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In This Issue

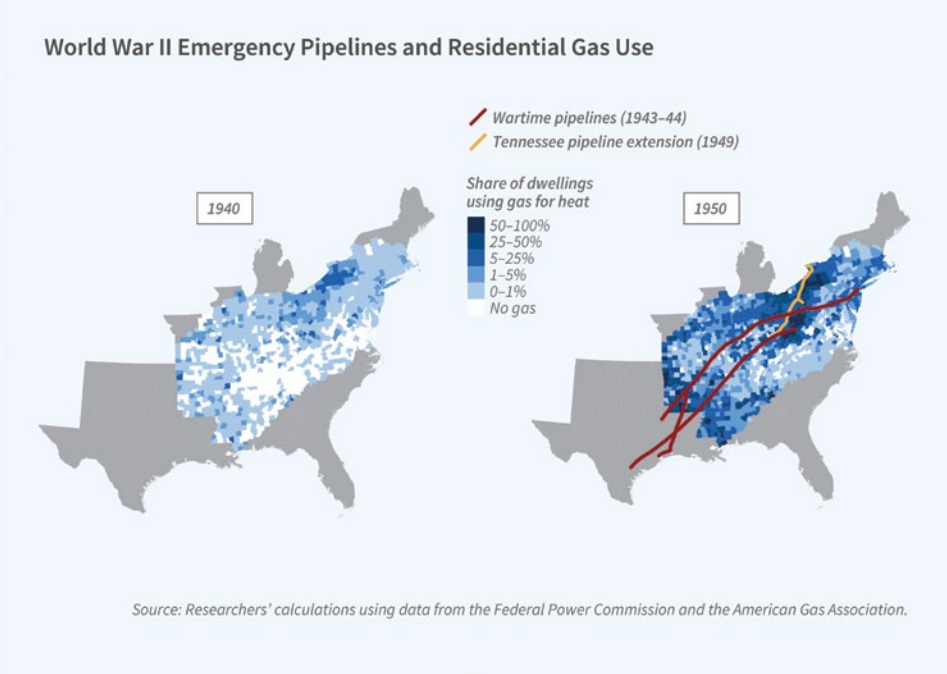
Energy Access and Industrial Specialization

How does access to energy resources shape regional industrial development? In Local Energy Access and Industry Specialization: Evidence from World War II Emergency Pipelines (NBER Working Paper 33721), Jacob Greenspon and Gordon H. Hanson examine this question by studying how emergency pipelines built during World War II influenced regional manufacturing specialization across American counties after the war.

They analyze the impact of pipelines constructed by the US government to transport oil and gas from oil fields in the Southwest to wartime industrial producers in the Northeast. These pipelines were built rapidly along direct paths to minimize the use of scarce wartime construction materials. After the war, the pipelines were converted to supply natural gas to communities along their routes, providing counties close to the pipelines with access to cheaper and more plentiful energy. By 1950, among counties with prewar gas utilities, those located 1 standard deviation farther from the pipelines (71.2 miles) experienced a 3.6 percentage point smaller increase in the share of households using utility gas (relative to a mean of 16 percent), compared to counties situated directly on the pipeline.

The study examines counties within 250 miles of pipeline routes, excluding those in major gas-producing states (Texas, Louisiana, and Oklahoma). Using data on county employment from 1940 to 1997, the researchers measure whether counties that had gas utilities before the pipelines were built, which facilitated local distribution within counties near the pipeline routes, experienced larger increases in energy-intensive manufacturing than similar counties farther from these pipelines.

Counties with preexisting gas utilities had significantly different characteristics in 1940 compared to those without such utilities. On average, they had larger populations (approximately 42,000 versus 15,000), lower agricultural employment (28.0 percent versus 51.8 percent), and higher manufacturing employment (20.1 percent versus 11.2 percent). These baseline differences are controlled for to account for any potential confounding effects on postwar growth in energy-intensive manufacturing.



Between 1940 and 1950, counties with better access to pipeline gas saw larger increases in employment within energy-intensive industries. A county located 1 standard deviation closer to a pipeline experienced a 0.5 percentage point increase in its gas-intensive manufacturing employment share (relative to a mean of 4 percent), and a 0.9 percentage point increase in its electricity-intensive manufacturing employment share (relative to a mean of 5.3 percent). These effects intensified over time, reaching 2.6 and 4.0 percentage points, respectively, by the late 1960s. The researchers explain that the growth in electricity-intensive employment likely resulted from pipeline access enabling increased local electricity generation at low costs by gas-fired power plants.

These impacts persisted for decades but at different rates by industry type. For industries intensive in direct gas use, the effects lasted until the mid-1980s. For electricity-intensive industries, the employment advantages endured through at least the late 1990s. The difference is the result of federal price regulations on interstate gas shipments during the energy crisis of the 1970s. These regulations led producers to divert supplies from national to local markets, disrupting gas-intensive industries in gas-importing states. Electric utilities could more easily substitute coal for natural gas, leaving electricity-intensive industries relatively insulated from these regulatory shocks.

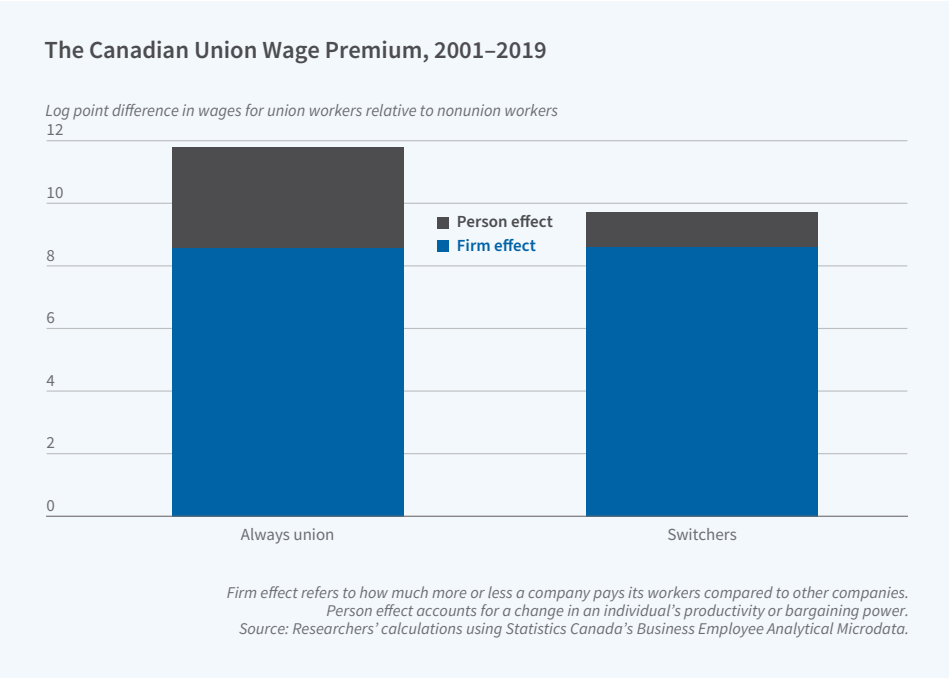
Researcher Gordon H. Hanson acknowledges research support from the Generation Foundation.

Unpacking the Union Wage Premium

There is broad agreement that the wages of unionized workers are higher than those of workers who are not union members. There is less consensus, however, on the source of this wage premium and in particular the extent to which it reflects actions by unions rather than differences between union members and other workers or unionized and other firms. In Why Do Union Jobs Pay More? New Evidence from Matched Employer-Employee Data (NBER Working Paper 33740), Pierre-Loup Beauregard, Thomas Lemieux, Derek Messacar, and Raffaele Saggio analyze the Canadian Business Employee Analytical Microdata for the period 2001 to 2019 to provide new evidence on this question.

They find that the higher wages enjoyed by unionized workers can be traced to two primary factors. One is rent extraction, the capacity of unions to negotiate higher wages for their workers on account of their collective role, and the other is firm selection. Unionized firms are more productive, on average, than nonunionized firms, and pay reflects this higher value added per worker. The researchers estimate that rent extraction accounts for about 60 percent of the premium and that selection explains most of the rest.

The study leverages job switchers—workers who move between union and nonunion jobs—to control for worker characteristics while identifying union effects. Among switchers they find a premium of 9.8 log points, with 8.6 log points induced by unions through firm-level pay policies. When incorporating always-unionized workers (who comprise more than 60 percent of unionized workers), the union premium increases to 11 log points. Always-unionized workers are more likely to be women and have lower education levels—characteristics associated with larger pay gains from unionization.



In Canada, about 60 percent of the union wage premium comes from unions' ability to negotiate higher wages, while the balance is from unionized firms being more productive than their nonunionized counterparts.

The data underlying the study identify both firms and workers, which makes it possible to determine whether factors other than unionization explain the wage gap between unionized and other workers. Specifically, the researchers find that after controlling for year effects and worker-age effects, unionized firms pay about 15 percent more than nonunionized firms. When they control for value added per worker, the per-worker average of annual payroll plus net income at each firm, the estimated union premium falls to about 9 log points, or 60 percent of the total premium. This suggests that productivity disparities can account for about 40 percent of the union wage premium.

Unionized firms in the researchers' sample are about 28 percent more productive than nonunionized firms, and they exhibit less variability in worker pay. Assortative matching, where highly paid employees work for high-pay employers, is only half as large for union jobs as for nonunion jobs. This suggests that the risk of being missorted, for example, being a high-skill worker at a low-pay firm, is greater at unionized than at nonunionized firms. This finding is consistent with past research that has found wage compression at unionized firms. Such compression can create a wage floor, which helps low-skill workers, as well as a ceiling, which can hurt higher-skilled workers. The researchers confirm that the benefits of a union job are greatest, on average, for low-skill workers and for workers who spend most or all of their careers in unionized jobs.

— Emma Salomon

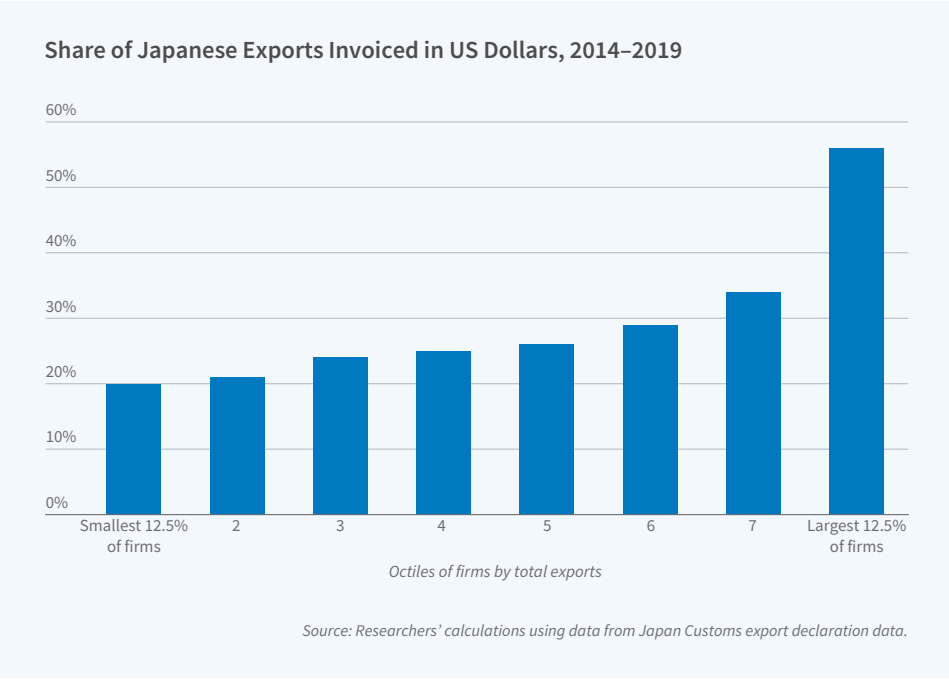
The researchers thank the Social Sciences and Humanities Research Council of Canada for financial support. This research was conducted at the University of British Columbia (UBC), a part of the Canadian Research Data Centre Network (CRDCN). This service is provided through the support of the Canada Foundation for Innovation, the Canadian Institutes of Health Research, the Social Sciences and Humanities Research Council, and Statistics Canada, as well as the support of UBC.

Firm Size and Currency Choice in Japanese Exports

Firms that export make strategic choices about the prices and quantities of the goods they sell as well as the currency in which they invoice their buyers. Unlike firms in other advanced countries, firms in Japan are less likely to invoice their exports in their own currency than in US dollars. Between 2014 and 2023, more than half of Japanese exports were sold in dollars, while exports priced in yen accounted for just over one-third of the total despite Japanese government initiatives in the 1980s and 1990s to internationalize the yen and promote its use in trade invoicing.

In The Myth of US Dollar Dominance in Japanese Exports: New Evidence from Japanese Customs Level Data (NBER Working Paper 33748), researchers Uraku Yoshimoto, Kiyotaka Sato, Takatoshi Ito, Junko Shimizu, Yushi Yoshida, and Taiyo Yoshimi used newly available Japan Customs transaction data combined with comprehensive firm-level information from the Ministry of Economy, Trade and Industry to analyze the invoicing practices of Japanese exporters. They find that dollar invoicing is dominant only for the largest firms and that yen invoicing is far more popular among small and midsize businesses.

The researchers analyzed more than 4.4 million export transactions by 8,644 firms that exported goods to 233 countries between 2014 and 2019. They found that the smallest one-quarter of Japanese exporters used yen invoices nearly three-quarters of the time. Even for firms in the top quartile of the exporter size distribution, yen-invoiced exports outnumbered dollar-invoiced ones by 52 to 39 percent. Only among the top octile (12.5 percent) of Japanese exporters did the pattern flip: 56 percent of exports for this group were invoiced in dollars, while 40 percent were in yen. For the largest 1 percent of exporters, 56 percent of exports were invoiced in dollars while 30 percent were in yen. This pattern is not the result of pricing to the destination market, namely the US. The researchers found a similar pattern when they limited their attention to exports only to other Asian countries.



Source: Researchers' calculations using data from Japan Customs export declaration data.

Large Japanese exporters are more likely than small ones to invoice in US dollars because they are better positioned to manage currency risk.

One likely reason for the association between firm size and currency preference is the capacity to hedge foreign-currency risk. Large firms, on average, have greater corporate resources to devote to financial functions, so they can enter into financial transactions to mitigate the risk to their income in yen even when they invoice in dollars.

Intra-firm exports are another reason for the observed pattern. The largest Japanese exporters are more likely than smaller firms to have substantial networks of foreign subsidiaries. Firms in the top quartile of exporters sent an average of 39 percent of their exports to a company-owned subsidiary overseas, compared with only 15 percent for the smallest. These networks allow large firms to offset import payments with export revenues, a process known as operational hedging. If a Japanese firm's foreign subsidiary is earning foreign currency, typically dollars, it can use those dollars to pay for intra-firm imports from Japan. Small firms, in contrast, with fewer opportunities for operational hedging, are more likely to pass exchange rate risk on to their customers by invoicing their exports in yen. In some cases, potential buyers may demand more favorable terms to absorb exchange rate risk. They might, for example, ask the exporter to share the cost if exchange rates shift significantly within a certain period after the sale.

— Laurent Belsie

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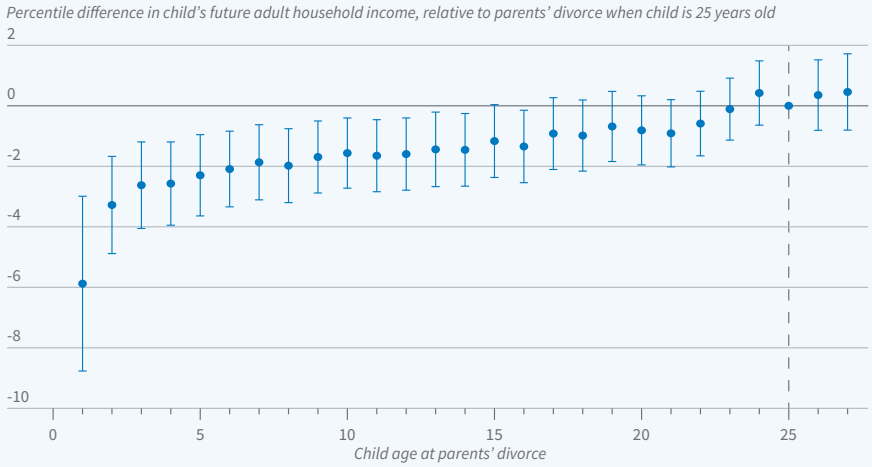
Parental Divorce and Children's Long-Term Outcomes

Nearly one-third of American children experience parental divorce before reaching adulthood, making family dissolution a significant factor in child development. In Divorce, Family Arrangements, and Children's Adult Outcomes (NBER Working Paper 33776), Andrew C. Johnston, Maggie R. Jones, and Nolan G. Pope provide new quantitative evidence on the association between adult outcomes and the presence or absence of a divorce during childhood. They analyze over 5 million children born between 1988 and 1993. They link tax records, Census Bureau data, and Social Security Administration files to build a dataset with information on family structure changes and long-term outcomes through 2018, when the study population was between 25 and 30 years old.

The researchers find that divorce is associated with substantial and immediate changes in children's wellbeing. Teen birth rates increase by 63 percent above pre-divorce levels, rising from 8 to 13 births per 1,000 girls annually in the years following divorce. Child mortality increases by 35 to 55 percent after divorce relative to a baseline of 27 deaths per 100,000 children annually and persists at elevated levels for at least 10 years.

Over the long term, children experiencing divorce during early childhood (ages 0–5) show reduced adult earnings. At age 25 they rank, on average, 2.4 percentile points lower in the income distribution than children who did not experience a divorce. By age 27, this effect rises to 3.9 percentile points. This translates to approximately 9 to 13 percent lower earnings, comparable to losing one year of education or living in a neighborhood of 1 standard deviation lower quality throughout childhood. Early childhood divorce is associated with a 0.9 percentage point higher probability of teen birth,

Divorce and Children's Future Household Income



Bars represent 95% confidence intervals.
Source: Researchers' calculations using data from the US Census Bureau and the Internal Revenue Service.

Children whose parents divorce experience reduced adult earnings and higher rates of teen pregnancy and incarceration.

a 73 percent increase relative to the baseline. It is also associated with a 0.39 percentage point (35 percent) increase in mortality by age 25 and a 0.2 percentage point (43 percent) higher probability of incarceration. Children of early divorce are also substantially less likely to live on college campuses in their late teens and early twenties, with college residency declining by approximately 4 percentage points (over 40 percent relative to the baseline rate). The effects vary by timing, with divorce during early childhood associated with the largest impacts across most outcomes. The effects are broadly similar across income levels, racial groups, and gender.

The researchers use estimates from earlier studies of outcomes for young adults to provide estimates of the relative importance of three potential channels through which divorce could matter. First, they estimate that changes in household resources account for between 10 and 44 percent of the correlation between divorce and adult earnings. Second, they conclude that deterioration in neighborhood quality could explain an additional 16 percent of divorce's impact on income at age 25. The divorce-related decline in neighborhood quality could reduce children's income by 0.42 percentile points, compared to the total divorce effect of 2.44 percentile points. Neighborhood changes could account for 17 percent of teen birth effects and 29 percent of incarceration effects. Finally, an increase in physical distance between children and nonresident parents could account for 15 percent of the mortality effects and 22 percent of the teen birth effects, likely reflecting reduced parental supervision and involvement. Together, these three mechanisms could explain 25 to 60 percent of divorce's total effects on children's outcomes, suggesting that other unmeasured factors—such as changes in family dynamics, parental time investment, and emotional stability—also play important roles.

The researchers are grateful for financial support from the Smith Richardson Foundation.

The Changing Distribution of the Return to Higher Education

Higher education has played a central role in reducing income inequality and the intergenerational persistence of socioeconomic status in the US during the twentieth century. However, the average return to attending college for students from families in different strata of the income distribution is not the same and has diverged in recent decades. Students from higher-income families receive greater wage benefits from college attendance than their lower-income peers.

In Changes in the College Mobility Pipeline Since 1900 (NBER Working Paper 33797), Zachary Bleemer and Sarah Quincy report that the average wage premium associated with college attendance by lower-income Americans has halved, relative to that for students from higher-income families, since 1960. The researchers analyze dozens of longitudinal surveys and administrative datasets spanning more than a century to measure wage premiums, defined as the difference in early-30s earnings between those who completed at least one year of college and high school graduates who did not attend college.

In the first half of the twentieth century, students from the bottom and top thirds of the parental income distribution received similar average wage premiums from college attendance. However, a divergence emerged beginning around 1960. By the end of the twentieth century, the college wage premium for students from the top income tercile was twice as large as that for bottom-tercile students. Between 1950 and 2000, the college-going premium for top-tercile students rose by about 0.14 log points relative to that for bottom-tercile students.

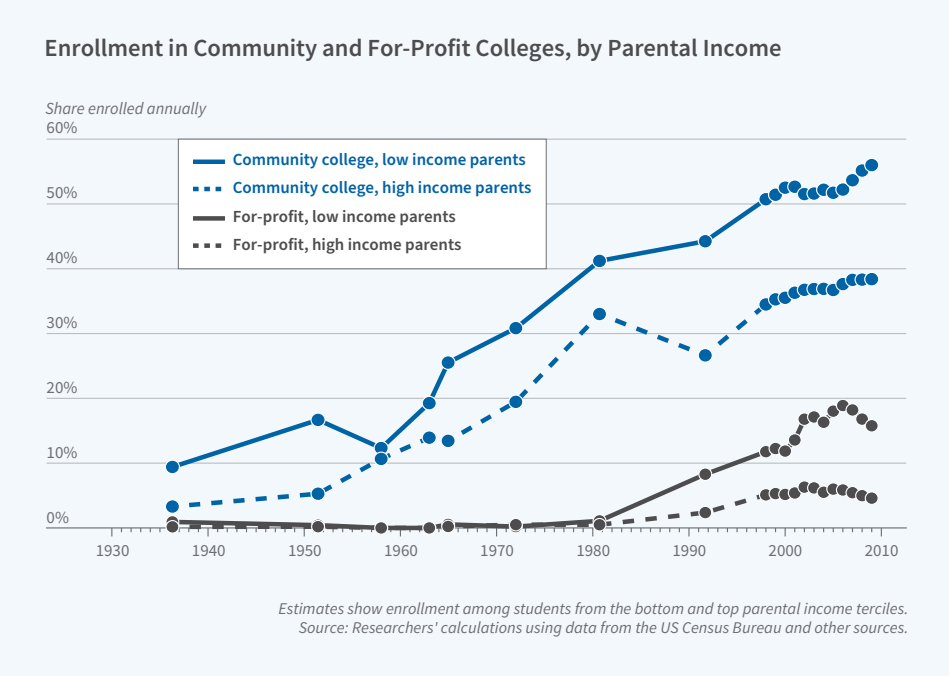
Three factors appear to explain about 80 percent of this growing disparity. First, the teaching-oriented public universities where lower-income students concentrate have experienced relative declines in quality indicators like funding, retention rates, and economic value since 1960. The gap in annual per-student revenue between institutions attended by lower- and higher-income students grew by $67 per year between the 1960s and the 1990s, then accelerated to $100 per year through the 2010s.

Second, lower-income students who attend college have increasingly attended community colleges (since about 1980) and for-profit institutions (since about 1990). The gap in two-year college enrollment between bottom- and top-tercile students was less than 10 percentage points before and through the 1970s, but it exceeded 20 percentage points after 1990. For-profit enrollment among bottom-tercile students rose from near zero to 20 percent between 1980 and the early 2000s before regulatory changes reduced the size of this sector.

Third, shifts in college major choices since 2000 have widened the earnings gap. Higher-income students have increasingly moved out of humanities fields and into computer science and economics/finance programs, while lower-income students have not. About 40 percent of the recent heightening of major stratification across income groups is due to higher-income students' increased declaration of computer science majors while nearly 20 percent is due to lower-income students' growing concentration in lower-earning humanities fields.

The researchers also explore several other potential explanations of the growing disparity in returns to college, including differential selection into college based on pre-college cognitive skills, changes in enrollment patterns across four-year universities resulting from rising selectivity or tuition, and shifts in the relative value of different majors over time, and conclude that they are at most modest contributors.

Disparities in the return to college attendance today can account for as much as 25 percent of the transmission of income from one generation to the next, up from virtually no effect in 1960.



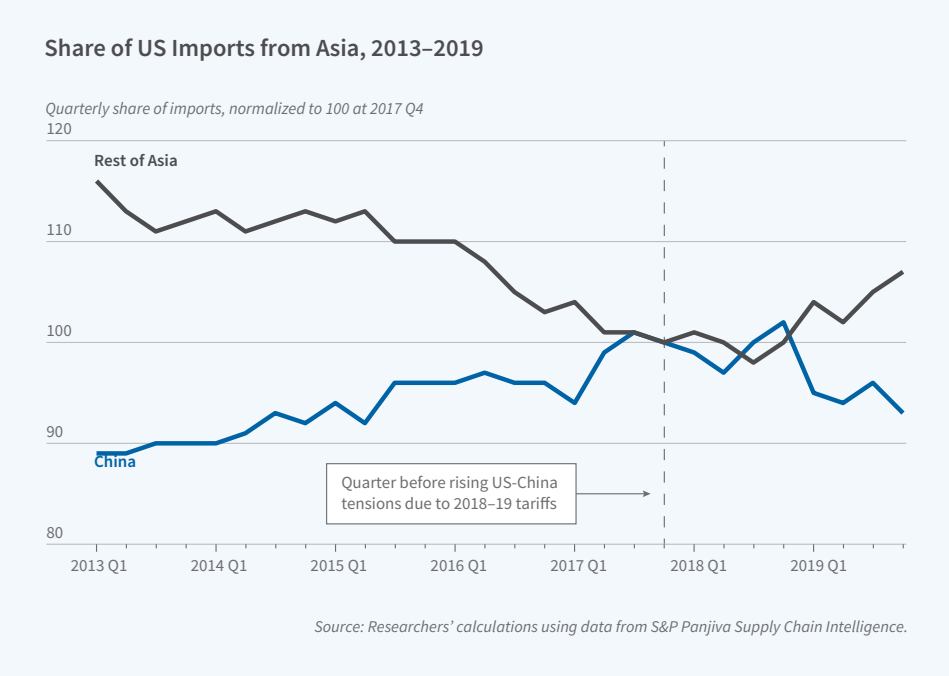
Since 1960, the wage premium from attending college for students from high- and low-income families has diverged.

Financial Institutions and Supply Chain Dynamics

As US-China trade tensions escalated in 2018–19, American firms scrambled to reorganize their supply chains. In Bank Financing of Global Supply Chains (NBER Working Paper 33754), Laura Alfaro, Mariya Brussevich, Camelia Minoiu, and Andrea Presbitero study how commercial banks facilitated this shift by providing both financial and informational support. Firms that relied on Chinese suppliers before the tariff increase reoriented imports toward other Asian countries. The probability of withdrawing from a relationship with a Chinese supplier rose by 82 percent, while the probability of entering a new relationship with an Asian supplier outside China nearly doubled.

Exposed firms decreased the share of their imports coming from China by 86 percent and increased the share coming from other Asian countries by 48 percent. This realignment was slow: on average, it took firms nearly three years to find a new Asian supplier. Firms with existing supplier relationships in Asian countries other than China were significantly more likely to find new suppliers, as were those in industries with less specialized inputs.

Tariff-exposed firms increased their borrowing to manage these disruptions. Their utilization of credit lines rose by 0.7 percentage points and they took out new loans at higher interest rates, suggesting a need for liquidity to cover the costs of higher tariffs and supplier switching. Relative to firms that were not exposed to Chinese suppliers, these firms paid interest rate premia of up to 18 basis points on new loans.



Source: Researchers' calculations using data from S&P Panjiva Supply Chain Intelligence.

During the 2018–19 US-China trade war, American firms exposed to tariffs, particularly those with ties to banks with trade finance operations in Asia, shifted their supply chains from China to other Asian countries.

Firms connected to "specialized banks," institutions with a history of trade financing operations in Asia, fared better than those without such ties. These banks helped their clients reconfigure supply chains. Firms with such ties were 15 percentage points more likely to shift to a new supplier and were also able to borrow at lower interest rates, by about 19 basis points, than firms with less globally connected banks.

Firms were 10–15 percent more likely to establish a relationship with a supplier in a new country and were close to 6 months faster in matching to that new supplier if their bank had a local affiliate there, which suggests that information and relationship networks were important. In line with this interpretation, specialized banks with Asian branches earned more than 2 percent in additional advisory fee income during the tariff period.

— Abigail Hiller

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