Are Immigrants More Innovative? Evidence from Entrepreneurs*

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Abstract

We evaluate the contribution of immigrant-entrepreneurs to innovation in the U.S. Immigrants are more likely than natives to own businesses, with a self-employment rate rising rapidly since 2000 and currently about 30 percent higher than the rate for natives. Concerning job creation, often thought to represent a large contribution of immigrant entrepreneurs, we find that the immigrant self-employed are somewhat less likely than natives to be employers, but the employer share of immigrants still exceeds their population and employment shares. Conditional on employing others, immigrant entrepreneurs tend to have slightly fewer employees. New firm-level data on innovation activities show immigrant-owned firms tend to be stronger along all measured dimensions, including creation of completely new products, new processes, both basic and applied RD, and patenting, although immigrant-owned firms are less likely to imitate products of others and to obtain copyrights and trademarks. The strong advantage of immigrants in innovation is reflected in substantially higher productivity of their firms. Beyond these key findings, the paper delves into potential explanations of the immigrant-native differences, including other characteristics of the entrepreneur, access to finance, choice of industry, immigrant self-selection, and effects of experiencing cultural diversity. We find that the immigrant innovation advantage holds in both high-tech and non-high-tech industries and that it tends to be even stronger in firms owned by diverse immigrant-native teams. We conclude that nearly all types of measures show that immigrant-owned firms tend to operate more innovative and productive

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firms, which, together with the high share of business ownership by immigrants, implies large contributions to U.S. innovation.

1 Paper Proposal and Summary

Do immigrant entrepreneurs create and operate businesses that are more innovative than those owned by native-born Americans? The presumption that immigrant owners contribute disproportionately to U.S. economic growth is implicit in such policies as the EB-5 visa program, which provides a special pathway to U.S. residence for immigrant entrepreneurs founding large businesses. Immigrants might create more innovative firms on average because they self-select on risk preferences (with the exception of refugees), and both immigration and innovation involve considerable uncertainty. Another possibility is that the immigrant's experiences of multiple societies, cultures, and languages foster innovations based either on recombination of diverse ideas or on the broader choice sets enabled by diversity of experiences. An opposing mechanism could be immigrants' disadvantages in language and local knowledge that may be necessary complements for radical departures from conventional practice, making immigrants more likely to simply imitate local standards.

Despite the policy relevance and popular interest in immigrants, as yet there has been relatively little systematic evidence on their role as potentially innovative entrepreneurs. A number of studies have examined immigrants as individual inventors, as employees of high-tech firms, and as scientists, engineers, and self-employed, but few have studied immigrant-owned firms. The few firm-level studies focus on size and growth.[1] Only Hart and Acs (2011) examine innovation measures – research and development and patenting – at the firm-level, using a survey of 1300 "high impact" high tech companies. They report little difference between firms with and without immigrant founders. A few other studies focus on particular industries, regions, or immigrant ethnicities.

This paper aims to contribute to understanding of the innovation impact of immigrant entrepreneurship on the U.S. economy using a much larger, broader, and richer data set than those heretofore available. Most of our analysis exploits the Annual Survey of Entrepreneurs (ASE), a new database from the U.S. Census Bureau covering about 290,000 employer businesses based on a random sample of all nonfarm businesses. Like the well-known Surveys of Business Owners (SBO), the ASE questionnaire contains detailed information on the four largest owners and some characteristics of the business, which provide us with control variables for measuring immigrant-native differences conditional on other characteristics including demographics, human capital, and ownership team. Unlike the SBO, however, and crucially for this paper, the ASE also includes many innovation measures that we study as outcome variables, including reported innovation activities in both products and

[1] As far as we can determine, there are two published studies of job creation by immigrant entrepreneurs using broad, representative samples: Fairlie and Lofstrom (2015) and Kerr and Kerr (2020)

processes, research and development, trademarks, and patents. We also link these data to other data sources on patents, and on revenue and employment, which we use to construct measures of productivity. And we study Decennial Census, American Community Survey, and Current Population Survey data to examines shares of immigrants by employment and self-employment status and for the numbers of employees that immigrant entrepreneurs hire.

The subject of our study lies at the intersection of several large areas of research. To start with, there is a voluminous literature on the economic effects of immigrants. Most of this research focuses on the consequences of immigration for native worker wages and treats immigrants as a qualitatively similar factor of production, so that immigration represents a labor supply shock to a particular region or education-experience group (e.g., Borjas (2003), Card (2001), and Ottaviano and Peri (2012)). Other immigration research focuses on the disadvantage faced by immigrants in U.S. labor markets and the extent and pace of immigrant-native convergence in wages, or "assimilation" (e.g., Borjas (1985), Chiswick, Lee and Miller (2005)). Some studies of immigrants consider the possibility that immigrants have certain advantages, and document higher rates of STEM workforce participation, patents, publication citations, and Nobel Prize winners among immigrants (Kerr and Lincoln (2010), Stephan and Levin (2001), **?**.

Yet much innovation takes place within firms, and our study relates to research on firm-level Research and Development (R&D), patenting, and other aspects of innovation. As widely recognized, however, R&D and patents both have limitations as measures of innovation, much of which takes place without formal RD or patenting. Some surveys, including the Community Innovation Surveys (CIS) in Europe and the Business Research and Development and Innovation Survey (BRDIS) in the US, attempt to fill this gap with qualitative questions on product and process innovations (Mairesse and Mohnen (2010)). These surveys have documented the incidence of such activities and demonstrated their correlation with productivity (e.g., Griffith et al. (2006) Parisi, Schiantarelli and Sembenelli (2006), Hall (2011). But the data in these studies is usually based on small samples (for example, only 5000 receive the full questionnaire for the BRDIS) that are non-randomly selected to focus on firms with known R&D activity. And crucially, for our purposes, they contain no information on the firm's founders or owners.

Our analysis begins with measuring the contribution of immigrants to entrepreneurship. To take a long view, we compile immigrant shares in population, employment, and self-employment using Decennial Census data from 1910 (the earliest year for which self-employment can be distinguished) to 2000, and American Community Survey data for recent years. Figure 1 contains the results. The time series for all variables shows a pronounced U-shape with the trough in 1970 and much higher but roughly similar levels in the early

20th and early 21st centuries. Focusing on the more recent period, the immigrant shares in U.S. employment and self-employment both doubled from about 7 percent in 1980 to 14 percent in 2000, but diverged afterward as the employment share rose to 17.4 percent in 2017, while the self-employment share rose substantially more, to 21.2 percent. These results imply a nearly 30 percent higher propensity as of 2017 for immigrants than natives to work as self-employed rather than as employees. Note, however, that prior to 1970, the employment and self-employment shares of immigrants tended to be more similar, and prior to 1940, the self-employment share was actually lower than that for natives.

In the broad literature on entrepreneurship, the self-employment measure is subject to criticism (e.g., Parker (2004)), as it may reflect outside contracting, casual work, or subsistence or "necessity" activities, and it does not take into account the degree to which the venture is genuinely entrepreneurial in the colloquial sense, creating jobs and innovating with new products or production processes. One approach in previous research (e.g., Levine and Rubinstein (2017)) to come closer to this notion of new business creation is to distinguish incorporated from unincorporated self-employed businesses. Kerr (2017) report a high and increasing share of incorporated businesses among immigrants. Adopting this perspective, we use information on incorporation, which is available in the Decennial since 1970 and in the ACS for all years, we show the immigrant shares for 1970-2017 in Figure 2.

In 2017, the immigrant share in incorporated self-employment is slightly lower than for unincorporated (20.4 versus 21.7 percent). But going back to 1970, when the immigrant share in employment was only 6 percent, the situation was reversed as the incorporated exceeded the unincorporated share (9.5 versus 7 percent). Moreover, the post-2000 divergence in self-employment rates is associated with a much faster rise in unincorporated than incorporated self-employment among immigrants: from 2000 to 2017, the immigrant share in the former nearly doubled from 11.8 to 21.7 percent while growth for the latter was much smaller, from 16.2 to 20.4 percent. Both the incorporated and unincorporated shares of immigrants exceed their employment share throughout this period, but at least for the recent period consideration of incorporation does not really strengthen the case for a disproportionate contribution of immigrants to U.S. entrepreneurship.

These calculations include all workers regardless of their hours, but working longer hours might be taken as a proxy of more committed entrepreneurship. As a step in this direction, Figure 2 contains the share of immigrants in full-time self-employed. This variable is also similar to the immigrant share in employment and self-employment until about 2000 after which it rises rapidly, diverging from the rise in employment. By 2017, it reaches 23 percent. By this measure, immigrants appear to be more committed entrepreneurs.

Figure 3 uses recent Current Population Survey (CPS) data both to replicate this analysis

and to take another perspective: self-employed individuals who hire employees. For the latter purpose, we exploit new data on the number of employees reported by self-employed individuals in questions added to the Outgoing Rotation Groups (ORG) questionnaire since 2014. Data are also shown for immigrant shares in population, employment, and self-employment for the year 1994, the first year that the CPS included regular question on immigration status. The CPS results are similar to the Decennial, ACS, including the relative fall in the share of incorporated businesses among immigrants. The share of immigrants among employers (self-employed who have employees) is 19.4 percent (on average over 2014-18), which is higher than the share in employment (18.3) but lower than the share in self-employed (20.4), so the interpretation depends on which perspective one takes. Studies of employer probabilities (e.g., Fairlie and Lofstrom (2015)) usually take existing businesses as the base, implying a comparison of the employer share and the self-employment share, but if the question is about immigrants' contributions, then the share in employment (18.3 percent) or population (15 percent, 18 percent for 16 and older) would be more appropriate. The relevant comparison group is an issue we will return to in analyzing data on firms and in drawing conclusions on the role of immigrants in U.S. entrepreneurship.

How much job creation takes place in firms owned by these self-employed immigrants? To compare with natives, Figure 3 shows the immigrant shares using various size thresholds that might be adopted for answering this question. The immigrant share in firms with at least 5 employees (17.5 percent) is similar to their total employment share, but the immigrant share declines with the size of the threshold, so that among firms with 50 or more employees, the share is only 12 percent. The mean number of employees for immigrant self-employed is 7.1, compared with 8.4 for native self-employed; the difference is likely understated because the publicly available variable is top-coded at 75, which is the 99th percentile of the native distribution, while 72 is the 99th percentile for immigrants. These CPS data imply that immigrant-owned firms tend to be smaller, undercutting the conventional wisdom that immigrants create the largest firms. However, we hasten to add that the CPS is unlikely to capture accurately larger businesses, because of the small CPS sample size, the tiny share of such firms, and the presence of multiple owners, many of whom do not report themselves as self-employed operators of the businesses.

To take into account these larger firms and in order to examine other outcome measures relevant for entrepreneurship, we turn to firm-level perspectives and data. Indeed, unlike the broader research on characteristics of entrepreneurs, at least within economics, studies of immigrant entrepreneurs more commonly use data on businesses. Many of these studies rely on small sample surveys of businesses in particular industries, regions, or ethnicities of owners. The high-tech sector has been a particular focus, for instance in Saxenian (2002),

Wadhwa et al. (2007), and Hart and Acs (2011). These studies are typically based on small sample surveys of firms, frequently collected by the authors themselves. Brown et al. (2019*a*) also focuses on high-tech firms, but uses a national sample and studies innovation outcomes, as discussed below.

Less common is firm-level research on immigrant entrepreneurs using large, nationally representative samples. Kerr (2017) use data from the Longitudinal Employer-Household Dynamics (LEHD) to identify immigrant-owned firms and examine various measures of firm performance in the Primary Metropolitan Statistical Areas (PMSAs) of eleven U.S. states. Focusing on new start-ups, they define immigrant-ownership for firms with at least one immigrant among the top three earners for the first three years after entry (first employee hired). Under this definition, they find rates of immigrant ownership increasing to 27 percent of employers in 2008, the last year in their data. They also report that the firms defined as immigrant-owned have higher rates of employment growth and probability of being large, but the results are not robust to adding fixed effects for cohort-PMSA-industry. Their regressions control for start-up size, and they exclude initial employment from the calculation of growth.

Kerr and Kerr (2020) uses a different data source to identify immigrant owners: the Survey of Business Owners (SBO) for 2007 and 2012. The SBO has the large advantage over the LEHD in containing direct questions on the characteristics, including immigrant status, of the top four owners in the firm (for owners with at least 10 percent ownership). Restricting attention to employer firms, Kerr and Kerr (2020) report 16 percent of firms have at least one immigrant owner in 2007, and 18 percent in 2012. The share of firms less than five years old with an immigrant owner is reported as 24 and 26 percent for the two years, respectively. Using the same 2007 SBO data but a different method based on the ownership shares of immigrants within firms and focusing on new entrants, Brown et al. (2019*b*) report that 15 percent of firms are wholly owned by immigrants and another 4.3 percent are owned by mixed immigrant-native teams.

The SBO data are rich in firm characteristics, which Kerr and Kerr (2020) exploit to examine differences in immigrant versus native-owned firms. For the raw data, they report that immigrant-owned firms have fewer employees, pay lower wages, and provide fewer fringe benefits. These results are largely robust to a large battery of controls used in regressions. With log employment as the dependent variable, for instance, Kerr and Kerr (2020) report eight different specifications for all firms and for firms younger than five years old, separately, and report negative coefficients in all 16 cases, ranging from -0.1 to -0.3 in magnitude. They also report higher productivity (receipts per employee) among immigrant-owned firms, with coefficients ranging from 0 to 0.1.

Building on this research, we bring in new data and consider a broader set of outcome

measures related to innovation. The most important new data are from the Annual Survey of Entrepreneurs (ASE), with several advantages over other sources. Like the SBO, the ASE has detailed questions on owner characteristics, permitting not only immigrants to be distinguished but also other human capital and demographic characteristics to be included as control variables. The data on multiple owners allow us to study entrepreneurial teams, particularly mixed immigrant-native teams. Questions about amount of start-up finance permit us to control, in some specifications, for this very important correlate of firm performance. Particularly useful for this paper is that the 2014 ASE contains a large module on innovation, including standard innovation survey questions on product and process innovation activities, on RD, and on intellectual property, including whether or not the firm has a patent. Finally, we have linked the ASE with the 2014 Business Register (BR), Longitudinal Business Database (LBD), and Census Bureau data on patenting firms. The BR link is crucial for identifying the exact quarter in which the firm enters (defined as first hire at any of its establishments) and for providing the revenue and number of employees. The LBD contains firm age (defined as entry of any of a firm's establishments), an essential control variable given the strong association between firm age and performance, and it allows us to aggregate establishments into firms. The data on patenting firms contain the number of patents, not just an indicator for any patent. Together, these data provide measures of entrepreneurial performance.

Preliminary results from analysis of these data are shown in tables 3-20. Our general procedure is to estimate how the gap changes with various sets of controls. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Accordingly, results are shown for three different regression specifications: The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Both the amount of finance and the industry in which the firm operates are, to some extent choice variables, and thus arguably endogenous in these equations, but the results help illuminate the degree to which these factors condition the immigrant-native differences.

To summarize briefly, the firm-level data corroborate findings from the CPS analysis reported above that immigrants are more likely to be employers but also that their firms tend to be similar or smaller in number of employees, compared with native entrepreneurs. The probability of an immigrant-owned firm being large – here defined as in the top 5 percent of the employment size distribution (more than 38 employees) is one percentage point (or 20 percent) lower than for natives. Clear differences between immigrant and native entrepreneurs manifest when we consider productivity and innovation, with immigrant-owned

firms 12-18 percent higher in productivity and two percentage points more likely to be among the most productive firms in their industry (defined as the top five percent). Consistent with this finding for productivity, we also find that immigrants have an advantage in nearly every one of the many measures of innovation in our data, including most product and process innovation activities, all types of RD, and both the probability of patenting and the number of patents.

These results for innovation are complementary to a body of research on immigrants as scientists, inventors, and members of the science, technology, engineering, and mathematics (STEM) workforce. That literature documents higher rates of patents, publications and citations, STEM work, and Nobel Prizes among individual immigrants (Kerr and Kerr (2020), Stephan and Levin (2001), Hunt (2011); Kerr (2013); Kahn, La Mattina and J MacGarvie (2017); Hunt and Gauthier-Loiselle (2010)). However, it does not address innovation in firms owned by immigrants.

These estimates pertain to comparisons of individual immigrant and native entrepreneurs and comparisons of teams with all immigrants versus teams made up only of natives. By contrast, the results for mixed immigrant-native teams of owners are almost the reverse: such diverse teams tend to have more employees than native-only teams but no higher productivity and no difference in innovation outcomes.

For most outcomes the estimates are qualitatively similar for alternative sets of control variables. In ASE and SBO data on employer businesses, as in Kerr and Kerr (2020), immigrants use higher levels of finance when starting up their businesses, as shown for the ASE in Figure 4. This result suggests that financial market discrimination is not a systematic problem for immigrants and instead it likely reflects differences in demand for finance associated with the ideas and plans for the business. The finance variable is thus endogenous, which is why we exclude it from base specifications. Controlling for it, as shown in the "+ finance" specifications, only slightly attenuates the coefficients on immigrant owner, as shown in the figures with results.

Another potential control, one that is also endogenous to planned outcomes, is the choice of industry in which the business operates. Firms are obviously quite heterogeneous across industries in terms of some of our outcome variables, including employment size and innovation, especially patenting. The distribution of immigrant entrepreneurs across industries differs somewhat from natives, as shown in Figure 5. Immigrant-owned employer businesses are more likely to operate in trade, food, and health care services, and less likely in construction, manufacturing, and business services; they are slightly less likely to be in High Tech, defined as industries with substantial RD spending. Controlling for 4-digit industry fixed effects has a substantial impact on the job creation coefficients, which become negative

for both the number of employees and the probability of being in the largest five percent of employers. Productivity coefficients are little affected, however, and most innovation coefficients decline only slightly, including the probability of patenting. Together, these results suggest that immigrants tend to choose industries with higher average employment as well as somewhat higher innovation, especially in the number of patents.

In further extensions, we consider further analysis of mixed immigrant-native entrepreneurial teams, and of heterogeneity of the immigrant difference by education, high-tech versus non-high-tech industries, and by country/region of origin. The general pattern that emerges is that the magnitude of the immigrant advantage varies somewhat but is uniformly positive across these dimensions of heterogeneity.

Overall, the review and extension of empirical evidence in this paper leads to the conclusion that immigrants are indeed more innovative, viewed from most perspectives. Among the interesting questions suggested for future research is the source of the immigrant advantage. We can distinguish three types of explanations based on differences in constraints, preferences, and skills. Kim (2018) has argued that immigrants become entrepreneurs because of greater difficulties finding jobs as wage-and-salary employees. Or perhaps immigrants have stronger preferences to "be their own boss" or a higher tolerance for risk. These explanations could account for higher self-employment rates, but have difficulty explaining the much higher productivity and innovation at immigrant-owned firms. Moreover, higher risk tolerance would seem to imply greater dispersion in outcomes resulting from riskier behavior, but we find no evidence of higher dispersion, either in the residuals from earnings regressions or in employment (whether CPS or firm-level data), productivity, or patents. Instead, we find immigrant and native entrepreneurs have similarly shaped distributions for all these outcome variables.

Thus, the more likely explanation for the mean differences in entrepreneurship seems to be related to skills. The regressions we have presented (specifications from "+ Human Capital" on) control for observables including education, former business ownership, and military experience. The relevant skills are unobserved, but an interesting question is whether they reflect self-selection of immigrants with higher entrepreneurial skills than the general population or, alternatively, that there is a causal effect of immigration that leads to more entrepreneurship. The former could happen because immigration is itself an entrepreneurial act, involving risk-taking in hopes of improvement. The latter could occur if immigrants can more easily spy market opportunities, gaps that could be filled, as a result of their experience of different cultures and institutions. Yet another possibility is that the ability distribution of immigrants has a fatter right tail than for natives, and that entrepreneurs are drawn from that right tail, leading to more immigrants with higher skills entering entrepreneurship

(Åstebro, Chen and Thompson (2011); Kahn, La Mattina and J MacGarvie (2017)), although our finding of similar dispersion in outcomes for immigrant and native entrepreneurs is inconsistent with that hypothesis. The results in this paper raise these all intriguing questions for future research.

Our conclusion that immigrants are more likely to become entrepreneurs, creating jobs (if not disproportionately), raising productivity, and innovating more than natives, suggests that along these dimensions immigrants may have positive externalities for U.S. economic growth. Of course, there may be displacement as well, and Fairlie and Meyer (2003) report evidence of crowding out of native self-employed, although they also find positive effects on native self-employed earnings. As in the debate over the impact of immigration on native worker wages, the extent of displacement depends on the similarity of immigrant and native skills, and the degree of substitution versus complementary between them. Our findings concerning productivity and innovation suggest that immigrant skills are at least somewhat different, and that immigrant entrepreneurs may contribute positively to the growth of the U.S. economy.

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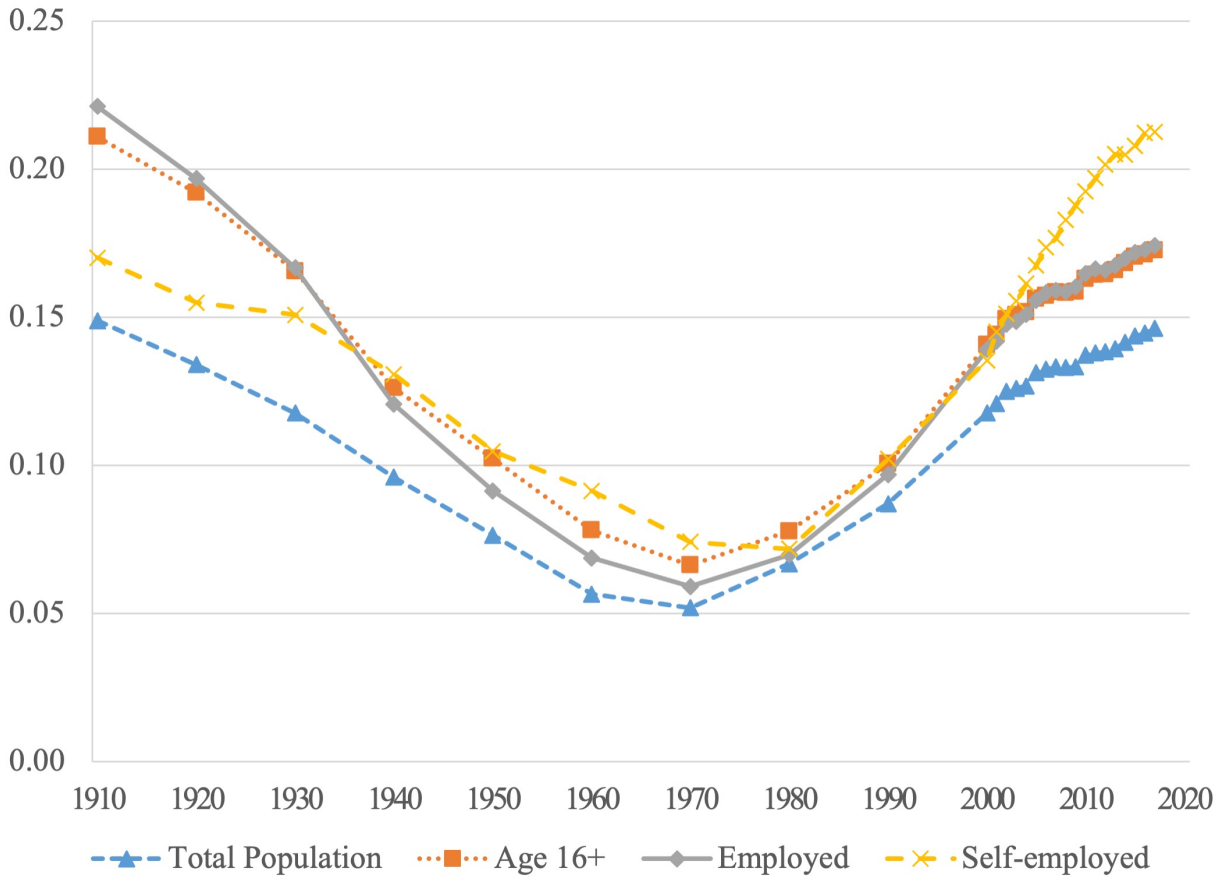
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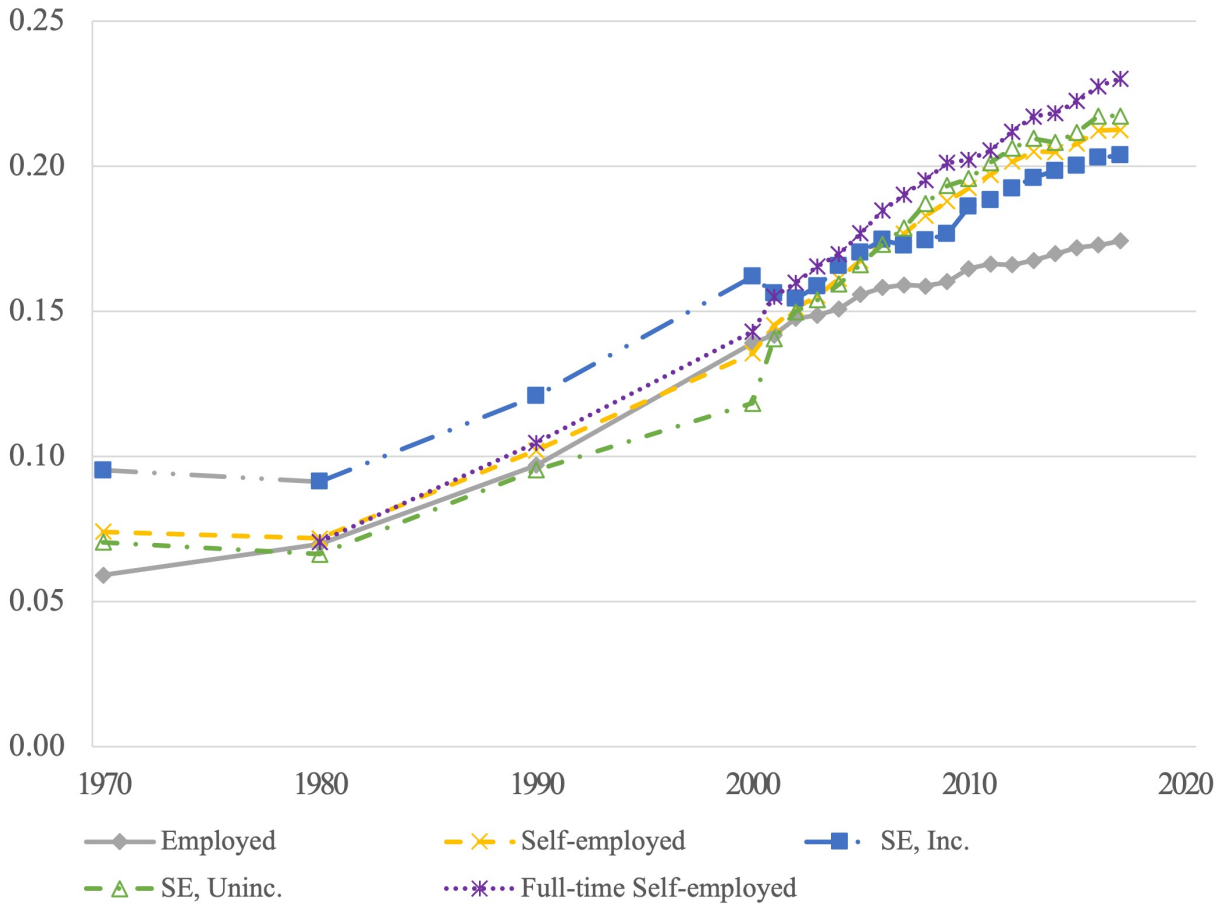
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Figure 1: Share of Foreign Born by Sub-Population Groups, Decennial Census 1910-2000 and ACS 2001-2017



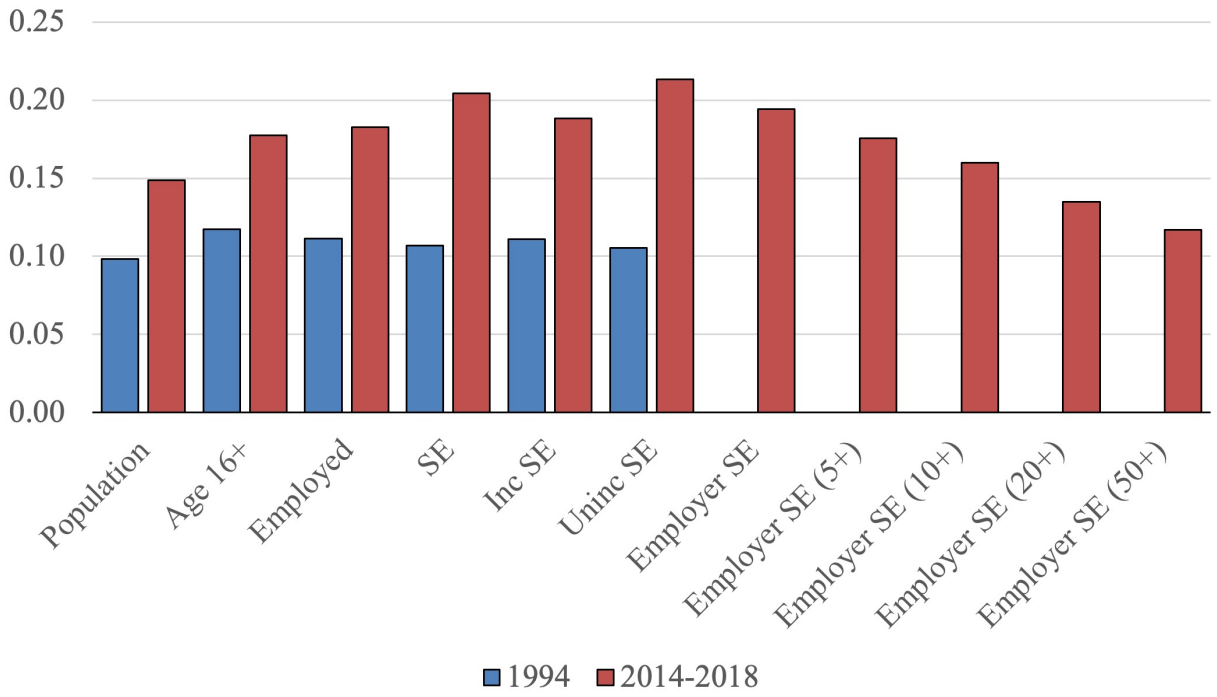
Note: Data sources include Decennial Census 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000 and American Community Survey 2001-2017. Estimates are weighted by final person weights provided by the Census.

Figure 2: Share of Foreign Born by Employed and Self-employed, Decennial Census 1970-2000 and ACS 2001-2017



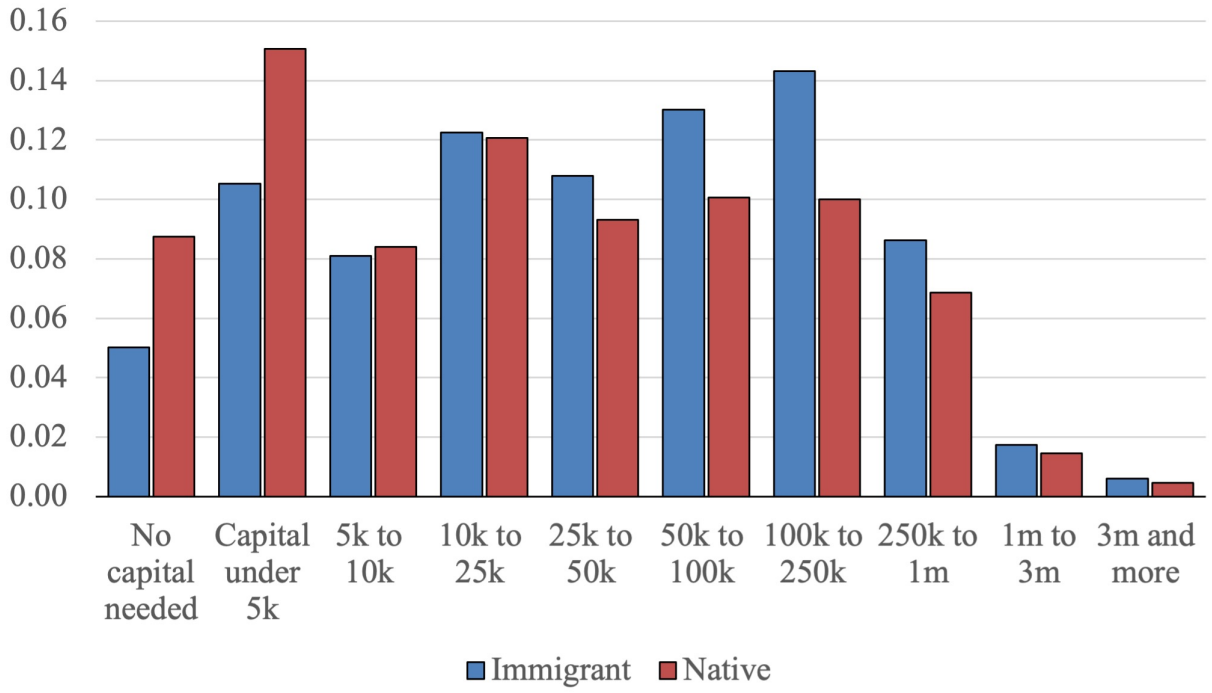
Note: Data sources include Decennial Census 1970, 1980, 1990, 2000 and American Community Survey 2001-2017. Estimates are weighted by final person weights provided by the Census.

Figure 3: Share of Foreign Born, CPS Monthly 1994 and CPS MORGs 2014-2018



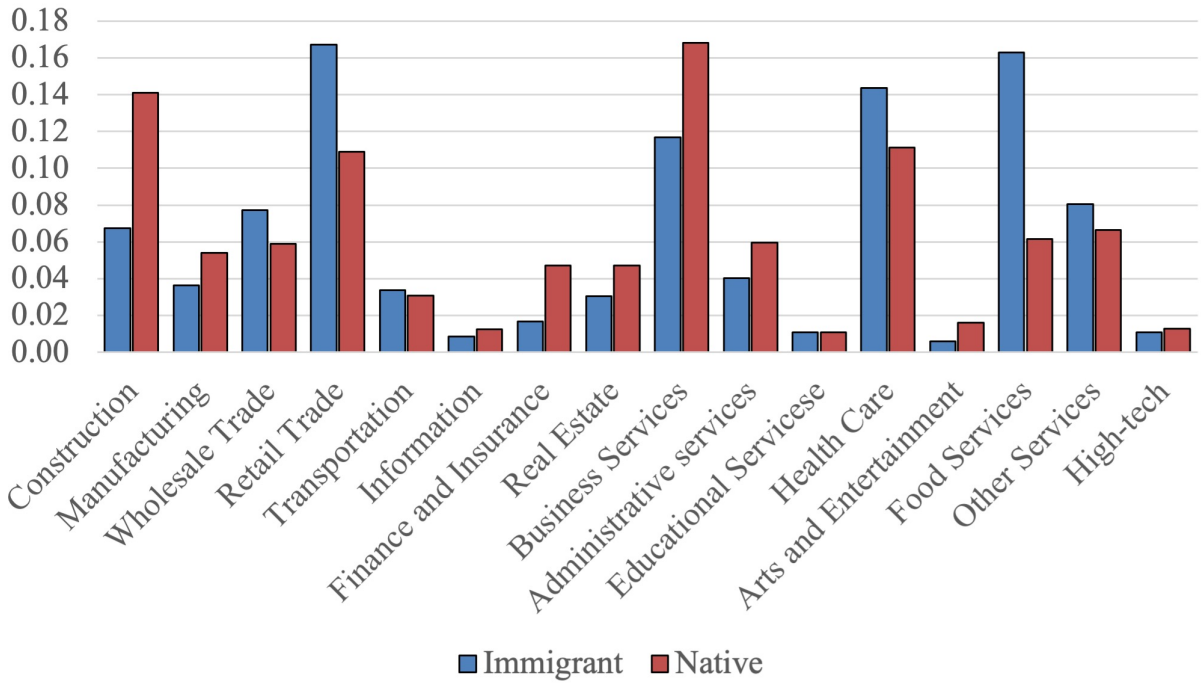
Note: Data sources include Current Population Survey (CPS) Monthly 1994 and CPS Monthly Outgoing Rotation Groups (MORGs) 2014-2018. Estimates are weighted by final person weights provided by the Census.

Figure 4: Immigrant-Native Owner Differences by Start-up Capital Amount, ASE 2014



Note: These are percentages of owners by start-up capital amount dummies from ASE 2014.

Figure 5: Immigrant-Native Owner Differences by Industry, ASE 2014



Note: These are percentages of owners by NAICS 2 digit industry, and the high-tech sector is defined as industries on top 10 percent of RD activities calculated from the ASE 2014.

Table 1: Descriptive Statistics: Innovation and Employment

VARIABLES	Any-Immigrant	Only-Immigrant	Diverse-Immigrant	Natives
Innovation Activities				
Innovation Count	2.52	2.455	2.816	2.107
Innovation Dummy	0.564	0.555	0.605	0.527
Product Innovation	0.445	0.440	0.472	0.397
New Product to Other Business	0.072	0.068	0.087	0.047
New Product to This Business	0.145	0.134	0.193	0.154
Other Product Innovations	0.422	0.417	0.442	0.367
Product Performance	0.297	0.289	0.333	0.262
Product New Use	0.147	0.148	0.143	0.079
Product New Feature	0.231	0.224	0.260	0.186
Product Easy to Use	0.316	0.316	0.317	0.254
Process Innovation	0.463	0.454	0.507	0.432
Process New Way	0.224	0.216	0.260	0.195
Process Distribution	0.214	0.211	0.226	0.147
Process Upgrade	0.346	0.334	0.397	0.337
Process Improve	0.212	0.202	0.255	0.197
Process Reduce Cost	0.161	0.157	0.179	0.129
Process Delivery	0.157	0.154	0.167	0.121
R&D Activities				
Basic R&D	0.056	0.050	0.084	0.038
Applied R&D	0.054	0.049	0.074	0.037
Intellectual Property				
Copyright or Trademark	0.083	0.070	0.143	0.080
Patent Pending	0.011	0.008	0.025	0.007
Patent Granted	0.014	0.010	0.029	0.011
No. of Patent 2012-2014 >0	0.005	0.004	0.009	0.003
No. of Patent 2012-2014 >2	0.002	0.001	0.003	0.001
No. of Patent >0 2015-2017	0.005	0.004	0.012	0.003
No. of Patent >2 2015-2017	0.002	0.001	0.003	0.001
No. of Firm Obs ASE Sample	31,000	24,600	6,400	168,000
Employment & Productivity				
Top 5% Employment	0.035	0.026	0.079	0.055
Top 5% Productivity	0.069	0.070	0.066	0.046
Employment	1.275	1.176	1.728	1.401
Productivity (Deviation)	0.118	0.116	0.127	-0.005
No. of Firm Obs ASE+LBD Sample	20,000	15,400	4,600	116,000

Note: Data are from the 2014 Annual Survey of Entrepreneurs (ASE), 2012-2014 2015-2017 Census Bureau Patent Crosswalk Data, and 2014 Business Register (BR). The results presented in this table are approved for dissemination by the DRB (CBDRB-FY2020-CES005-034).

Table 2: Descriptive Statistics: Firm and Owner Characteristics

VARIABLES	Any-Immigrant	Only-Immigrant	Diverse-Immigrant	Natives
Firm Age				
0-2	0.222	0.227	0.195	0.147
3-5	0.211	0.217	0.180	0.145
6-10	0.242	0.247	0.22	0.207
11-15	0.310	0.295	0.378	0.470
16 or more	0.016	0.013	0.027	0.032
No. of Owner				
1	0.553	0.674	0	0.592
2-4	0.398	0.290	0.886	0.369
5 or more	0.042	0.028	0.107	0.035
N. of Owner Don't Know	0.008	0.008	0.007	0.005
Gender Family Relationships				
Any female	0.442	0.390	0.679	0.407
Female Only	0.178	0.209	0.039	0.166
Female Diverse Unrelated	0.058	0.037	0.154	0.037
Female Diverse Family	0.206	0.145	0.486	0.204
Owner Age				
Under 25	0.004	0.003	0.006	0.003
25-34	0.063	0.062	0.068	0.052
35-44	0.239	0.245	0.210	0.159
45-54	0.324	0.331	0.294	0.285
55-64	0.250	0.248	0.262	0.315
65 or more	0.120	0.111	0.159	0.186
Prior Business	0.360	0.354	0.389	0.316
Veteran	0.024	0.015	0.065	0.113
Education				
Less than High School	0.087	0.096	0.048	0.024
High School	0.189	0.197	0.151	0.188
Some College	0.221	0.217	0.239	0.275
University	0.245	0.232	0.306	0.281
Graduate	0.258	0.258	0.257	0.232
Finance				
No Capital needed	0.051	0.051	0.051	0.092
Capital Under 5k	0.114	0.116	0.105	0.161
5k-10k	0.081	0.084	0.065	0.086
10k-25k	0.127	0.132	0.105	0.121
25k-50k	0.109	0.113	0.092	0.093
50k-100k	0.128	0.129	0.126	0.099
100k-250k	0.134	0.133	0.137	0.096
250k-1m	0.085	0.079	0.112	0.064
1m-3m	0.018	0.015	0.033	0.014
3m more	0.007	0.006	0.013	0.005
Don't Know Start up Capital	0.146	0.142	0.163	0.169
Industry				
Primary Sector	0.003	0.002	0.006	0.011
Construction	0.068	0.066	0.075	0.135
Manufacturing	0.035	0.030	0.062	0.047
Wholesale Trade	0.068	0.067	0.069	0.052
Retail Trade	0.156	0.165	0.115	0.108
Transportation	0.032	0.033	0.026	0.030
Information and Finance	0.029	0.026	0.043	0.061
Real Estate	0.036	0.032	0.049	0.051
Professional	0.123	0.117	0.150	0.167
Administrative and Support	0.046	0.045	0.051	0.065
Education	0.011	0.010	0.016	0.011
Health	0.135	0.139	0.112	0.109
Art and Entertainment	0.008	0.007	0.013	0.019
Accommodation and Food	0.169	0.173	0.149	0.062
Other Services	0.082	0.087	0.062	0.066
High Tech	0.064	0.060	0.078	0.049
No. of Firm Obs ASE Sample	31,000	36,400	6,400	168,000

Note: Data are from the 2014 Annual Survey of Entrepreneurs (ASE), AND 2012-2014 2015-2017 Census Bureau Patent Crosswalk Data. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY2020-CES005-034).

Table 3: Regression Results: Innovations by Any-Immigrant

VARIABLES	(1) + Human Capital	(2) + Finance	(3) + Industry
Innovation Activities			
Innovation Count	0.372	0.290	0.224
	(0.022)	(0.022)	(0.023)
Innovation Dummy	3.414	1.806	1.304
	(0.356)	(0.354)	(0.363)
Product Innovation	4.297	2.929	1.629
	(0.356)	(0.356)	(0.364)
New Product to Other Business	2.127	1.989	1.350
	(0.180)	(0.181)	(0.186)
New Product to This Business	-1.591	-2.283	-3.787
	(0.254)	(0.256)	(0.263)
Other Product Innovations	4.959	3.682	2.717
	(0.353)	(0.353)	(0.362)
Product Performance	3.274	2.298	1.693
	(0.326)	(0.327)	(0.335)
Product New Use	6.296	5.987	5.258
	(0.246)	(0.246)	(0.252)
Product New Feature	3.905	3.142	1.847
	(0.299)	(0.299)	(0.307)
Product Easy to Use	5.713	4.747	3.7
	(0.331)	(0.331)	(0.341)
Process Innovation	2.934	1.441	1.469
	(0.357)	(0.356)	(0.366)
Process New Way	2.186	1.321	0.764
	(0.298)	(0.298)	(0.310)
Process Distribution	6.214	5.499	4.766
	(0.290)	(0.290)	(0.299)
Process Upgrade	0.908	-0.317	0.022
	(0.339)	(0.339)	(0.349)
Process Improve	1.684	1.001	1.069
	(0.291)	(0.292)	(0.302)
Process Reduce Cost	3.127	2.608	2.669
	(0.261)	(0.262)	(0.269)
Process Delivery	3.381	2.960	3.065
	(0.259)	(0.260)	(0.268)
Basic R&D	1.656	1.609	1.236
	(0.161)	(0.162)	(0.164)
Applied R&D	1.435	1.411	1.098
	(0.158)	(0.159)	(0.163)
Copyright/Trademark	0.346	0.148	-0.584
	(0.197)	(0.198)	(0.202)
Observations	199,000	199,000	199,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 4: Regression Results: Patents by Any-Immigrant

VARIABLES	(1) + Human Capital	(2) + Finance	(3) + Industry
Patent Granted	0.380	0.357	0.233
	(0.081)	(0.082)	(0.083)
Patent Pending	0.302	0.278	0.190
	(0.071)	(0.071)	(0.073)
2012-2014 Patent>0	0.182	0.179	0.141
	(0.046)	(0.047)	(0.048)
2012-2014 Patent>2	0.080	0.080	0.060
	(0.026)	(0.026)	(0.026)
2015-2017 Patent>0	0.211	0.209	0.180
	(0.050)	(0.050)	(0.051)
2015-2017 Patent>2	0.089	0.090	0.080
	(0.029)	(0.029)	(0.030)
Observations	199,000	199,000	199,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 5: Regression Results: Employment and Productivity by Any-Immigrant

VARIABLES	(1) + Human Capital	(2) + Finance	(3) + Industry
Employment Top5%	-1.102	-1.213	-1.317
	(0.155)	(0.155)	(0.162)
Productivity Top5%	1.858	1.8	1.908
	(0.223)	(0.224)	(0.231)
Employment	-0.067	-0.110	-0.141
	(0.009)	(0.009)	(0.009)
Productivity (Deviation)	0.103	0.094	0.107
	(0.009)	(0.009)	(0.009)
Observations	135,000	135,000	135,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 6: Regression Results: Innovations by Only-Immigrant and Diverse-Immigrant

	(1)		(2)		(3)	
	+ Human Capital		+ Finance		+ Industry	
VARIABLES	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant
Innovaction Activities						
Innovation Count	0.369	0.3876	0.2804	0.33	0.219	0.246
	(0.024)	(0.051)	(0.024)	(0.050)	(0.025)	(0.049)
Innovation Dummy	3.456	3.227	1.721	2.188	1.311	1.277
	(0.390)	(0.751)	(0.389)	(0.748)	(0.400)	(0.733)
Product Innovation	4.489	3.435	3.022	2.514	1.742	1.156
	(0.390)	(0.764)	(0.389)	(0.761)	(0.401)	(0.740)
New Product to Other Business	2.892	3.123	1.283	2.145	1.441	1.583
	(0.390)	(0.766)	(0.390)	(0.764)	(0.402)	(0.749)
New Product to This Business	1.998	2.705	1.854	2.592	1.229	1.858
	(0.195)	(0.432)	(0.196)	(0.431)	(0.202)	(0.421)
Other Product Innovations	-2.118	0.772	-2.861	0.291	-4.501	(0.796)
	(0.272)	(0.602)	(0.274)	(0.603)	(0.284)	(0.577)
Product Performance	5.203	3.863	3.835	3.000	2.947	1.754
	(0.387)	(0.760)	(0.387)	(0.757)	(0.399)	(0.739)
Product New Use	3.041	4.323	1.996	3.647	1.486	2.563
	(0.356)	(0.719)	(0.356)	(0.720)	(0.368)	(0.699)
Product New Feature	6.644	4.738	6.316	4.521	5.629	3.704
	(0.273)	(0.533)	(0.273)	(0.533)	(0.281)	(0.521)
Product Easy to Use	3.844	4.178	3.032	3.634	1.757	2.225
	(0.326)	(0.669)	(0.326)	(0.667)	(0.337)	(0.649)
Process Innovation	6.287	3.134	5.254	2.484	4.224	1.503
	(0.363)	(0.711)	(0.364)	(0.710)	(0.376)	(0.697)
Process New Way	2.043	2.827	1.118	2.226	0.509	1.836
	(0.323)	(0.671)	(0.324)	(0.670)	(0.338)	(0.667)
Process Distribution	6.471	5.064	5.707	4.569	4.956	3.968
	(0.318)	(0.639)	(0.318)	(0.638)	(0.329)	(0.633)
Process Upgrade	0.503	2.724	-0.819	1.921	-0.352	1.589
	(0.370)	(0.747)	(0.370)	(0.746)	(0.382)	(0.734)
Process Improve	1.423	2.854	0.699	2.347	0.853	1.974
	(0.315)	(0.663)	(0.316)	(0.662)	(0.329)	(0.650)
Process Reduce Cost	3.260	2.529	2.711	2.148	2.886	1.759
	(0.285)	(0.584)	(0.286)	(0.583)	(0.296)	(0.569)
Process Delivery	3.484	2.914	3.035	2.622	3.210	2.459
	(0.284)	(0.572)	(0.284)	(0.572)	(0.294)	(0.563)
Basic R&D	1.257	3.446	1.212	3.382	0.954	2.421
	(0.171)	(0.413)	(0.172)	(0.413)	(0.176)	(0.382)
Applied R&D	1.084	3.012	1.059	2.98	0.860	2.097
	(0.170)	(0.388)	(0.171)	(0.388)	(0.176)	(0.366)
Copyright/Trademark	-0.426	3.807	-0.624	3.592	-1.300	2.419
	(0.204)	(0.527)	(0.204)	(0.526)	(0.211)	(0.502)
Observations	199,000	199,000	199,000	199,000	199,000	199,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 7: Regression Results: Patents by Only-Immigrant and Diverse-Immigrant

	(1)		(2)		(3)	
	+ Human Capital		+ Finance		+ Industry	
VARIABLES	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant
Patent Granted	0.185	1.256	0.163	1.222	0.086	0.851
	(0.081)	(0.247)	(0.081)	(0.247)	(0.084)	(0.233)
Patent Pending	0.096	1.228	0.073	1.193	0.022	0.894
	(0.070)	(0.230)	(0.070)	(0.230)	(0.072)	(0.218)
2012-2014 Patent>0	0.152	0.314	0.151	0.303	0.136	0.166
	(0.048)	(0.134)	(0.048)	(0.134)	(0.050)	(0.128)
2012-2014 Patent>2	0.061	0.166	0.061	0.164	0.050	0.101
	(0.026)	(0.080)	(0.026)	(0.080)	(0.028)	(0.073)
2015-2017 Patent>0	0.122	0.609	0.122	0.595	0.111	0.471
	(0.049)	(0.158)	(0.049)	(0.158)	(0.051)	(0.152)
2015-2017 Patent>2	0.082	0.121	0.085	0.117	0.085	0.059
	(0.030)	(0.080)	(0.030)	(0.080)	(0.032)	(0.079)
Observations	199,000	199,000	199,000	199,000	199,000	199,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 8: Regression Results: Employment and Productivity by Only-Immigrant and Diverse-Immigrant

	(1)		(2)		(3)	
	+ Human Capital		+ Finance		+ Industry	
VARIABLES	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant	Only-Immigrant	Diverse-Immigrant
Employment Top5%	-1.401	0.143	-1.512	0.023	-1.642	-0.068
	(0.151)	(0.439)	(0.152)	(0.436)	(0.161)	(0.419)
Productivity Top5%	1.999	1.272	1.932	1.254	2.104	1.157
	(0.248)	(0.471)	(0.248)	(0.471)	(0.258)	(0.469)
Employment	-0.097	0.056	-0.144	0.034	-0.182	0.018
	(0.010)	(0.020)	(0.009)	(0.019)	(0.009)	(0.018)
Productivity (Deviation)	0.107	0.089	0.096	0.085	0.112	0.087
	(0.009)	(0.018)	(0.009)	(0.018)	(0.010)	(0.018)
Observations	199,000	199,000	199,000	199,000	199,000	199,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 9: Regression Results: Innovations by High-tech Any-Immigrant

VARIABLES	(1) + Human Capital	(2) + Finance	(3) + Industry
New Product to Other Business	0.701	0.450	-0.722
	(1.023)	(1.018)	(1.026)
New Product to This Business	-1.279	-1.544	-3.89
	(1.296)	(1.291)	(1.299)
Other Product Innovations	3.558	2.838	-0.800
	(1.515)	(1.502)	(1.495)
Process Innovation	2.152	1.759	-0.262
	(1.501)	(1.486)	(1.490)
Basic R&D	2.973	2.604	1.019
	(1.246)	(1.233)	(1.204)
Applied R&D	2.773	2.476	1.978
	(1.190)	(1.184)	(1.155)
Copyright/Trademark	-2.56	-2.728	-4.309
	(1.159)	(1.157)	(1.160)
Observations	8,900	8,900	8,900

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 10: Regression Results: Patents by High-tech Any-Immigrant

VARIABLES	(1) + Human Capital	(2) + Finance	(3) + Industry
Patent Granted	1.017	1.013	0.491
	(0.659)	(0.656)	(0.644)
Patent Pending	1.495	1.334	1.070
	(0.676)	(0.663)	(0.650)
2012-2014 Patent>0	1.160	1.175	1.005
	(0.450)	(0.450)	(0.449)
2012-2014 Patent>2	0.832	0.860	0.776
	(0.305)	(0.309)	(0.308)
2015-2017 Patent>0	1.556	1.553	1.478
	(0.492)	(0.483)	(0.483)
2015-2017 Patent>2	0.515	0.527	0.507
	(0.297)	(0.289)	(0.295)
Observations	8,900	8,900	8,900

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 11: Regression Results: Employment and Productivity by High-tech Any-Immigrant

	(1) + Human Capital	(2) + Finance	(3) + Industry
Employment Top5%	0.716	1.038	0.611
	(0.689)	(0.684)	(0.688)
Productivity Top5%	3.089	3.061	3.052
	(0.889)	(0.881)	(0.870)
Employment	-0.004	0.021	0.025
	(0.036)	(0.035)	(0.035)
Productivity (Deviation)	0.079	0.082	0.085
	(0.037)	(0.037)	(0.037)
Observations	6,700	6,700	6,700

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 12: Regression Results: Innovation by High-tech Only-Immigrant and Diverse-Immigrant

	+ Human Capital		+ Finance		+ Industry	
VARABLES	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
New Product to Other Business	-0.124	3.495	-0.351	3.167	-1.429	1.613
	(1.111)	(2.140)	(1.100)	(2.129)	(1.124)	(2.074)
New Product to This Business	-2.938	4.348	-3.168	3.963	-5.759	2.281
	(1.418)	(2.579)	(1.410)	(2.577)	(1.442)	(2.476)
Other Product Innovations	3.349	4.265	2.608	3.618	-1.52	1.576
	(1.700)	(2.706)	(1.683)	(2.670)	(1.697)	(2.553)
Process Innovation	0.646	7.255	0.205	7.032	-2.117	5.867
	-1.698	(2.594)	(1.679)	(2.560)	(1.692)	(2.514)
Basic R&D	0.366	11.81	0.010	11.4	-1.141	8.151
	-1.362	(2.523)	(1.346)	(2.502)	(1.330)	(2.329)
Applied R&D	0.410	10.79	0.116	10.48	0.229	7.755
	(1.303)	(2.460)	(1.291)	(2.452)	(1.274)	(2.309)
Copyright/Trademark	-5.373	6.98	-5.532	6.784	-7.297	5.56
	(1.212)	(2.565)	(1.207)	(2.566)	(1.228)	(2.492)
Observations	8,900	8,900	8,900	8,900	8,900	8,900

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 13: Regression Results: Patents by High-tech Only-Immigrant and Diverse-Immigrant

	(1)		(2)		(3)	
	+ Human Capital		+ Finance		+ Industry	
	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
Patent Granted	-0.261	5.35	-0.266	5.354	-0.449	3.595
	(0.656)	(1.732)	(0.646)	(1.741)	(0.644)	(1.621)
Patent Pending	0.112	6.184	-0.041	6	-0.009	4.633
	(0.704)	(1.696)	(0.685)	(1.685)	(0.682)	(1.598)
2012-2014 Patent>0	0.777	2.457	0.808	2.422	0.781	1.746
	(0.480)	(1.189)	(0.479)	(1.187)	(0.480)	(1.133)
2012-2014 Patent>2	0.534	1.84	0.562	1.872	0.553	1.51
	(0.318)	(0.839)	(0.321)	(0.845)	(0.327)	(0.786)
2015-2017 Patent>0	0.484	5.189	0.480	5.194	0.533	4.599
	(0.477)	(1.439)	(0.459)	(1.437)	(0.462)	(1.395)
2015-2017 Patent>2	0.310	1.21	0.312	1.254	0.371	0.956
	(0.311)	(0.796)	(0.300)	(0.786)	(0.312)	(0.782)
Observations	8,900	8,900	8,900	8,900	8,900	8,900

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 14: Regression Results: Employment and Productivity by High-tech Only-Immigrant and Diverse-Immigrant

	(1)		(2)		(3)	
	+ Human Capital		+ Finance		+ Industry	
	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
Employment Top5%	0.472	1.474	0.805	1.765	0.347	1.41
	(0.693)	(1.606)	(0.689)	(1.603)	(0.695)	(1.598)
Productivity Top5%	3.339	2.316	3.328	2.231	3.289	2.336
	(1.017)	(1.663)	(1.008)	(1.646)	(1.008)	(1.628)
Employment	-0.026	0.065	0.001	0.083	0.012	0.064
	(0.040)	(0.070)	(0.039)	(0.068)	(0.039)	(0.067)
Productivity (Deviation)	0.085	0.057	0.088	0.065	0.093	0.063
	(0.042)	(0.072)	(0.041)	(0.071)	(0.042)	(0.070)
Observations	6,700	6,700	6,700	6,700	6,700	6,700

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 15: Regression Results: Innovations by Low-tech Any-Immigrant

	(1) + Human Capital	(2) + Finance	(3) + Industry
New Product to Other Business	2.055	1.903	1.472
	(0.180)	(0.181)	(0.187)
New Product to This Business	-1.735	-2.505	-3.717
	(0.258)	(0.259)	(0.267)
Other Product Innovations	4.857	3.405	3.024
	(0.363)	(0.363)	(0.374)
Process Innovation	2.875	1.184	1.670
	(0.367)	(0.367)	(0.378)
Basic R&D	1.198	1.116	1.182
	(0.149)	(0.150)	(0.155)
Applied R&D	1.029	0.978	0.950
	(0.148)	(0.149)	(0.156)
Copyright/Trademark	0.319	0.082	-0.328
	(0.196)	(0.197)	(0.202)
Observations	190,000	190,000	190,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 16: Regression Results: Patents by Low-tech Any-Immigrant

	(1) + Human Capital	(2) + Finance	(3) + Industry
Patent Granted	0.246	0.221	0.200
	(0.075)	(0.076)	(0.078)
Patent Pending	0.116	0.090	0.095
	(0.061)	(0.061)	(0.064)
2012-2014 Patent>0	0.085	0.079	0.083
	(0.039)	(0.040)	(0.041)
2012-2014 Patent>2	0.019	0.018	0.014
	(0.019)	(0.019)	(0.021)
2015-2017 Patent>0	0.079	0.079	0.084
	(0.041)	(0.041)	(0.043)
2015-2017 Patent>2	0.045	0.047	0.049
	(0.023)	(0.024)	(0.025)
Observations	190,000	190,000	190,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 17: Regression Results: Employment and Productivity by Low-tech Any-Immigrant

	(1) + Human Capital	(2) + Finance	(3) + Industry
Employment Top5%	-1.232	-1.372	-1.443
	(0.159)	(0.160)	(0.167)
Productivity Top5%	1.773	1.732	1.817
	(0.231)	(0.232)	(0.240)
Employment	-0.066	-0.115	-0.152
	(0.009)	(0.009)	(0.009)
Productivity (Deviation)	0.105	0.094	0.108
	(0.009)	(0.009)	(0.009)
Observations	129,000	129,000	129,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 18: Regression Results: Innovations by Low-tech Only-Immigrant and Diverse-Immigrant

	(1) + Human Capital		(2) + Finance		(3) + Industry	
	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
New Product to Other Business	1.994	2.335	1.834	2.219	1.4	1.775
	(0.196)	(0.429)	(0.196)	(0.428)	(0.203)	(0.421)
New Product to This Business	-2.156	0.186	-2.983	-0.339	-4.328	-1.12
	(0.276)	(0.612)	(0.278)	(0.613)	(0.288)	(0.589)
Other Product Innovations	5.184	3.364	3.627	2.402	3.345	1.661
	(0.397)	(0.788)	(0.397)	(0.784)	(0.410)	(0.772)
Process Innovation	2.971	2.434	1.15	1.337	1.778	1.207
	(0.402)	(0.797)	(0.401)	(0.794)	(0.415)	(0.784)
Basic R&D	0.977	2.204	0.893	2.125	1.031	1.823
	(0.158)	(0.371)	(0.160)	(0.371)	(0.166)	(0.361)
Applied R&D	0.834	1.915	0.78	1.875	0.813	1.531
	(0.160)	(0.350)	(0.160)	(0.350)	(0.168)	(0.343)
Copyright/Trademark	-0.299	3.138	-0.540	2.896	-0.891	2.065
	(0.204)	(0.524)	(0.204)	(0.523)	(0.211)	(0.503)
Observations	190,000	190,000	190,000	190,000	190,000	190,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 19: Regression Results: Patents by Low-tech Only-Immigrant and Diverse-Immigrant

	(1) + Human Capital		(2) + Finance		(3) + Industry	
	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
Patent Granted	0.144	0.707	0.120	0.675	0.115	0.561
	(0.076)	(0.216)	(0.077)	(0.216)	(0.080)	(0.211)
Patent Pending	0.006	0.618	-0.020	0.588	-0.003	0.512
	(0.060)	(0.192)	(0.060)	(0.192)	(0.063)	(0.189)
2012-2014 Patent>0	0.092	0.052	0.087	0.041	0.099	0.013
	(0.041)	(0.103)	(0.042)	(0.103)	(0.044)	(0.102)
2012-2014 Patent>2	0.024	-0.007	0.023	-0.010	0.022	-0.021
	(0.020)	(0.048)	(0.020)	(0.048)	(0.022)	(0.046)
2015-2017 Patent>0	0.068	0.132	0.070	0.124	0.079	0.106
	(0.043)	(0.112)	(0.043)	(0.112)	(0.045)	(0.112)
2015-2017 Patent>2	0.056	-0.009	0.059	-0.010	0.065	-0.020
	(0.025)	(0.053)	(0.026)	(0.052)	(0.028)	(0.053)
Observations	190,000	190,000	190,000	190,000	190,000	190,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).

Table 20: Regression Results: Employment and Productivity by Low-tech Only-Immigrant and Diverse-Immigrant

	(1) + Human Capital		(2) + Finance		(3) + Industry	
	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse	Immigrant-only	Immigrant-diverse
Employment Top5%	-1.533	0.045	-1.674	-0.102	-1.766	-0.179
	(0.155)	(0.456)	(0.156)	(0.452)	(0.166)	(0.433)
Productivity Top5%	1.904	1.216	1.858	1.2	2.013	1.05
	(0.255)	(0.492)	(0.256)	(0.492)	(0.267)	(0.489)
Employment	-0.096	0.061	-0.150	0.035	-0.194	0.015
	(0.010)	(0.021)	(0.010)	(0.020)	(0.010)	(0.019)
Productivity (Deviation)	0.108	0.093	0.096	0.088	0.112	0.09
	(0.010)	(0.018)	(0.010)	(0.018)	(0.010)	(0.018)
Observations	129,000	129,000	129,000	129,000	129,000	129,000

Note: Regression results from LPM estimation. All regressions include firm age, demographic variables (gender, age, and race/ethnicity), and ownership team variables (size and family relationships). Coefficients and standard errors are multiplied by 100 for ease of reading. The first specification ("+ Human Capital") includes education, veteran, and prior business. The second ("+ Finance") and third ("+ Industry") specifications include start-up capital dummies and 4-digit industry dummies, respectively. Firm-level clustered standard errors are reported in parentheses. The results presented in this table are approved for dissemination by the DRB (CBDRB-FY23-CES019-004).