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## Manufacturing Decline and the Rise of Non-Employment

**I**n **Manufacturing Decline, Housing Booms, and Non-Employment** (NBER Working Paper No. 18949), co-authors **Kerwin Kofi Charles, Erik Hurst, and Matthew Notowidigdo** study how two large changes in the national economy during the 2000s affected aggregate non-employment: the continuing decline of the manufacturing sector and the national boom and bust in the housing market. Using detailed data from the Census and the American Community Survey, they estimate that roughly 40 percent of the increase in non-employment over the eleven years between 2000 and 2011 can be attributed to the decline in manufacturing. The decline in employment over that period was largest for men and women without a college degree.

By exploiting variation in housing market dynamics across metropolitan statistical areas

(MSAs), Charles and his co-authors find that increases in housing demand sharply low-

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“The positive labor market effects of the temporary housing boom ‘masked’ the negative effect of the decline in manufacturing that otherwise would have been more evident in the mid-2000s.”

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ered non-employment during 2000–7, especially among men and women without a college degree. But the housing market’s reversal during the years 2007 to 2011 among cities that had experienced unusually large increases in housing demand during the previous seven years implies that, over the entire 2000–11 period, local housing booms did not contribute significantly to labor market improvement.

Instead, it appears that the positive labor market effects of the temporary housing boom “masked” the negative effects of the decline in manufacturing

that otherwise would have been more evident in the mid-2000s. Thus, the 2007–11 collapse of

the housing market not only had an independent adverse effect on labor market outcomes for some sub-groups but also “unmasked” the negative manufacturing effect that would have been apparent earlier. Consistent with this interpretation, the authors use detailed data from the Displaced Worker Survey to show that workers displaced from manufacturing sectors during 2000–7 were much less likely to end up non-employed if they resided in an MSA in which housing demand had increased sharply during the same period.

These results highlight the

fact that booms and busts in one sector can have very different aggregate effects on employment dynamics, depending on

circumstances in other sectors. In this case, the negative labor market effects of the manufacturing decline are muted during the

housing boom and very large during the housing bust.

— Matt Nesvisky

## Exporting and Plant-Level Efficiency Gains

Trade competition has led to aggregate productivity gains, but some research suggests that those gains come only from selection of the most productive plants into exporting, rather than from efficiency gains within plants. That finding is rather surprising, because exporters can learn from international buyers, and by exporting will have access to larger markets and therefore incentives to innovate or invest in productive technology.

In **Exporting and Plant-Level Efficiency Gains: It's in the Measure** (NBER Working Paper No. 19033) **Alvaro Garcia Marin** and **Nico Voigtländer** use a cost-based measure of productivity and find that within-plant efficiency gains do occur after plants begin exporting. They suggest that other studies failed to find such gains because they used a revenue-based productivity measure, which is affected by changes in prices. Garcia and Voigtländer instead calculate plant-product-level marginal costs for a panel of Chilean establishments and show that those costs drop significantly for new

exporters — that is, a within-plant productivity gain.

The gains are substantial: marginal costs within plant-product

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“Marginal costs within plant-product categories drop by approximately 15–25 percent during the first three years after export entry.”

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categories drop by approximately 15–25 percent during the first three years after export entry. At the same time, new exporters pass on most of the efficiency gains to customers in the form of lower prices (around 20 percent), which are accompanied by a strong increase in export volumes. The fact that plants pass on the gains in physical productivity to buyers in the form of lower prices explains why studies that look at revenue-based productivity measures typically do not find evidence of within-plant efficiency gains.

In the data, export entry goes hand-in-hand with a decline in marginal costs in the entry period, which is not driven by productivity shocks before export entry. And marginal costs drop particularly steeply for plants that are initially less productive. Those

two facts suggest that investment complementarity — the fact that investment opportunities in new technologies become profitable

in combination with access to larger markets — is important. Moreover, marginal costs keep falling in the years after entry, which suggests that learning-by-exporting is also an important driver of the result.

Although the results suggest within-plant productivity improvements, selection into exporting based on revenue productivity is significant. In fact, the exporter revenue-productivity premium is 17 percent in this sample of Chilean firms. The within-plant productivity gains reflect efficiency gains in addition to the typically documented selection effect. Within-plant gains are of roughly the same magnitude as the between-plant differences.

— Claire Brunel

## Vehicle Scrappage and Gasoline Policy

In **Vehicle Scrappage and Gasoline Policy** (NBER Working Paper No. 19055), authors **Mark Jacobsen** and **Arthur van Benthem** examine the timing of decisions to scrap used cars and the relationships between scrap rates, used car resale values, and policies designed to reduce gasoline use. They conclude that changes in the relative rates of scrappage of different types of used cars can have important effects on the fuel economy of the vehicle fleet, and thus on the ultimate impact of policies.

The authors develop a novel dataset that includes a detailed history of used vehicle prices and registrations at the make, model, and trim level. They first estimate

the responsiveness of used vehicle prices and scrap rates to changes in gasoline prices. They confirm that higher retail gasoline prices

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“Tightened standards for new vehicles lead to reduced scrappage for used vehicles. [T]his effect offsets 13–23 percent of expected gasoline savings.”

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mean that fuel-efficient cars are scrapped less while the largest, lowest-fuel-economy cars are scrapped more. Also, with higher gas prices, the resale value of fuel-efficient cars increases relative to the value of “gas guzzlers.”

Next, the authors estimate the responsiveness of scrap decisions to changes in used vehicle values. They find that a 10 percent increase in used vehicle prices

leads to a 7 percent reduction in the scrap rate. Using this estimate, they consider the effect that tightened standards on new

vehicles will have in the used market. Prices of used vehicles generally rise under the standards, particularly for large and fuel-inefficient models. This reduces scrap rates, offsetting some of the expected gasoline savings. The authors estimate that this effect offsets between 13 and 23 percent of gasoline savings from mileage standard policies.

—Lester Picker

## Exposure to Interest Rate Risk and the Transmission of Monetary Policy

The income streams of most commercial banks are sensitive to interest rate risk: commercial banks fund their long-term, fixed-rate lending with short-term loans, so any hike in rates by the Federal Reserve System raises their cost of securing deposits, reduces their cash flow, and increases their leverage. Because banks usually try to keep their leverage constant, higher interest rates mean they have to issue more stock or reduce the growth of their lend-

ing—but previous research has shown that banks have trouble raising equity in the short term, so they

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“Banks ... with a smaller disparity between the interest rate sensitivity of their assets and liabilities will not curtail their lending as much as those with larger disparities.”

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tend to reduce their lending instead. This reduction in lending represents an important channel by which monetary policy changes are transmitted to the real economy.

The extent to which a particular bank needs to curtail its lending to achieve a leverage tar-

get in the aftermath of an interest rate increase depends on the difference between the value of its short-term assets, which generate interest-rate sensitive

income streams, and the value of its liabilities, which are similarly interest-rate dependent. Stronger banks — those with a smaller disparity between the interest rate sensitivity of their assets and liabilities — will not curtail their lending as much as those with larger disparities. For example, in the aftermath of a 100-basis-point increase in the Fed funds rate, a bank with a “gap” in the 25th percentile will lend about 1.6 percentage points more than a bank in the 75th percentile, according to **Augustin Landier, David Sraer, and David Thesmar**. In **Banks’ Exposure to Interest Rate Risk and the Transmission of Monetary Policy** (NBER Working Paper No. 18857), they conclude that the income gap — that is, the disparity between the interest-sensi-

tive assets and liabilities — significantly affects the lending channel.

Examining quarterly bank holding data from 1986 to 2011, the authors find that the income gap of U.S. institutions with more than \$1 billion in assets has varied dramatically over time. In 1993, it averaged 22 percent; in 2009, the average gap was 5 percent. The income gap also varies among institutions: at the 25th percentile of large commercial banks, the income gap is zero; at the 75th percentile, it’s 25 percent of total assets.

Banks that have an income gap could use interest-rate derivatives to hedge against the risks of a rate hike by the Fed, but they appear not to fully hedge their interest-rate exposure, according to this study. The difference in the effect of a 100-basis-point rise in inter-

est rates on the quarterly earnings of a bank in the 75th percentile of the income gap distribution and the earnings of a bank in the 25th percentile is about 0.02 percent of total assets. Given that the average quarterly return on assets is 0.2 percent, that 0.02 percent difference is significant.

This study also documents that the income gap strongly predicts not only a bank’s lending but also its earnings. A rate rise will have a smaller effect on trimming the growth of lending at a stronger institution than at a weaker one. The authors calculate that in the face of an increase of 100 basis points, a bank at the 25th percentile will reduce its lending by about 0.4 percentage points more than a bank at the 75th percentile.

—Laurent Belsie

## House Prices, Collateral, and Start-Up Businesses

Collateral lending, especially mortgage lending, has long been recognized as an important financial catalyst that can drive overall demand for products and services within an economy. In **House Prices, Collateral and Self-Employment** (NBER Working Paper No. 18868), **Manuel Adelino, Antoinette Schoar, and Felipe Severino** determine that in areas of the United States with strong home-

price increases before the 2008 financial crisis, the collateral

need little start-up capital, and it was evident even in manufactur-

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“The increase in start-ups and small-business hiring was more pronounced in areas with high run-ups in home values.”

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lending channel contributed to strong employment gains in small businesses, but to smaller gains at large firms in the same industries. This employment growth was most noticeable in sectors that

ing sectors in which products are shipped long distances, suggesting that local demand for products and services was not driving firms’ expansion.

Previous studies had exam-

ined the connections between collateral lending and overall economic activity, but this study focuses on how collateral lending affects self-employment and business starts. The authors do this by examining “shocks” to the value of home collateral, and then differentiating between geographic areas where strong housing demand led to either higher

home prices—which translate into more collateral—or higher new-home building—which does not generate greater wealth or greater collateral for existing homeowners.

Their research shows that access to collateral allows individuals to start small businesses. The increase in start-ups and small-business hiring was more pro-

nounced in areas with high run-ups in home values. The authors find that after 2008, the employment losses at small businesses in areas that previously experienced large home-price run-ups were about the same as, and in some cases smaller than, the employment losses at larger firms in the same geographic areas.

—Jay Fitzgerald

## Trade, Technology, and the Labor Market

**T**rade and technology have quite different effects on U.S. businesses, according to new research by **David Autor, David Dorn, and Gordon Hanson**. In **Untangling Trade and Technology: Evidence from Local Labor Markets** (NBER Working Paper No. 18938), they find that local labor markets exposed to rising Chinese import competition see significant declines in jobs, whereas those susceptible to computerization see a polarization of occupations, but no net job loss.

The authors also observe that job loss accelerated during the 2000s in labor markets hit by foreign competition, while the impact of computerization decelerated, at least in manufacturing. “Our analysis reveals a surprising degree of divergence between the labor market consequences of these two phenomena—both across industrial, occupational, geographic

and demographic groups, and over time as the trajectory of these forces has evolved,” they conclude. “Trade competition leads to sharp

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“A \$1,000 rise in import exposure per worker lowers the employment rate of non-college workers by an estimated 1.21 percentage points.”

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declines in local manufacturing employment, with corresponding growth in local unemployment and non-employment, particularly among workers without college education. In contrast, exposure to technological change has largely neutral effects on overall employment, yet leads to substantial polarization of occupational composition within sectors.”

To approximate local labor markets, the authors examine 722 commuting zones (CZs), covering the entire mainland United States, from 1990 to 2007. They determine how susceptible each

of these CZs was to technological change, based on Census data on occupational patterns, and to Chinese competition, measured

by the local market’s industry mix in 1980. The impact of technology—or what the authors call “task-replacing technical change” through computerization—is spread throughout the United States. In contrast, those CZs affected by trade competition from China are geographically concentrated, leading to quite a bit of geographical disparity.

For example, the Providence, Rhode Island CZ—a manufacturing hub—experienced an increase of imported Chinese goods of \$2,330 per worker between 1991 and 2000. Between 2000

and 2007, the value of Chinese goods that might otherwise have been made locally rose to \$3,490 per worker. By contrast, the New Orleans CZ had few industries directly competing with China and saw only small increases in import exposure: \$170 and \$490 per worker respectively in those two time periods.

Because the CZs are so disparate in terms of industry specialization, this regional approach makes it easier to identify the labor-market effects of trade shocks, which hit young and old, male and female, with roughly equal force. But the least educated are hit the hardest. A \$1,000 rise in import exposure per worker lowers the employment rate of non-college workers by an estimated 1.21 percentage points; the impact on college workers is less than half that, 0.53 percentage points. These effects don't show up as much as a rise in the unemployment rate as they do in a decline in labor-force participation.

By contrast, computerization hits women harder than men. A CZ at the 75th percentile of expo-

sure to computerization typically sees a decline of 1.8 percentage points in the female employment-to-population ratio over a decade relative to a CZ at the 25th. "The effects of exposure to routinization also appear larger for older versus younger workers, though this difference is less precisely estimated," the authors write.

This study also looks at what kind of workers are affected by these changes. For trade shocks, the impact is largest for routine-task intensive occupations, such as repetitive production and office clerical jobs. It is also significant for manual-task-intensive jobs, like vehicle driving, cleaning, and security. The effect is evident, but not significant, for abstract-task-intensive occupations, such as managerial and technical workers. For computerization, the only significant negative impact is on routine task-intensive occupations; it is as large as the impact of trade shocks for this group. "But these losses are largely offset by employment growth in abstract and manual-task-intensive occupations," the authors write.

How can computerization

have had such small, insignificant effects on manufacturing employment with all the labor-saving improvements of computer-aided manufacturing? Extending their study back to the 1980s, the authors find that computerization did have substantial impacts on job task composition in the 1980s and 1990s but not since then. In contrast, the effect of computerization in non-manufacturing industries has accelerated in that period, almost quadrupling from the 1980s to the 2000s. "Concurrent with the rapid growth of U.S. imports from China, the effect of trade competition on the manufacturing sector has become stronger over time, while the effect of technological change on employment composition in the manufacturing sector has subsided," the authors conclude. "Conversely, the impact of technology on the non-manufacturing sector is growing as technological change seems to be shifting from automation of production in manufacturing to computerization of information processing in knowledge-intensive industries."

— Laurent Belsie

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