IMMIGRATION, EMPLOYMENT GROWTH AND ECONOMIC DYNAMISM

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EXECUTIVE SUMMARY

Immigrants boost economic growth, employment growth and economic dynamism through their contributions to the workforce, entrepreneurial activities and purchases of goods and services. The analysis in this study also finds that immigrants may slow the offshoring of manufacturing activity by U.S. businesses, indicating the importance of immigration to increasing U.S. domestic manufacturing production. Metro areas with a higher share of immigrants have more dynamic economies and experience faster growth in the number of jobs created and new business establishments. During 2010 to 2019, foreign-born workers accounted for up to one-quarter of employment growth and up to three-quarters of the growth in business establishments in the 248 metro areas examined.

This study presents new estimates of the relationship between foreign-born workers and measures of economic growth, including:

- Across 248 metro areas, a 1 percentage point higher share of the population composed of the working-age foreign born in 2010 is associated with a 0.58 percentage point higher growth rate in the number of establishments during 2010-2019. Foreign-born workers accounted for up to three-quarters of the growth in business establishments in 248 U.S. metro areas between 2010 and 2019.
- A 1 percentage point higher share of the population composed of foreign-born workers is associated with a 0.7 percentage point higher employment growth rate. Foreign-born workers can account for up to one-quarter of employment growth during the 2010s in the 248 metro areas examined.
- Foreign-born college graduates have a significant impact: A 1 percentage point higher share of the population composed of working-age foreign born who are college graduates is associated with a 1.64 percentage point higher growth rate in the number of business establishments and a 2.1 percentage point higher job growth rate.

The report also presents new estimates of the relationship between foreign-born workers and business dynamism, or the entry and exit of businesses and job creation and destruction, a topic that has received little prior attention:

- Immigration appears to boost business entry and exit rates. A 1 percentage point higher immigrant share in 2010 is associated with a 1.7 percentage point higher entry rate and a 1.2 percentage point higher exit rate over 2010-2019.
- A 1 percentage point higher immigrant share in 2010 is associated with a 1.6 percentage point higher job creation rate and a 0.8 percentage point higher job destruction rate from 2010 to 2019.
- The estimated relationships are again larger for foreign-born college graduates: A 1 percentage point higher college graduate immigrant share in 2010 is associated with a 5.4 percentage point higher business entry

rate, a 3.7 percentage point higher business exit rate, a 4.8 percentage point higher job creation rate, and a 2.5 percentage point higher job destruction rate.

The analysis examines how immigration is related to business dynamism by combining data from the American Community Survey with the U.S. Census Bureau's Business Dynamics Statistics program. Metro areas with a higher foreign-born share have more dynamic economies, with higher rates of business entry and exit and job creation and destruction. The college graduate immigrant share appears to have a larger impact on establishment and employment growth and on business dynamism than the immigrant share that includes all education groups, but both measures appear to have positive impacts. Foreign-born workers appear to be particularly important to business dynamics in the construction industry, while foreign-born workers who are college graduates appear to be particularly important to business dynamics in the information industry. Foreign-born workers also appear to reduce the growth rate of offshoring in the manufacturing industry.

Business dynamism has been declining in the United States since the 1980s. The causes of the decline in business dynamism are unclear, but the implications are not: an economy with less "churn" means that most peoples' living standards rise more slowly. Business dynamism is a vital part of a growing economy. Immigrants promote economic growth by moving to areas where businesses are forming or expanding and need more workers. As workers, consumers and entrepreneurs, immigrants promote business dynamism by adding their skills to the labor force, serving as a new group of customers and starting up new businesses. Immigrants enable the U.S. economy to add more businesses and jobs and help it to grow continuously and change instead of stagnating. The results here suggest that having more immigrants would boost business dynamism and lead to slower growth of offshoring or even "reshoring" of some activities to the U.S.

Business formation and job creation are vital to a growing economy. Some new businesses offer new or better products, and others help fill gaps in underserved markets. Successful young businesses are the engine of job creation in the United States. While the benefits of business formation and job creation are obvious, business closure and job destruction play important roles in economic growth as well. Business exits and job destruction can free up scarce resources for more highly valued uses. In a dynamic economy, entrepreneurs, employees and other resources readily shift from declining areas or sectors to growing ones. Business dynamism – the perpetual process of businesses forming, expanding, shrinking and dying, and creating and destroying jobs as they do – is fundamental to economic growth and rising living standards.

Immigration contributes to business dynamism in several ways. Since the foreign born tend to be more entrepreneurial than U.S. natives, higher rates of immigration are likely to lead to more business formation. Immigrants are more likely than U.S. natives to start businesses at every size, not just at small sizes. Immigrants'

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roles as workers and consumers may also boost business dynamism. Greater availability of workers because of immigration is likely to stimulate business entry and expansion. Workers with the skills most in demand are particularly important. Similarly, an increase in the number of consumers due to immigration is likely to stimulate business entry and expansion. Further, immigration-induced changes in what and where businesses produce may lead to more business entry and exit along with more job creation and destruction.

Immigration can also shape business dynamics by affecting whether goods are produced domestically or abroad. The analysis shows that immigrants may contribute to the U.S. economy by slowing the offshoring of manufacturing activity by U.S. businesses. The result confirms and updates earlier research that shows that having more immigration reduces the share of manufacturing employment that is offshored, without reducing the employment of U.S. native-born workers. It also supports research showing that restrictions on immigration boost offshore employment in high-tech industries.

THE IMPORTANCE OF BUSINESS DYNAMISM

Business formation and job creation are vital to a growing economy. Some new businesses offer new or better products, and others help fill gaps in underserved markets. Successful young businesses are the engine of job creation in the United States.[1] While the benefits of business formation and job creation are obvious, business closure and job destruction play important roles in economic growth as well. Business exits and job destruction can free up scarce resources for more highly valued uses. In a dynamic economy, entrepreneurs, employees and other resources readily shift from declining areas or sectors to growing ones. Business dynamism -- the perpetual process of businesses forming, expanding, shrinking and dying, and creating and destroying jobs as they do so – is fundamental to economic growth and rising living standards.

Immigration contributes to business dynamism in several ways. Since the foreign born tend to be more entrepreneurial than U.S. natives, higher rates of immigration are likely to lead to more business formation.[2] Immigrants are more likely than U.S. natives to start businesses at every size, not just at small sizes.[3] And, since many startups fail early on, more immigration may be associated with higher rates of business closure. Beyond their own entrepreneurial activities, immigrants' roles as workers and consumers may also boost business dynamism. Greater availability of workers, particularly those with in-demand skills, because of immigration is likely to spur business entry and expansion. Similarly, an increase in the number of consumers due to immigration is likely to stimulate business entry and expansion. Further, immigration-induced changes in what businesses produce and where they produce it may lead to more business entry and exit along with more job creation and destruction.

Immigration also may play a role in whether businesses choose to expand domestic operations or turn to overseas operations. Greater availability of workers due to immigration may cause businesses to open more U.S. establishments or increase the number of workers at existing domestic establishments. Smaller workforce growth due to less immigration may cause businesses to expand their operations abroad instead of domestically. However, greater immigration may boost overseas operations by facilitating international ties and reducing the information and transactions costs associated with offshoring activity.

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[1] See the Congressional Research Service report "Small Business Administration and Job Creation" for an overview of research findings, available at https://sgp.fas.org/crs/misc/R41523.pdf.

[2] According to the 2016 Kauffman Index of Startup Activity, immigrants are twice as likely to become entrepreneurs as U.S. natives; see https://www.kauffman.org/wp-content/uploads/2019/12/kauffman_compilation_immigration_entrepreneurship.pdf. Immigrants are especially overrepresented in billion-dollar startup companies, as discussed by Stuart Anderson in "Immigrants and Billion-Dollar Companies," available at https://nfap.com/research/new-nfap-policy-brief-immigrant-entrepreneurs-and-u-s-billion-dollar-companies/.

[3] See Pierre Azoulay, Benjamin F. Jones, J. Daniel Kim, and Javier Miranda, "Immigration and Entrepreneurship in the United States," *American Economic Review: Insights* (2022), available at http://doi.org/10.1257/aeri.20200588.

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This study combines data from the U.S. Census Bureau's Business Dynamics Statistics (BDS) program and its American Community Survey (ACS) to examine how foreign-born workers are related to growth in the number of businesses and jobs across metro areas during the 2010s. The analysis here offers new insights into the role of the foreign-born workers in business dynamics, including differences across industries. The study first examines the relationship between immigration and the number of business and jobs before turning to several measures of business dynamism. The study then examines the relationship between immigration and offshoring in the manufacturing sector.

IMMIGRATION AND GROWTH IN BUSINESSES AND JOBS

Figure 1 shows, for 248 metropolitan areas, the share of the total population composed of foreign-born, working-age adults, or the "immigrant share," in 2010 and the growth rate in the number of business establishments (the left-hand figure) or the growth rate in the number of jobs (the right-hand figure) over the next decade.[4] Each dot represents a metro area, and the dashed line shows the best-fit linear relationship between the immigrant share and the establishment or employment growth rate across metro areas. There is considerable dispersion in the immigrant shares and the growth rates, but the data clearly show a positive relationship between the immigrant share and the growth rate in the number of establishments or the number of jobs. A 1 percentage point higher share of the population composed of the working-age foreign born is associated with a 0.58 percentage point higher growth rate in the number of establishments. (See the Appendix for the regression results and details.) Evaluated at the sample averages, the baseline estimate suggests that foreign-born workers can account for up to three-quarters of the growth in the number of establishments in those metro areas during the 2010s. Controlling for underlying economic conditions or using instrumental variables estimation to control for the possibility that the foreign-born workers are more likely to live in growing areas reduces the positive relationship somewhat, but foreign-born workers can still account for up to one-half of the growth in the number of establishments.

The immigrant share in a metro area in 2010 is also positively related to the growth rate in the number of jobs in that metro area over the next decade. A 1 percentage point higher share of the population composed of foreign-born workers is associated with a 0.7 percentage point higher employment growth rate. Evaluated at the sample averages, the baseline estimate suggests that foreign-born workers can account for up to one-quarter of employment growth in those areas during the 2010s. Controlling for underlying economic conditions or using instrumental variables estimation again reduces the magnitude of the estimate, but the immigrant share remains significantly positively related to job growth over the next decade.

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[4] The analysis focuses on establishments instead of firms since the BDS reports establishment entries but not firm entries. The majority of firms have only a single establishment, and single-establishment firms presumably account for the majority of firm entries since most new firms are small. Table 2 in the appendix shows regression results for the growth rate of the number of firms, which are similar to the results for the growth rate of the number of establishments.

Figure 1
Relationship between Immigrant Share and Establishment or Employment Growth Rate
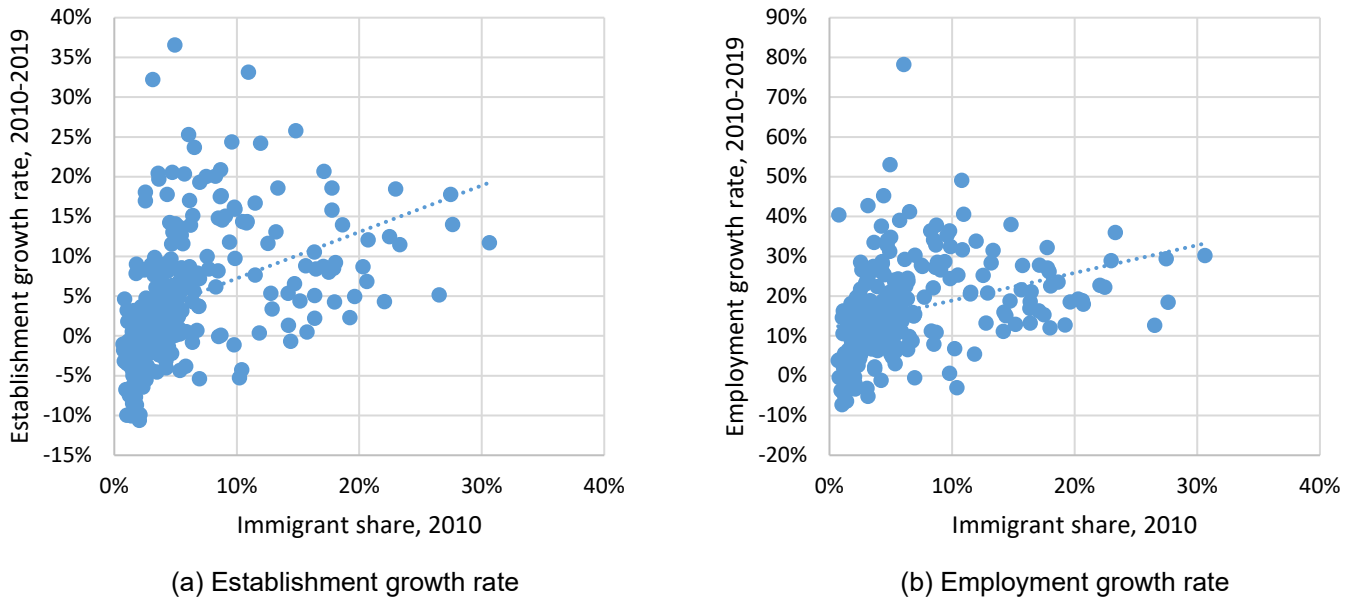
(a) Establishment growth rate

(b) Employment growth rate

Note: The figures show foreign-born, working-age adults as a share of the total population in 2010 and the percentage change in the number of establishments or total employment over 2010 to 2019. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

The working-age foreign born who are college graduates may have a larger impact on business or job growth because of their skills, incomes or entrepreneurial bent, among other reasons, than foreign-born workers across all education groups. Figure 2 indicates this is indeed the case: The estimated relationship between the share of the population composed of foreign-born, working-age adults who are college graduates (the "college graduate immigrant share") in 2010 and the growth rate in the number of business establishments or the number of jobs over the next decade is considerably larger than the earlier estimates, which included foreign-born, working-age adults of all education levels. A 1 percentage point higher share of the population composed of working-age foreign born who are college graduates is associated with a 1.64 percentage point higher growth rate in the number of establishments. Evaluated at the sample averages, the baseline estimate suggests that the college graduate working-age foreign born can account for up to one-half of the growth in the number of establishments in those metro areas during the 2010s. College graduates thus appear to underlie most of the relationship between the immigrant share and the establishment growth rate. The estimated relationship is again smaller but still statistically significant when controlling for underlying economic conditions or using instrumental variables estimation.

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Figure 2
Relationship between College Graduate Immigrant Share and Establishment or Employment Growth Rate

(a) Establishment growth rate

(b) Employment growth rate

Note: The figures show foreign-born, working-age adults who have at least a bachelor's degree as a share of the total population in 2010 and the percentage change in the number of establishments or total employment over 2010 to 2019. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

A 1 percentage point higher share of the population composed of the working-age foreign born who are college graduates is associated with a 2.1 percentage point higher job growth rate. Evaluated at the sample averages, the baseline estimate suggests that the college graduate working-age foreign born can account for up to one-fifth of employment growth in those areas during the 2010s. The immigrant share remains significantly positively related to job growth over the next decade when controlling for underlying economic conditions.

DIFFERENCES ACROSS INDUSTRIES

The relationship between the immigrant share and the growth rate of businesses or jobs may differ across industries. Foreign-born workers may have skill sets that are better fits in certain industries, such computer programmers working in the information sector or laborers working in construction. Concentration of foreign-born entrepreneurs in certain industries may lead to faster growth in those industries when an area has more foreign born. The foreign born also may choose to settle in areas where certain industries predominate, leading to faster growth in those industries. And some industries may scale up locally in response to international migration, whereas others may operate in national markets and not respond much, if at all, to local population or labor force changes.

The immigrant share appears to have an outsized impact on the establishment growth rate in several industries: construction; transportation and warehousing; information; professional services; and arts, entertainment and recreation.[5] (See the Appendix for the regression results and details.) The college graduate immigrant share appears to have an outsized impact on the establishment growth rate in education and in arts, entertainment and recreation. Some of those industries are ones in which foreign-born workers are over-represented, such as construction among less-educated foreign-born workers and education, particularly higher education, among highly educated foreign-born workers.[6] Others may be industries where international migrants are particularly likely to open businesses or be customers. Regardless of the reason, having more working-age foreign born as a share of the population appears to enable the number of businesses in those industries to grow more quickly.

Growth in some other industries is not closely linked to the immigrant share. The relationship between the immigrant share and the establishment growth rate is smaller than the all-industry average in manufacturing, wholesale and retail trade, administrative services and health care. The relationship between the college graduate immigrant share and the establishment growth rate is below average in wholesale and retail trade and administrative services. The latter list makes sense given that college graduates are relatively unlikely to be employed in those industries. There is no clear pattern for the immigrant share that includes all education groups, however. Indeed, some of the industries with a below-average relationship between the immigrant share and the establishment growth rate are surprising since they disproportionately employ immigrants, such as administrative services.

For most major industries, the estimated relationship between the immigrant share and the employment growth rate is similar to the all-industry average. Only the information industry has a significantly larger relationship when looking at either the immigrant share that includes all education groups or the college graduate immigrant share. In the manufacturing industry, the relationship between either measure of the immigrant share and the employment growth rate is smaller than the all-industry average, and the same is true for wholesale trade when looking at the immigrant share that includes all education groups.

There are two noteworthy patterns in the industry-level results. First, the immigrant share is not significantly negatively related to establishment or employment growth in any major industry examined here, with one exception. That exception is a negative relationship between the college graduate immigrant share and employment growth in manufacturing. The negative relationship may reflect slower manufacturing employment growth in metro areas that

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[5] The estimated relationship between the immigrant share and the establishment growth rate is significantly larger in those industries than the estimated relationship across all industries.

[6] For the industry distribution of foreign-born workers relative to U.S.-born workers, see https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2015/immigrant-employment-by-state-and-industry.

are more attractive to highly educated immigrants, not a causal impact. When all education groups are included, the immigrant share is not significantly related to manufacturing employment growth. Immigration thus appears to play a larger role in business and job growth in some industries than in others, but does not appear to reduce the growth rate of businesses or jobs.

Second, the immigrant share appears to play a key role in establishment and employment growth in the information industry. That may come as no surprise since one-quarter of information technology (IT) workers are foreign born.[7] However, most of those IT workers are employed in other industries, not in the information industry. Indeed, foreign-born workers are underrepresented in the information industry relative to their overall labor market share.[8] Nonetheless, they appear to be an important engine of growth in that industry. A 1 percentage point higher population share composed of the working-age foreign born in 2010 is associated with a 0.9 percentage point higher establishment growth rate and a 1.6 percentage point higher employment growth rate in the information industry over 2010-2019. A 1 percentage point higher population share composed of working-age foreign-born college graduates in 2010 is associated with a whopping 7 percentage point higher employment growth rate in the information industry over the ensuing decade.

BUSINESS DYNAMICS

The above results examined changes in the number of establishments or jobs between 2010 and 2019. Changes in the number of establishments or job depend on the number of businesses or jobs that are added and on the number of businesses or jobs that are shed. Although business entry and job creation may be viewed more favorably than business exit and job destruction, all are important parts of a dynamic economy. The analysis below therefore turns to the relationship between the immigrant share and measures of business dynamism.

Figure 3 shows the immigrant share in 2010 and the establishment entry rate (the left-hand figure) and exit rate (the right-hand figure) over 2010-2019. The entry rate is the total number of establishments that opened in a given metro area during 2010-2019 divided by the number of establishments in that metro area in 2010. The exit rate is the total number of establishments that closed in a given metro area during 2010-2019 divided by the number of establishments in that metro area in 2010. The difference between the two is the establishment growth rate examined above. As before, each dot is a metro area and the dashed line is the best linear fit between the two variables.

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[7] See https://research.newamericaneconomy.org/report/covid-19-immigrant-tech-workers/.

[8] Foreign-born workers were 0.7 times as likely as U.S. born workers to be employed in the information industry as of 2015. See https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2015/immigrant-employment-by-state-and-industry. The information industry (NAICS code 51) includes software publishers, telecommunications and data processing and hosting services, as well as traditional media outlets like newspaper and book publishers, radio and television broadcasting and video production.

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Figure 3
Relationship between Immigrant Share and Establishment Entry or Exit Rate
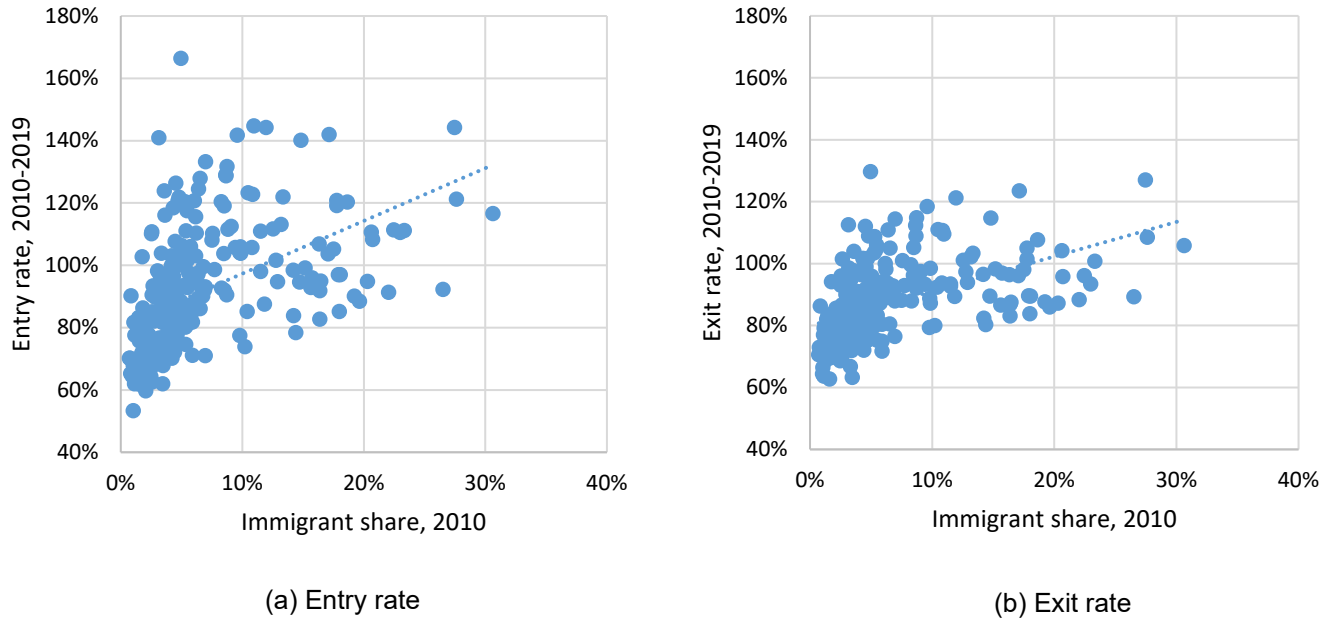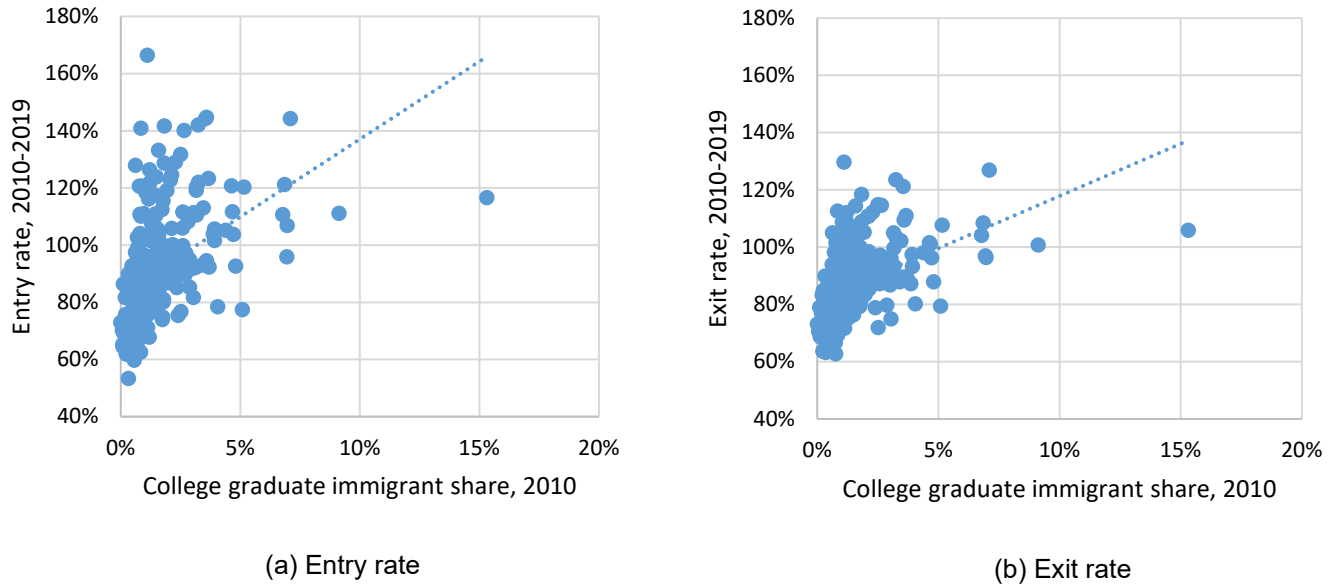

(a) Entry rate

(b) Exit rate

Note: The figures show foreign-born, working-age adults as a share of the total population in 2010 and the number of establishment entries or exits between 2010 and 2019 as a share of the number of establishments in 2010. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

A higher immigrant share is associated with higher business entry and exit rates.[9] A 1 percentage point higher immigrant share in 2010 is associated with a 1.7 percentage point higher entry rate and a 1.2 percentage point higher exit rate over 2010-2019 (see the Appendix for the regression results). The larger estimate for entries than for exits underlies the positive relationship between the immigrant share and the establishment growth rate in Figure 1 and suggests that foreign-born workers boost the number of businsses in an area by spurring business formation. Business closures appear to rise as well. This is not surprising since failure rates are higher for newer businesses than for more-established ones. Nonetheless, metro areas have faster growth in the number of establishments if they have a higher immigrant share. Evaluated at the sample averages, the estimates suggest that the working-age foreign born can account for up to one-eighth of the business entry rate and one-twelfth of the business exit rate in those areas during the 2010s. As before, the positive relationships are smaller, particularly for the exit rate,

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[9] Other research also finds that immigration is associated with higher rates of business formation. See Parag Mahajan, "Immigration and Local Business Dynanics: Evidence from U.S. Firms," Center for Economic Studies Working Paper CES-21-18 (2021), https://www2.census.gov/ces/wp/2021/CES-WP-21-18.pdf.

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but still statistically significant when controlling for underlying economic conditions or using instrumental variables estimation.

Figure 4
Relationship between College Graduate Immigrant Share and Establishment Entry or Exit Rate
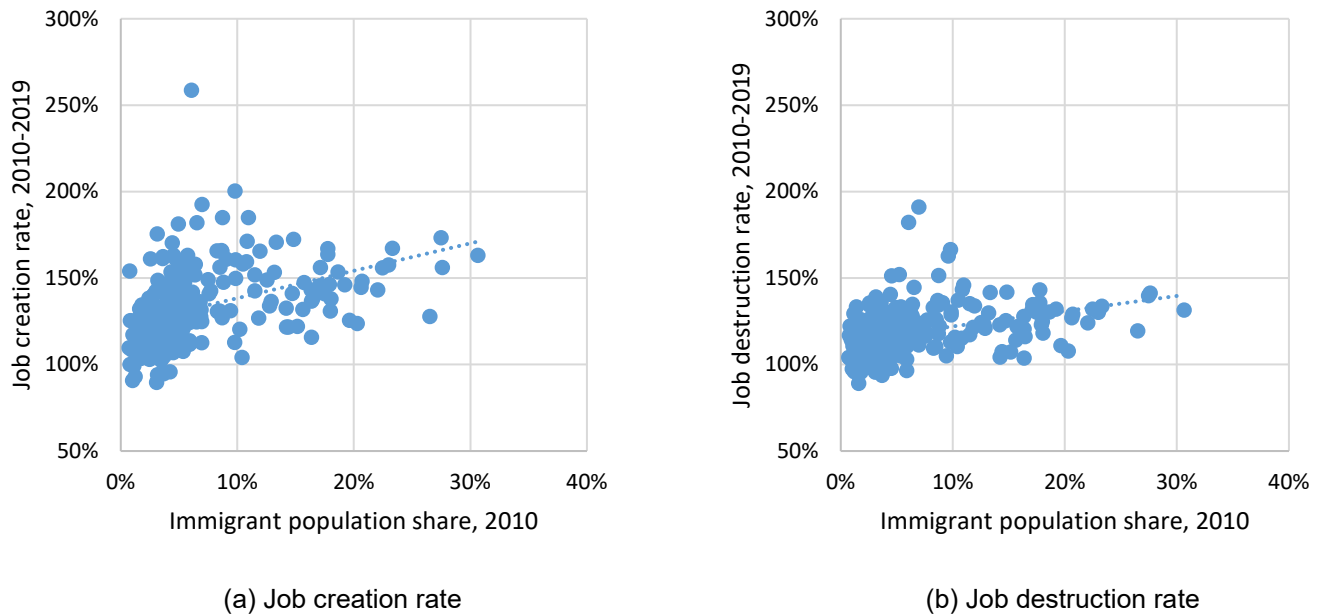

(a) Entry rate

(b) Exit rate

Note: The figures show foreign-born, working-age adults who have at least a bachelor's degree as a share of the total population in 2010 and the number of establishment entries or exits between 2010 and 2019 as a share of the number of establishments in 2010. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

The estimated relationship between the college graduate immigrant share and the entry or exit rate is again considerably larger than the relationship that includes the working-age foreign born of all education levels. As Figure 4 shows, the college graduate immigrant share is strongly positively related to establishment entry and exit rates. A 1 percentage point higher college graduate immigrant share in 2010 is associated with a 5.4 percentage point higher entry rate and a 3.7 percentage point higher exit rate over 2010-2019. The larger estimate for entries than for exits reflects the positive relationship between the college graduate immigrant share and the establishment growth rate in Figure 2. Evaluated at the sample averages, the estimates suggest that working-age foreign-born college graduates can account for up to one-tenth of the business entry rate and one-fifteenth of the business exit rate in those areas during the 2010s. The positive relationships are again smaller but still statistically significant when controlling for underlying economic conditions or using instrumental variables estimation.

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The immigrant share is also strongly positively related to job creation and destruction rates, as Figure 5 shows.[10] A 1 percentage point higher immigrant share in 2010 is associated with a 1.6 percentage point higher job creation rate and a 0.8 percentage point higher job destruction rate over 2010-2019. The larger estimate for job creation than for job destruction underlies the positive relationship between the immigrant share and the employment growth rate in Figure 1. Immigration thus appears to lead to stronger job growth in metro areas, on net. Evaluated at the sample averages, the estimates suggest that the working-age foreign born can account for up to one-twelfth of the job creation rate and one-twentieth of the job destruction rate during the 2010s. As before, the positive relationships are smaller but still statistically significant when controlling for underlying economic conditions or using instrumental variables estimation.

Figure 5
Relationship between Immigrant Share and Job Creation or Destruction Rate

(a) Job creation rate

(b) Job destruction rate

Note: The figures show foreign-born, working-age adults as a share of the total population in 2010 and the number of jobs created or destroyed between 2010 and 2019 as a share of employment in 2010. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

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[10] Other research also finds that immigration appears to boost job creation and destruction rates. For an analysis at the county level, see Konrad B. Burchardi et al., "Immigration, Innovation, and Growth," NBER Working Paper No. 27075 (2021), https://www.nber.org/papers/w27075.

The college graduate immigrant share is also positively related to job creation and destruction rates, as Figure 6 shows. The relationships are again larger than for the immigrant share that includes all education groups. A 1 percentage point higher college graduate immigrant share in 2010 is associated with a 4.8 percentage point higher job creation rate and a 2.5 percentage point higher job destruction rate over 2010-2019. The sizeable difference between the two estimates reflects the strong positive relationship between the college graduate immigrant share and the employment growth rate (Figure 2). Evaluated at the sample averages, the estimates suggest that working-age foreign-born college graduates can account for up to one-sixteenth of the job creation rate and about one-thirtieth of the job destruction rate during the 2010s. The positive relationships are again smaller but still statistically significant when controlling for underlying economic conditions or, for the job creation rate, using instrumental variables estimation.

Figure 6
Relationship between College Graduate Immigrant Share and Job Creation or Destruction Rate

(a) Job creation rate

(b) Job destruction rate
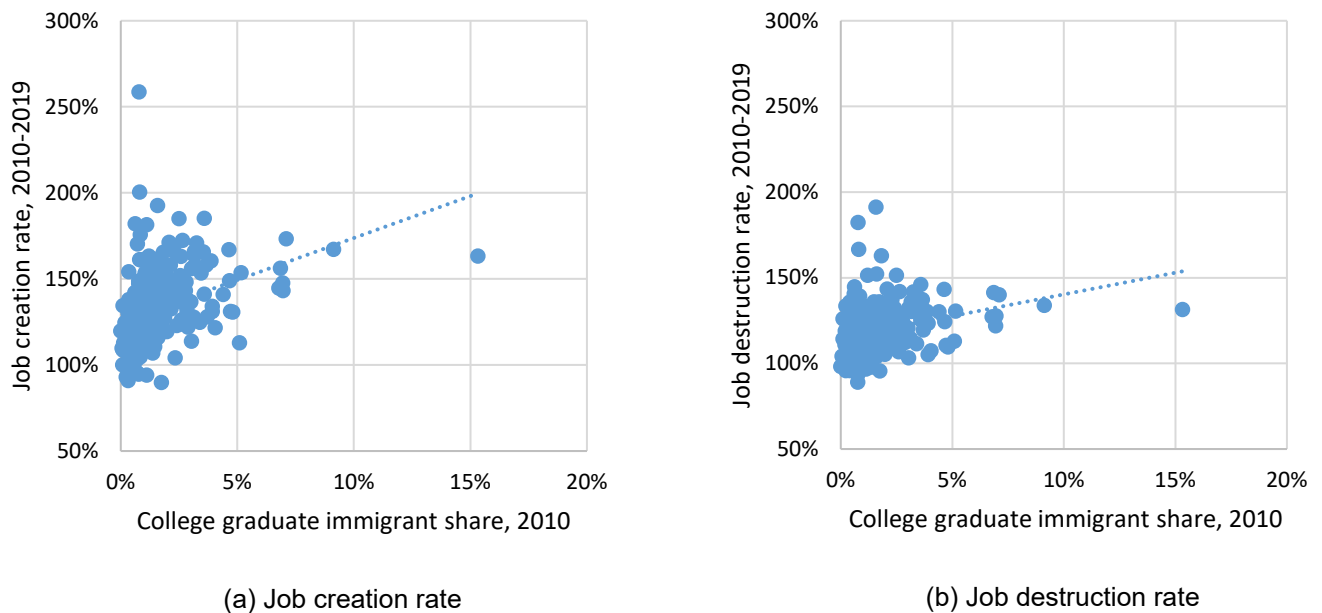
Note: The figures show foreign-born, working-age adults who have at least a bachelor's degree as a share of the total population in 2010 and the number of jobs created or destroyed between 2010 and 2019 as a share of employment in 2010. Calculations based on data for 248 metro areas from the American Community Survey and Business Dynamics Statistics.

BUSINESS DYNAMICS AND DIFFERENCES ACROSS INDUSTRIES

The relationship between the immigrant share and the establishment entry rate varies somewhat across industries. (See the Appendix for regression results and details.) Foreign-born workers appear to lead to particularly high rates

of business formation in the construction, transportation and warehousing, professional services and arts, entertainment and recreation industries. Foreign-born workers appear to have a relatively small – but still positive – impact on entry rates in retail trade, administrative services, health care and accommodation and food services. The relationship between the immigrant share and the establishment exit rate is relatively large in construction and is relatively small in administrative services, health care and accommodation and food services.

Working-age foreign-born college graduates appear to lead to particularly high rates of business formation in the information and education sectors. The relationship between the college graduate immigrant share and the entry rate is relatively small in administrative services and health care. The estimated relationship between the college graduate immigrant share and the exit rate is relatively large in information and professional services and is relatively small in health care and accommodation and food services.

The relationship between the immigrant share and job creation or destruction varies somewhat across industries. The relationship between the immigrant share and the job creation rate is relatively strong in construction and is relatively weak in manufacturing, retail trade, real estate, health care and accommodation and food services. The relationship between the immigrant share and the job destruction rate is relatively large in construction and finance and insurance and is relatively small in retail trade, real estate, health care and accommodation and food services.

The estimated relationship between the college graduate immigrant share and job creation or destruction also varies somewhat across industries. The relationship between the college graduate immigrant share and the job creation rate is relatively strong in the information industry and is relatively weak in manufacturing and real estate. The relationship between the college graduate immigrant share and the job destruction rate is relatively strong in the information industry and is negligible in health care, transportation and warehousing and real estate. The relationship between the college graduate immigrant share and the job destruction rate is negative in arts, entertainment and recreation.

There are two main takeaways from industry-level results for business dynamics. First, the impact of foreign-born workers on business entry and exit and job creation and destruction is not uniform across industries. When including all education groups, foreign-born workers appear to have an outsized impact on business dynamism in the construction industry. There is a large positive relationship between the immigrant share and business entry and exit and job creation and destruction in that sector. This is not surprising given the over-representation of foreign-born workers in construction, in addition to their roles as consumers and business owners. Working-age foreign-born college graduates appear to particularly spur business dynamism in the information industry. Meanwhile, the immigrant share tends to be relatively weakly related to business dynamism in the health care sector and in accommodation and food services. The immigrant share is still positively related to business entry and exit and job

creation and destruction in those two industries, but the many of the estimated relationships are weaker than the all-industry averages.

Second, the estimated relationship between the immigrant shares and business entry and exit rates is not negative for any major industry examined here. In other words, there is no industry in which a higher immigrant share appears to reduce business dynamism in terms of either business entry or exit. There is also no industry in which a higher immigrant share appears to reduce job creation. There are several industries in which a higher immigrant share does not appear to raise job destruction, however, and one industry – arts, entertainment and recreation – in which a higher college graduate immigrant share appears to reduce job destruction.

IMMIGRATION, MANUFACTURING AND OFFSHORING

The above results do not indicate that the immigrant share has an outsized impact on establishment or job growth or on business dynamism in the manufacturing industry. This may be surprising since businesses can relocate manufacturing activity more readily than, for example, construction activity or health care services. In manufacturing, production and consumption can occur in different locations, whereas most service industries need to be located near their customers. Manufacturing therefore tends to move to places where workers are relatively abundant and labor costs are lower. In recent decades, U.S. manufacturers have moved more operations overseas to take advantage of lower labor costs elsewhere. This offshoring by U.S. manufacturers has reduced U.S. manufacturing employment.[11]

Foreign-born workers may reduce the extent of offshoring by increasing the size of the U.S. labor force. A study of U.S. manufacturing sectors during 2000-2007 finds that having more immigration reduces the share of employment that is offshored, without reducing employment of U.S. native-born workers. If anything, more immigration appears to have a positive impact on the number of U.S. natives employed in manufacturing, likely because foreign- and native-born workers tend to hold different but complementary jobs within manufacturing.[12] Similarly, immigration appears to reduce offshoring in high-tech industries; restrictions on skilled immigration via the H-1B visa program lead to U.S. high-tech companies increasing their employment offshore.[13] The information industry is an outlier among service sectors for its ability to offshore jobs if domestic workers are not available – computer programming can be done remotely, unlike landscaping or health care.

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[11] See Christoph E. Boehm, Aaron Flaaen and Nitya Pandalai-Nayar, "Multinationals, Offshoring, and the Decline of U.S. Manufacturing," *Journal of International Economics* (2020), https://doi.org/10.1016/j.jinteco.2020.103391.

[12] See Gianmarco I.P. Ottaviano, Giovanni Peri, and Greg C. Wright, "Immigration, Offshoring, and American Jobs," *American Economic Review* (2013), http://dx.doi.org/10.1257/aer.103.5.1925.

[13] See Britta Glennon, "How Do Restrictions on High-Skilled Immigration Affect Offshoring? Evidence from the H-1B Program," NBER Working Paper No. 27538 (2020), http://www.nber.org/papers/w27538.

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Figure 7 shows the relationship between the immigrant share and offshoring activity by U.S. manufacturers during the 2010s. The figure shows, for 47 sectors within the manufacturing industry, the share of U.S. workers who were foreign born in 2010 and the growth rate of the number of foreign affiliates that are majority owned by U.S. firms or the growth rate of employment at majority-owned foreign affiliates during 2010-2019.[14] Each dot represents a manufacturing sector, and the dashed line shows the best-fit linear relationship between the immigrant share and the growth rate of foreign affiliates or employment at those foreign affiliates across manufacturing sectors.

Figure 7
Relationship between Immigrant Share and Growth in Manufacturing Offshoring

(a) Foreign affiliates growth rate

(b) Offshore employment growth rate
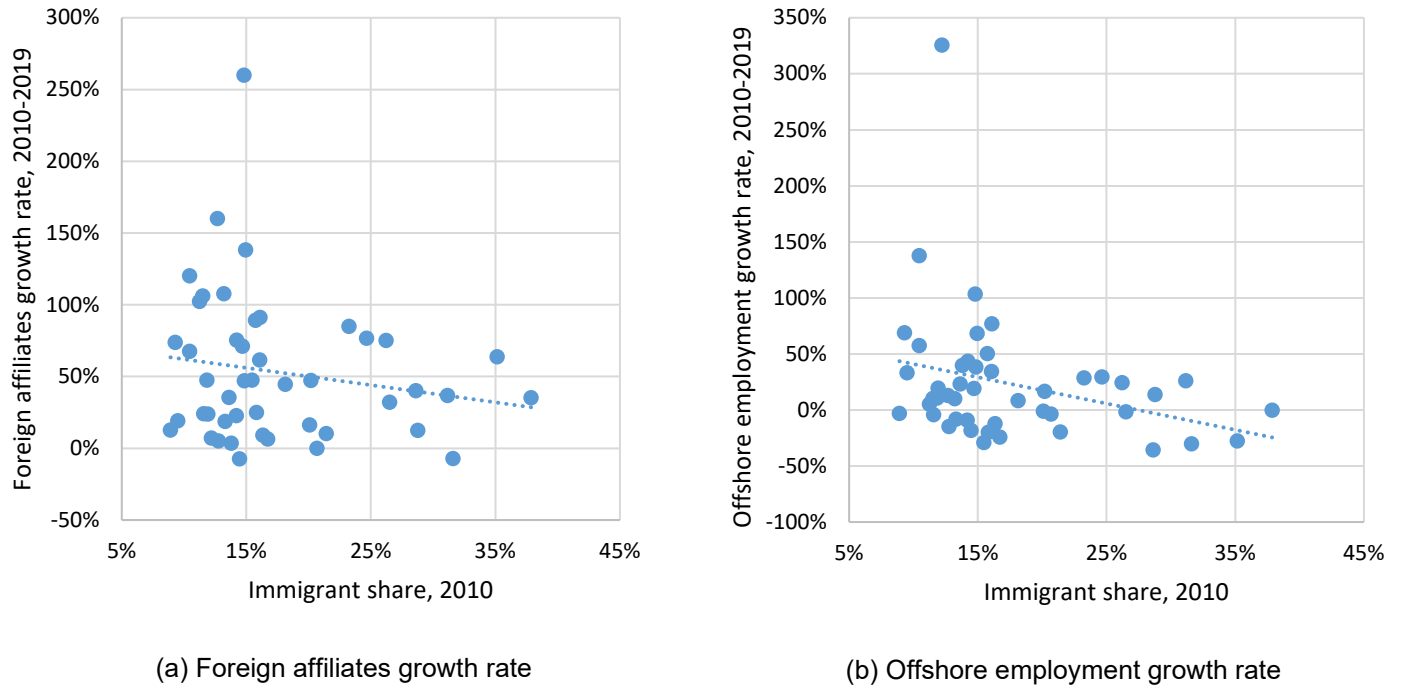
Note: The figures show foreign-born worker as a share of all U.S. workers in 2010 and the growth rate in the number of foreign affiliates that are majority owned by U.S. firms or in employment at those foreign affiliates between 2010 and 2019. Calculations based on data for 47 manufacturing sectors from the American Community Survey and Bureau of Economic Analysis, U.S. Direct Investment Abroad.

Manufacturing sectors with a higher immigrant share among their U.S. workers in 2010 experienced slower growth in offshoring during the ensuing decade. Figure 7 points to a negative relationship between the immigrant share and the growth rate of the number of foreign affiliates of U.S. manufacturing firms and employment at those foreign

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[14] The data on foreign affiliates are from the Bureau of Economic Analysis's U.S. Direct Investment Abroad program and are affiliates with assets, sales or net income greater than $25 million. See the Appendix for details.

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affiliates; the negative relationship is statistically significant for offshore employment growth. (See the Appendix for the regression results.) A 1 percentage point higher immigrant share in a manufacturing sector in 2010 is associated with a 2.3 percentage reduction in the growth rate of offshore manufacturing employment by U.S. multinationals during 2010-2019. The results are consistent with earlier research concluding that immigration can reduce offshoring.

DISCUSSION AND CONCLUSION

The results here show that metro areas with a higher immigrant share experience faster growth in the number of establishments and jobs. Further, metro areas with a higher immigrant share have more dynamic economies, with higher rates of business entry and exit and job creation and destruction. The college graduate immigrant share appears to have a larger impact on establishment and employment growth and on business dynamism than the immigrant share that includes all education groups, but both measures appear to have positive impacts. Foreign-born workers appear to be particularly important to business dynamics in the construction industry, while foreign-born workers who are college graduates appear to be particularly important to business dynamics in the information industry. Foreign-born workers also appear to reduce the growth rate of offshoring in the manufacturing industry.

Business dynamism has been declining in the United States since the 1980s.[15] The causes of the decline in business dynamism are unclear, but the implications are not: an economy with less "churn" means that most peoples' living standards rise more slowly. Business dynamism is a vital part of a growing economy. Immigrants promote economic growth by moving to areas where businesses are forming or expanding and need more workers.[16] As workers, consumers and entrepreneurs, immigrants promote business dynamism by adding their skills to the labor force, serving as a new group of customers and starting up new businesses. Immigrants enable the U.S. economy to add more businesses and jobs and help it to continuously grow and change instead of stagnating. The results here suggest that having more immigrants would boost business dynamism and lead to slower growth of offshoring or even "reshoring" of some activities to the U.S.

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[15] See, for example, Ryan A. Decker, et al., "Declining Business Dynamism: What We Know and the Way Forward," *American Economic Review Papers & Proceedings* (2016), http://dx.doi.org/10.1257/aer.p20161050. The Covid pandemic may have halted or even reversed the slide in business dynamism, but it is too early to conclude that long-term trends have changed.
[16] See, for example, Brian C. Cadena and Brian K. Kovak, "Immigrants Equilibrate Local Labor Markets: Evidence from the Great Recession," *American Economic Journal: Applied Economics* (2016), http://dx.doi.org/10.1257/app.20140095.

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APPENDIX: DATA SOURCES AND ANALYTICAL METHODS

This study uses publicly available data from the 2010 American Community Survey (ACS) via IPUMS (available at https://usa.ipums.org/usa/) to calculate immigrant shares. The ACS is conducted among 1% of the U.S. resident population each year. In most of the analysis, the immigrant share is the number of working-age (ages 16-65), foreign-born adults relative to the total population in a metro area. A higher immigrant share therefore reflects greater availability of foreign-born workers in an area.[17] The data on business dynamics are from the U.S. Census Bureau's Business Dynamics Statistics (BDS) program (available at https://www.census.gov/data/datasets/time-series/econ/bds/bds-datasets.html). The BDS data are a near universe of incorporated businesses. The BDS does not include the self-employed, domestic service workers, agricultural production workers, or most government workers. All 248 metro areas that are available in both the ACS and the BDS data are included in the analysis.

Figures 1 and 2 show scatter plots of the immigrant share and establishment or employment growth rates. The dashed lines in those figures are a visual representation of an ordinary least squares (OLS) regression of the establishment or employment growth rate on the immigrant share. Columns (1) and (4) in Table 1 show the estimated coefficients on the immigrant share variable in those OLS regressions. Columns (2) and (5) show the estimated coefficients on the immigrant share variable when the regressions add controls for underlying economic conditions. The controls are the unemployment rate, the natural log of real GDP per capita, and the distribution of establishments or employment across major industries (2-digit NAICS codes) in the metro area in 2010. Controlling for underlying economic conditions reduces the magnitude of the estimated coefficients somewhat, but they remain statistically significantly different from 0.

Table 1
Estimated Relationship between Immigrant Share and Growth Rate of Establishments or Employment

	Establishments			Employment		
	OLS (1)	OLS (2)	IV (3)	OLS (4)	OLS (5)	IV (6)
All	0.584 (0.074)	0.460 (0.114)	0.414 (0.084)	0.696 (0.100)	0.568 (0.174)	0.378 (0.129)
College graduates	1.765 (0.436)	1.003 (0.412)	0.841 (0.342)	2.145 (0.447)	1.643 (0.680)	0.712 (0.620)
Controls	No	Yes	Yes	No	Yes	
Number of obs.	248	248	208	248	248	208

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

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[17] Results are similar if immigrant shares are created using the working-age population instead of the total population in the denominator.

Columns (3) and (6) show the estimated coefficients on the immigrant share variable in instrumental variables (IV) regressions that instrument for the immigrant share variable to control for potential endogeneity. If foreign-born workers move to areas because those areas have faster establishment or employment growth, the estimated coefficient on the immigrant share variable in OLS regressions is biased upwards.[18] Instrumenting for the immigrant share with a variable that is correlated with the immigrant share but not with shocks to establishment or employment growth controls for this potential endogeneity bias. As is standard in the economics of immigration literature, this report uses a shift-share measure that reallocates foreign-born workers across areas as they were distributed in 1990.[19] The reallocation is done separately for 10 origin regions.[20] The instrumental variable controls for endogeneity bias as long as any shocks that affected the distribution of foreign-born workers in 1990 did not also affect establishment or employment growth rates in 2010-2019. The instrumental variables regressions also control for the unemployment rate and the natural log of real GDP per capita. The first-stage regressions have an F-statistic of 16.5 when all education groups are included and 11.4 when only college graduates are included. The instrumental variables regressions in column (3) continue to show a significant positive relationship between the immigrant share and the establishment growth rate. In column (6), the immigrant share is significantly positively related to the employment growth rate when all education groups are included but not when college graduates are included. The weaker first stage for college graduates likely accounts for the latter result.

Table 2
Estimated Relationship between Immigrant Share and Growth Rate of Firms

	OLS (1)	OLS (2)	IV (3)
All	0.642 (0.082)	0.396 (0.124)	0.447 (0.092)
College graduates	2.008 (0.482)	0.762 (0.443)	1.046 (0.366)
Controls	No	Yes	Yes
Number of observations	248	248	208

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

The report focuses on the growth rate in the number of establishments rather than the growth rate in the number of firms for two main reasons: the majority of businesses are single-establishment firms, and the BDS reports

[18] Note that since the immigrant share is constructed from 2010 data and the establishment and employment growth rates are for 2010-2019, this would require persistence in growth rates or foreign-born workers who can correctly forecast growth rates.
[19] The 1990 distribution is created using the 1990 Census 5% sample from IPUMS. Only 208 metro areas merged with the 2010 ACS data and the BD data.
[20] The origin regions are Mexico, Central America, the Caribbean, South America, China, the Philippines. Vietnam, India, Africa, and the rest of the world.

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establishment entry but not firm entry. Table 2 shows regression results for the immigrant share and the growth rate of firms. The results are similar to the results for establishment growth rates.

Table 3 shows regression results for the estimated relationship between the immigrant share and the establishment or employment growth rate by major industry. The estimated coefficients are from a separate OLS regression for each industry. The report focuses on whether the estimated coefficients are significantly different from the corresponding estimate across all industries (column 1 or column 4 in Table 1). Industries with an estimated coefficient that is significantly larger than the "all-industry average" result are discussed in the report as having an outsized or above-average relationship, and industries with an estimated coefficient that is significantly smaller than the all-industry result are discussed as having a smaller or below-average relationship. The report also discusses whether the industry-specific estimated relationships are statistically significantly above or below zero (in two-sided t-tests).

Table 3
Estimated Relationship between Immigrant Share and Growth Rate of Establishments or Employment, by Major Industry

	Establishments		Employment	
	All	College grads	All	College grads
	(1)	(2)	(3)	(4)
Construction	1.076	3.007	1.163	2.701
	(0.137)	(0.633)	(0.287)	(0.791)
Manufacturing	0.332	0.804	-0.016	-1.004
	(0.112)	(0.447)	(0.185)	(0.539)
Wholesale trade	0.289	0.286	0.250	0.645
	(0.086)	(0.302)	(0.194)	(0.888)
Retail trade	0.244	0.572	0.619	1.479
	(0.067)	(0.334)	(0.087)	(0.516)
Transportation & warehousing	1.036	2.349	0.625	1.860
	(0.182)	(0.877)	(0.269)	(0.829)
Information	0.930	2.475	1.589	7.033
	(0.192)	(0.559)	(0.431)	(1.386)
Finance & insurance	0.471	1.282	0.476	2.386
	(0.080)	(0.374)	(0.161)	(0.484)
Real estate	0.529	1.928	0.448	1.660
	(0.146)	(0.601)	(0.184)	(0.734)
Professional services	0.823	2.444	0.678	2.899
	(0.104)	(0.610)	(0.233)	(0.976)

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Administrative services	0.302	0.566	0.674	3.130
	(0.102)	(0.398)	(0.433)	(1.422)
Educational services	0.734	3.233	0.861	1.374
	(0.190)	(0.578)	(0.419)	(0.902)
Health care & social assistance	0.296	1.391	0.765	2.492
	(0.101)	(0.460)	(0.107)	(0.576)
Arts, entertainment & recreation	1.070	4.308	1.161	3.530
	(0.169)	(0.942)	(0.391)	(0.915)
Accommodation & food services	0.596	1.929	0.873	2.753
	(0.094)	(0.430)	(0.121)	(0.482)
Other services	0.667	1.957	0.663	2.000
	(0.082)	(0.439)	(0.116)	(0.464)

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

Table 4 reports OLS and IV regression results for establishment entry and exit rates using specifications similar to those described for Table 1. All specifications show a statistically significant positive relationship between establishment entry or exit rates and the immigrant share.

Table 4
Estimated Relationship between Immigrant Share and Establishment Entry or Exit Rates

	Entry rate			Exit rate		
	OLS (1)	OLS (2)	IV (3)	OLS (4)	OLS (5)	IV (6)
All	1.693	0.806	1.244	1.118	0.288	0.789
	(0.186)	(0.197)	(0.207)	(0.123)	(0.110)	(0.140)
College graduates	5.437	2.124	3.413	3.650	1.094	2.576
	(1.158)	(0.717)	(0.901)	(0.737)	(0.359)	(0.607)
Controls	No	Yes	Yes	No	Yes	Yes
Number of obs.	248	248	208	248	248	208

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

Table 5 reports OLS and IV regression results for job creation and destruction rates using specifications similar to those described for Table 1. All specifications show a statistically significant positive relationship between the immigrant share and job creation or destruction rates except for the IV specification for the college graduate immigrant share and the job destruction rate.

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Table 5
Estimated Relationship between Immigrant Share and Job Creation or Destruction Rates

	Job creation rate			Job destruction rate		
	OLS (1)	OLS (2)	IV (3)	OLS (4)	OLS (5)	IV (6)
All	1.586 (0.182)	1.164 (0.269)	1.286 (0.235)	0.881 (0.116)	0.473 (0.150)	0.726 (0.153)
College graduates	4.874 (0.923)	3.476 (1.016)	2.391 (1.199)	2.531 (0.575)	1.535 (0.483)	1.085 (0.716)
Controls	No	Yes	Yes	No	Yes	Yes
Number of obs.	247	247	207	248	248	208

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

Tables 6 and 7 show regression results for the estimated relationship between the immigrant share and establishment entry or exit rates (Table 6) or job creation or destruction rates (Table 7) major industry. The estimated coefficients are from a separate OLS regression for each industry. The report focuses on whether the estimated coefficients are significantly different from the corresponding estimate across all industries (column 1 or column 4 in Table 4 or Table 5). Industries with an estimated coefficient that is significantly larger than the all-industry result are discussed in the report as having an outsized or above-average relationship, and industries with an estimated coefficient that is significantly smaller than the all-industry result are discussed as having a smaller or below-average relationship. The report also discusses whether the industry-specific estimated relationships are statistically significantly different from zero. As noted in the report, most of the estimated coefficients are statistically significantly greater than zero (in two-sided t-tests). The notable exception is the significant negative relationship between the job destruction rate and the college graduate immigrant share in the arts, entertainment and recreation industry (shown in column 4 of Table 7).

Table 6
Estimated Relationship between Immigrant Share and Establishment Entry or Exit Rates, by Major Industry

	Entry rate		Exit rate	
	All	College grads	All	College grads
	(1)	(2)	(3)	(4)
Construction	2.629	6.931	1.689	4.060
	(0.287)	(1.545)	(0.200)	(1.034)
Manufacturing	1.391	4.564	1.054	3.738
	(0.208)	(1.212)	(0.163)	(0.870)
Wholesale trade	1.544	4.770	1.268	4.392
	(0.202)	(1.086)	(0.156)	(0.806)
Retail trade	1.190	3.569	0.914	2.901
	(0.158)	(0.975)	(0.105)	(0.658)
Transportation & warehousing	2.424	5.360	1.378	2.879
	(0.373)	(1.753)	(0.245)	(0.950)
Information	2.161	9.474	1.552	7.617
	(0.411)	(1.207)	(0.336)	(1.220)
Finance & insurance	1.729	6.079	1.189	4.749
	(0.199)	(1.224)	(0.194)	(0.979)
Real estate	1.445	4.722	0.800	2.587
	(0.327)	(1.583)	(0.218)	(0.998)
Professional services	2.271	7.906	1.425	5.387
	(0.265)	(1.289)	(0.195)	(0.705)
Administrative services	0.951	2.802	0.680	2.164
	(0.204)	(1.044)	(0.143)	(0.707)
Educational services	2.331	9.512	1.540	5.746
	(0.461)	(1.899)	(0.314)	(1.420)
Health care & social assistance	0.675	2.697	0.382	1.329
	(0.203)	(0.921)	(0.120)	(0.518)
Arts, entertainment & recreation	2.538	9.387	1.644	5.422
	(0.457)	(2.506)	(0.336)	(1.727)
Accommodation & food services	1.077	3.860	0.517	2.000
	(0.178)	(0.945)	(0.123)	(0.575)
Other services	2.008	5.482	1.389	3.576
	(0.183)	(1.060)	(0.120)	(0.659)

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

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Table 7
Estimated Relationship between Immigrant Share and Job Creation or Destruction Rates, by Major Industry

	Job creation rate		Job destruction rate	
	All	College grads	All	College grads
	(1)	(2)	(3)	(4)
Construction	2.888	5.015	2.102	2.682
	(0.486)	(1.634)	(0.330)	(1.264)
Manufacturing	1.037	1.759	1.050	2.337
	(0.270)	(0.935)	(0.212)	(0.758)
Wholesale trade	1.300	4.048	0.931	3.125
	(0.289)	(1.216)	(0.194)	(0.637)
Retail trade	1.213	3.657	0.606	2.254
	(0.134)	(0.858)	(0.089)	(0.450)
Transportation & warehousing	1.215	0.814	0.566	-1.204
	(0.398)	(1.263)	(0.273)	(0.897)
Information	2.525	11.597	0.914	4.317
	(0.576)	(1.639)	(0.303)	(0.885)
Finance & insurance	1.771	6.809	1.440	4.664
	(0.314)	(1.414)	(0.256)	(1.313)
Real estate	0.746	1.302	0.348	-0.404
	(0.328)	(1.195)	(0.296)	(0.901)
Professional services	1.889	6.010	1.040	2.254
	(0.360)	(1.581)	(0.264)	(0.961)
Administrative services	0.920	4.020	0.399	0.950
	(0.585)	(1.873)	(0.345)	(1.108)
Educational services	2.399	2.597	1.386	0.640
	(0.709)	(1.946)	(0.535)	(1.612)
Health care & social assistance	1.058	2.814	0.159	0.009
	(0.203)	(0.919)	(0.162)	(0.505)
Arts, entertainment & recreation	0.994	2.328	-0.103	-1.564
	(0.613)	(1.458)	(0.413)	(0.901)
Accommodation & food services	1.071	4.260	0.253	1.646
	(0.224)	(0.843)	(0.163)	(0.487)
Other services	1.521	3.138	0.917	1.364
	(0.178)	(0.790)	(0.136)	(0.547)

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

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The offshoring analysis is conducted at the national level by manufacturing sector (4-digit NAICS codes, with some sectors combined to accord the ACS data with the offshoring data). The immigrant share is the number of foreign-born workers relative to all workers (both ages 16-65) employed in a manufacturing sector. The immigrant share is constructed from the 2010 ACS data from IPUMS and includes all education groups. The offshoring data are from the Bureau of Economic Analysis's U.S. Direct Investment Abroad program data on activities of U.S. multinational enterprises (available at https://www.bea.gov/international/di1usdop). The data include the number of majority-owned foreign affiliates of U.S. firms with assets, sales or net income greater than $25 million and employment at those affiliates. The data are by industry of the foreign affiliates.

Figure 7 shows scatter plots of the immigrant share in 2010 and the growth rate of the number of foreign affiliates or employment at those foreign affiliates (offshore employment) over 2010-2019. The dashed lines in those figures are a visual representation of an OLS regression of the foreign affiliates or offshore employment growth rate on the immigrant share. Table 8 shows the estimated coefficients on the immigrant share variable in those OLS regressions. Both regression suggest that immigration has a negative impact on offshoring, and the estimated relationship between the immigrant share and offshoring employment growth is statistically significantly different from zero.

Table 8
Estimated Relationship between Immigrant Share and Growth Rate of Offshoring in Manufacturing

	Foreign affiliates (1)	Offshore employment (2)
Immigrant share	-1.175 (0.721)	-2.308 (0.915)
Number of observations	47	47

Note: Each estimated coefficient (and robust standard error, in parentheses) is from a separate regression.

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Table 9 reports the top 10 metro areas by employment and establishments growth over 2010-2019 in the BDS data used in this study.

Table 9
Fastest-growing metro areas over 2010-2019

Employment growth	Establishments growth
Midland, TX	Provo-Orem, UT
Provo-Orem, UT	Austin-Round Rock, TX
Gainesville, GA	Bend-Redmond, OR
Elkhart-Goshen, IN	Naples-Immokalee-Marco Island, FL
Bend-Redmond, OR	Midland, TX
Greeley, CO	Cape Coral-Fort Myers, FL
Austin-Round Rock, TX	Orlando, FL
Florence-Muscle Shoals, AL	Greeley, CO
Auburn-Opelika, AL	Port St. Lucie-Fort Pierce, FL
Naples-Immokalee-Marco Island, FL	Las Vegas-Paradise, NV

Note: Calculations based on data for 248 metro areas from Business Dynamics Statistics.

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