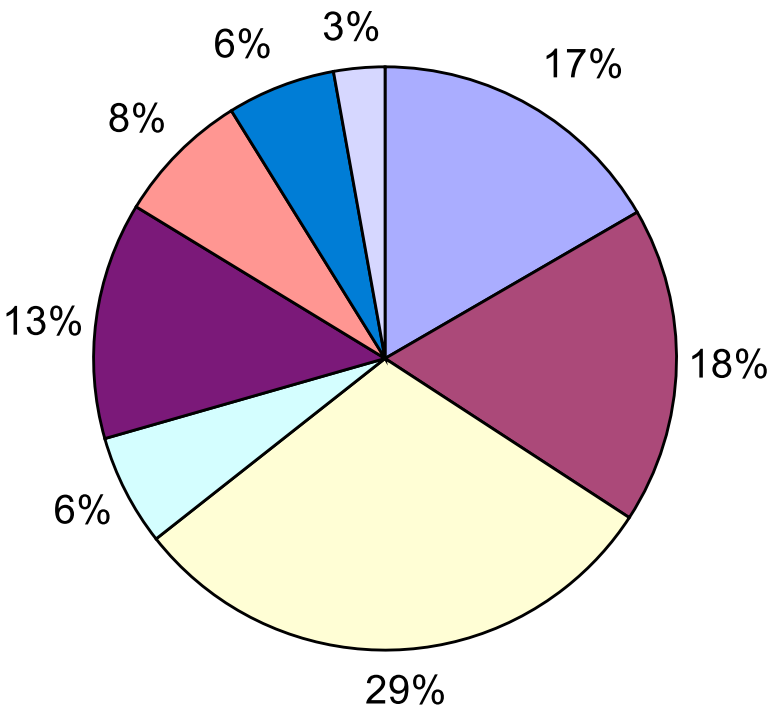


Table 20. Foreign-Born Founders of High-Impact, High-Tech Companies by Country of Origin					
Country	Number	Percent	Country	Number	Percent
India	40	15.9	Haiti	2	0.8
UK	25	10.0	Holland	2	0.8
Canada	15	6.0	Iraq	2	0.8
China	15	6.0	Jamaica	2	0.8
Japan	15	6.0	Philippine	2	0.8
Germany	13	5.2	Serbia	2	0.8
Cuba	8	3.2	Sweden	2	0.8
Iran	7	2.8	West Indies	2	0.8
Russia	7	2.8	Argentina	1	0.4
France	6	2.4	Burma	1	0.4
Mexico	5	2.0	Chile	1	0.4
Vietnam	5	2.0	Colombia	1	0.4
Australia	4	1.6	Croatia	1	0.4
Belgium	4	1.6	Denmark	1	0.4
Ireland	4	1.6	El Salvador	1	0.4
Korea	4	1.6	Ghana	1	0.4
Pakistan	4	1.6	Guyana	1	0.4
Ukraine	4	1.6	Israel	1	0.4
Austria	3	1.2	Nicaragua	1	0.4
Brazil	3	1.2	Nigeria	1	0.4
Italy	3	1.2	Panama	1	0.4
Lebanon	3	1.2	Peru	1	0.4
Netherlands	3	1.2	Poland	1	0.4
Romania	3	1.2	Spain	1	0.4
South Africa	3	1.2	Tanzania	1	0.4
Switzerland	3	1.2	Turkey	1	0.4
Greece	2	0.8	Uruguay	1	0.4

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).

Home Country by World Region



East and southeast Asia
South Asia
Western Europe
Eastern Europe
Latin America
Canada and Australia
Middle East and North Africa
Other

Team Comp.: Gender and Nativity

Table 21. High-Impact, High-Tech Companies by Founder Nativity and Gender

	Native-Founded	Immigrant-Founded	TOTAL
All Male Founders	824 (79.4%)	142 (69.9%)	966 (77.9%)
At Least One Female Founder	213 (20.5%)	61 (30.0%)	274 (22.1%)
TOTAL	**1,037 (100%)**	**203 (100%)**	**1,240 (100%)**

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).
Note: Pearson chi-squared (1) = 8.92, P = 0.003.

Team Comp: Race and Nativity

Table 24. High-Impact, High-Tech Companies by Founder Nativity and Race of Native-Born Founders in Companies with More than One Founder			
	All Founders Are White or Foreign-born	At Least One Minority Founder	TOTAL
Native-founded Companies with at Least One White Founder	370	23	393
%	94.1	5.9	100
Immigrant-founded Companies with at Least One Native-born Founder	55	12	67
%	82.1	17.9	100
TOTAL	425	35	457

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).

Economic Performance: Crosstab

Table 5. High-Impact, High-Tech Companies by Founder Nativity and Employment (bivariate)			
Employment	**Native-Founded**	**Immigrant-Founded**	**TOTAL**
Low Employment (1-4 employees)	175 (16.6%)	35 (17.1%)	210 (16.6%)
Medium Employment (5-20 employees)	633 (59.9%)	103 (50.2%)	736 (58.3%)
High Employment (>20 employees)	249 (23.6%)	67 (32.7%)	316 (25.0%)
TOTAL	**1,057 (100%)**	**205 (100%)**	**1,262 (100%)**

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).
Note: Pearson chi-squared (2) = 8.48. P = 0.014.

Economic Performance: Regression

Ind Variables	Coefficient	P-value
Founder Nativity	.11	.30
Firm Age (log)	.31	<.001
Ph.D. founder	.27	.027

Note: Linear regression, weighted by age, sector, employment, and location.

N = 1046. R-Squared = .1015.

Dependent variable: firm employment (log)

Control variables (not displayed): 2-digit SIC, education level of most educated founder.

Tech. Performance: Crosstab

Table 7. High-Impact, High-Tech Companies by Founder Nativity and Internal R&D

Internal R&D?	Native-Founded	Immigrant-Founded	TOTAL
Yes	263 (25.1%)	73 (36.1%)	336 (26.9%)
No	786 (74.9%)	129 (63.9%)	915 (73.1%)
TOTAL	**1,049 (100%)**	**202 (100%)**	**1,251 (100%)**

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).
Note: Pearson chi-squared (1) = 10.56. P = 0.001.

Table 8. High-Impact, High-Tech Companies by Founder Nativity and Patent-Holding

Patent?	Native-Founded	Immigrant-Founded	TOTAL
Yes	207 (20.4%)	55 (28.6%)	262 (21.8%)
No	805 (79.5%)	137 (71.3%)	942 (78.2%)
TOTAL	**1,012 (100%)**	**192 (100%)**	**1,204 (100%)**

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).
Note: Pearson chi-squared (1) = 6.36. P = 0.012.

Tech. Performance: Regression

Ind Variables	Odds ratio	P-value
Founder Nativity	1.06	.74
Firm Emp (log)	1.29	<.001
Firm Age (log)	.76	.033
Ph.D. founder	4.59	<.001

Note: Logistic regression, weighted by age, sector, employment, and location.

N = 1041. Pseudo R-Squared = .11.

Dependent variable: positive response to any survey question on patenting, contract R&D, or in-house R&D.

Control variables (not displayed): 2-digit SIC, education level of most educated founder.

Strategic Relationship: Crosstab

Table 11. High-Impact, High-Tech Companies by Founder Nativity and Strategic Relationship with Company Outside United States

Foreign partner?	Native-Founded	Immigrant-Founded	TOTAL
Yes	238 (23.0%)	83 (41.9%)	321 (26.0%)
No	798 (77.0%)	115 (58.1%)	913 (74.0%)
TOTAL	**1,036 (100%)**	**198 (100%)**	**1,234 (100%)**

Source: Corporate Research Board, *High-Impact, High-Tech Company Survey Database* (2009).
Note: Pearson chi-squared (1) = 31.0. P = 0.000.

Strategic Relationship: Regression

Independent Variables	Odds ratio	P-value
Founder Nativity	1.88	.002
Log (Employment)	1.29	<.001
Firm Age	.95	.73

Note: Logistic regression, weighted by age, sector, employment, and location.

N = 1009. Pseudo R-Squared = .13.

Dependent variable: positive response to survey question on strategic foreign relationship.

Control variables (not displayed): 2-digit SIC,

education level of most educated founder.

Next Steps: Research

Publish this study in peer-reviewed lit.

Write team composition paper.

Complete qualitative study of matched (foreign-born and native-born) firm pairs.

Conclusions and Policy Issues

Immigrants are less important in high-impact, high-tech entrepreneurship than prior studies have estimated, but they are very important.

Immigrant-founded and native-founded firms appear to be very similar in most, but not all, respects.

High-tech immigrant entrepreneurs are strongly-rooted in the U.S.

Relevant immigration policy issues include criteria for admission and pathways among student, temporary work, and permanent status.