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## Large, Modern Retailers Pay Comparatively High Wages

Contrary to widespread belief, big-box stores and chains have increased wages in the retail sector as they have spread, according to **Do Large Modern Retailers Pay Premium Wages?** (NBER Working Paper No. 20313). Retail wages rise markedly with the size of the chain and the individual store, according to the study by **Brianna Cardiff-Hicks**, **Francine Lafontaine**, and **Kathryn Shaw**. As retail chains' share of establishments has risen from one-fifth in 1963 to more than one-third by 2000, the number of jobs that pay better than traditional mom-and-pop stores has proliferated.

Half of the difference in wages between large and small retailers appears to be attributable to differences in the average skill level of workers in the two groups of firms. On average, better workers find their way to the bigger companies. With more levels of hierarchy than small stores, larger establishments also allow better workers to move into management positions, increasing their pay even more.

"The increasing firm size and establishment size that are a hallmark of modern

retail are accompanied by increasing wages and opportunities for promotion for many workers," the authors write. "While retail pay

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High-school graduates who work in retail firms with 1,000 or more employees earn 15 percent more than those in shops with fewer than 10 workers.

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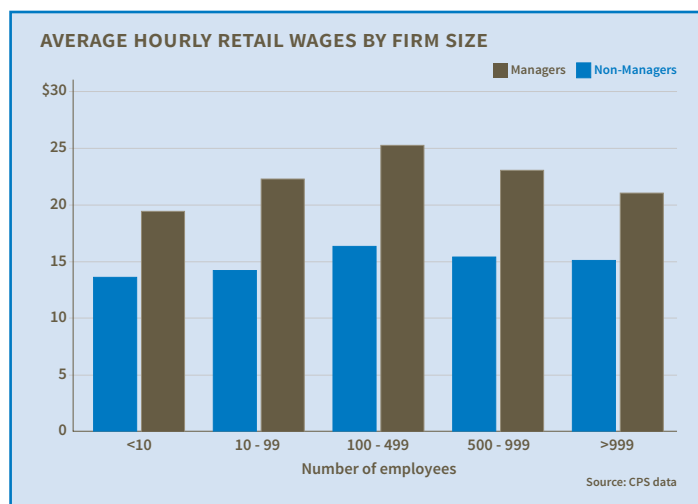
is considerably below that in manufacturing, pay in retail is above that found in service jobs. ... [These results] contradict the image of the retail sector as one comprised of the lowest paying jobs in the economy."

those who work in shops with fewer than 10 workers. The differential for those with some college education or a college degree

is even more marked: pay is 25 percent higher in the larger firms. The study relied on Current Population Survey data to carry out these comparisons.

Using National Longitudinal Survey of Youth data, the authors find that the same holds true for the size of the individual store: the high-school educated earn 26 percent more at stores with 500 or more workers than at ones with fewer than 10; the college-educated earn 36 percent more.

The pay disparities are much less dramatic when the authors control for worker quality. After this correction, they find the large-firm premium is 8 percent for high-school graduates and 11 percent for those with at least some college; the large-store premia are 19 percent and 28 percent, respectively.



High-school graduates who work in retail firms with 1,000 or more employees earn 15 percent more on average than

The authors conclude that these “results imply that higher-quality workers are sorted into large firms and large establishments, but that working in larger firms or establishments yields additional increases in pay.”

These higher-quality workers are also often rewarded with promotions that boost their pay. The study finds that compared across different ability levels, managers make more than 23 percent more than non-managers if they have a high-school education; 20 percent more if they have at least some college.

The finding is important because the frequency of promotion to managerial posi-

tions, including first-line supervisors, is high in retail. According to data published by Glassdoor, an entry-level cashier in a Walmart store earns an average \$8.48 per hour, but a supervisor earns \$14.38 per hour. A salaried shift manager makes \$62,837 a year and a store manager earns \$92,462. High-end grocery and big-box stores, such as Whole Foods and Costco, tend to pay more than other retailers. Manager pay varies substantially in the retail sector: 13 percent of managers earn \$20,000 or less, but 33 percent earn more than \$50,000.

Wages in the retail sector fall between those in other sectors. According to Current

Population Survey data, the average hourly wage in retail is 68 percent of that in manufacturing. On the other hand, retail pays about 15 percent better than service occupations. The average hourly wage for men in non-managerial positions in retail is \$16.28, versus \$13.97 in services. For women, this disparity is \$12.79 versus \$11.15.

“The retail sector pays considerably less than manufacturing, but as the manufacturing sector has declined over time, the growth of modern retail chains has increased retail wages and provided more promotion opportunities, particularly for the more-able worker,” the authors conclude.

—Laurent Belsie

## Oil Prices and Production: A Remodeling

Since Harold Hotelling developed his classic model of exhaustible resource extraction in 1931, economists have modeled the optimal extraction of a fixed stock of an exhaustible resource under the assumption that resource owners can reallocate extraction across different periods without constraint. In **Hotelling Under Pressure** (NBER Working Paper No. 20280), **Soren T. Anderson, Ryan Kellogg, and Stephen W. Salant** argue that

observed patterns of oil production and prices cannot be replicated using the Hotelling model or existing modifications. Instead, the authors develop a model in which the decision to drill a well in a new area is unconstrained, and reacts sharply to price changes, while the subsequent maximum pace of extraction is constrained by pressure inside the well. A drilling investment problem in which the maximal flow of oil is constrained at the well level provides a better fit for the actual cost structure of the oil industry.

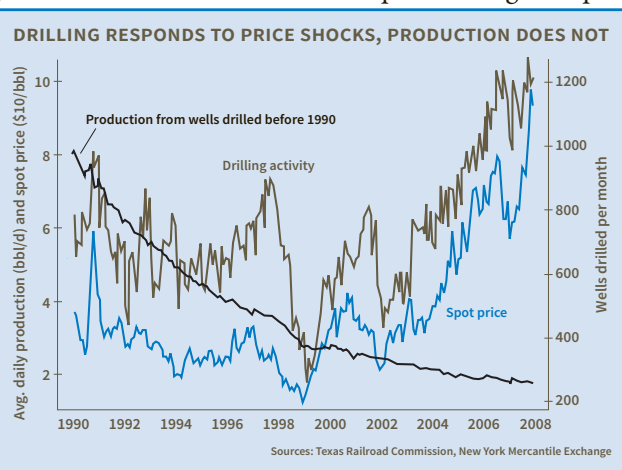
Using data from Texas over 1990–2007, the authors find that the rate of production from existing wells is initially high but declines rapidly, and does not respond to shocks in spot or expected future oil prices. This behavior is inconsistent with most extraction models. But it can be explained by the fact that the pace of extraction is dictated by the pressure level of the well. When a well is newly drilled, the pressure in the underground oil

reservoir is high and allows for rapid production. Over time, pressure declines toward zero as the reserves are depleted. Firms do respond to oil prices, but they do so by adjusting at the extensive margin: the drilling of new oil wells.

The maximum pace of extraction is constrained by pressure inside the well and does not react to price changes.

Therefore, the authors present oil extraction as a drilling problem in which firms maximize discounted wealth by choosing when to drill their wells, but the maximum flow from these wells is constrained by pressure. The model explains that extraction at the flow constraint can be optimal even in episodes like 1998–99 when spot prices were very low and oil futures markets implied that prices were expected to rise faster than the interest rate. A well owner who attempts to arbitrage such prices by producing below the constraint

cannot recover all the deferred production at the instant prices reach their maximum in present value because production is limited by pressure levels. Instead, deferred production can only be recovered gradually over the lifetime of the well, which may include periods when the discounted oil price is lower than the current price. Consequently, aggregate production is price inelastic. It will evolve gradually over time, following



changes in the drilling rate, and will only respond to shocks with a significant lag.

The model's equilibrium dynamics also replicate other salient features of the crude oil extraction industry. Drilling activity and rental rates on drilling rigs strongly co-vary with oil prices. Production in newly developed oil-producing regions starts low but

then peaks and eventually declines as extraction slows as the number of untapped wells diminishes. Positive global demand shocks lead to an immediate increase in oil prices, drilling activity, and rig rental prices; and oil prices may subsequently be expected to fall if the increased rate of drilling causes production to increase.

—Claire Brunel

## Import Competition and the Great U.S. Employment Sag

**I**n **Import Competition and the Great U.S. Employment Sag of the 2000s** (NBER Working Paper No. 20395), **Daron Acemoglu, David Autor, David Dorn, Gordon H. Hanson, and Brendan Price** determine that, from 1999 to 2011, Americans experienced net job losses of 2 to 2.4 million due to the rise in import competition from China. Analyzing changes in employment across four-digit manufacturing industries from 1991 to 2011, the researchers find that total U.S. manufacturing employment declined from 17.2 million workers in 1999 to 11.4 million in 2011, and that Chinese imports were responsible for approximately 10 percent of that job loss.

These direct effects, however, do not reveal the full impact of growing Chinese imports on U.S. employment, such as is seen in industry input-output linkages. If an industry contracts because of Chinese competition, it may reduce both its demand for intermediate inputs produced in the United States and its supply of inputs to other domestic industries. An industry may thus be negatively affected by trade shocks either to its upstream domestic suppliers or to its downstream domestic buyers. The authors consider that increased imports in upstream industries may lower the cost of obtaining certain inputs, making the implications of the negative upstream trade shock ambiguous. Consistent with these observations,

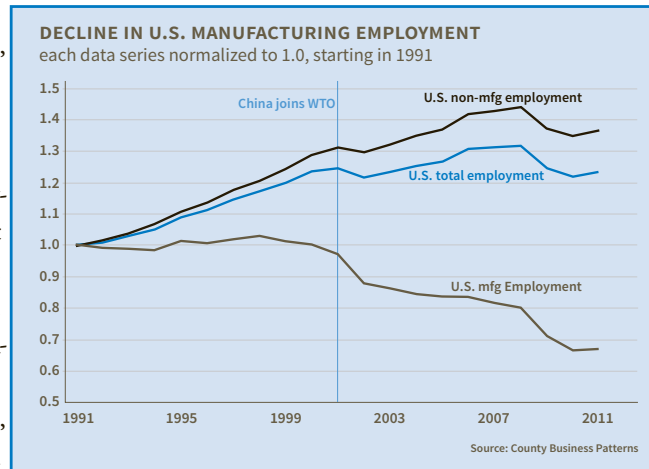
they find that industries contract when their downstream buyers are exposed to fiercer import competition. Accounting for such downstream linkages doubles

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U.S. manufacturers that were heavily exposed to Chinese competition in 1999–2007 continued to see rapid job losses even when competitive pressure eased.

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the estimated impact of Chinese imports on U.S. manufacturing employment and reveals an equally large effect on employment outside of manufacturing.



Import competition can affect employment through other mechanisms, as well. The authors look at local labor markets to study the reallocation effect from growing trade with China, in which declining manufacturers move to new opportunities, and study aggregate demand effects by which domestic consumption and investment may be depressed, extending employment losses to sectors not otherwise exposed

to import competition. If the reallocation mechanism often postulated in economic theory is operative, the authors write, then if an industry contracts in a

local labor market because of Chinese competition, some other industry in the same labor market should expand. In addition, part of any aggregate demand spillovers also should accrue to the local labor market. But they find few if any offsetting job gains in non-exposed industries.

U.S. imports from China dropped sharply in 2009, the researchers note, possibly implying that China absorbed part of the demand shock accompanying the Great Recession. Yet they find that U.S. manufacturers that were heavily exposed to Chinese competition during the period 1999 to 2007 continued to see rapid job losses during the period 2007 to 2011. This suggests that the trade shocks of the prior decade cast a long shadow over U.S. manufacturing, even when competitive pressure eased temporarily. U.S. manufacturers, the authors say, recognized that the loss in advantage over China in the prior decade was largely permanent and that the lull in trading activity was temporary. Indeed, U.S. imports from China more than made up all of

the ground lost in 2009 by the following year, and then rose further from there.

The researchers conclude that while rising labor costs in China suggest less trade

pressure in the years ahead, the U.S. has yet to experience such a reduction.

—Matt Nesvisky

## Higher Unemployment Insurance Boosts Consumer Credit

The United States and other developed countries have robust social safety nets that provide households with assistance in the case of job loss, a workplace accident, disability, or health or other problems. Throughout the Great Recession, as home values declined and foreclosures proliferated, housing issues dominated debates on economic policy. A key motivation for policy intervention was to avoid the costs of foreclosure borne by borrowers, lenders, and even those in the surrounding communities. Despite general agreement on the motives for intervention, policymakers struggled to design and implement effective policies. Debate centered on whether foreclosures were caused by job loss, payment shocks, or underwater borrowers' incentive to "strategically default." Accordingly, policymakers debated whether programs should focus on improving borrowers' ability or their incentive to repay.

Many previous studies have evaluated the benefits of unemployment insurance (UI) and other transfer programs by focusing on improvement in the living standards of direct recipients. But consumer credit markets can amplify social insurance's effects. Expanding social insurance can reduce lenders' perceptions of risk in low-income populations, increasing access to credit in at-risk populations even before those populations draw on the insurance. Also, social insurance that reduces defaults, such as in mortgage markets, benefits communities and individuals whose property values and environment would have been endangered by widespread fore-

closures and destitution.

In **Positive Externalities of Social Insurance: Unemployment Insurance and Consumer Credit** (NBER Working

Mortgage delinquency and default decline as unemployment benefits rise; higher benefits improve credit access for the poor.

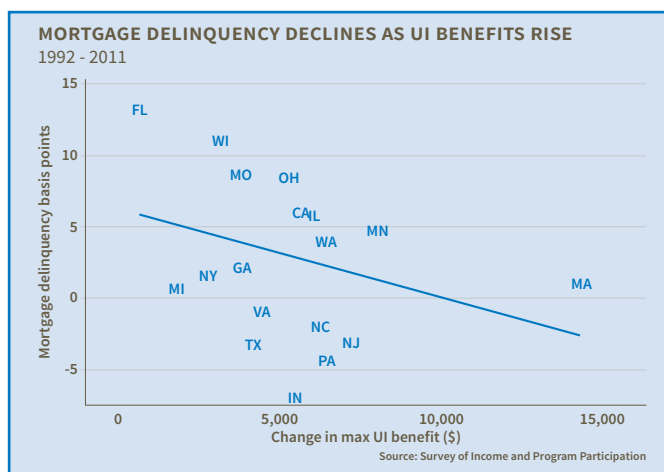
Paper No. 20353), authors **Joanne W. Hsu**, **David A. Matsa**, and **Brian T. Melzer** explore the role of unemployment benefits in consumer credit markets. The authors focus specifically on unemployment insurance, the largest government transfer program outside of social security and govern-

even while they are employed. In that way, unemployment insurance confers social benefits not previously highlighted by academic research.

Even if not by design, unemployment insurance stemmed foreclosures in a period when more-targeted housing programs such as the Home Affordable Refinance Program and the Home Affordable Modification Program underperformed their goals. UI achieved the goal of those programs—making loan payments more affordable—while avoiding key challenges of loan refinancing and modification, such as the need for lenders' and loan servicers' cooperation in screening borrowers and modifying loan contracts. UI bypassed lenders and loan services by transferring money to homeowners directly. By linking assistance to an observable economic shock beyond a household's control (i.e., job displacement), UI also

distorted homeowner choices less than assistance conditioned on indebtedness or payment delinquency.

Although expanding UI reduced foreclosures during the crisis, the authors point out that it is a blunt policy instrument that has both costs and benefits. Increasing benefit generosity has the potential to distort all recipients' job searches, even though it reduces foreclosure risk only among the roughly half of recipients who are mortgagors. More-targeted policies that could direct



ment-sponsored health care. Exploiting differences in the generosity of UI across U.S. states and over time, the authors find that mortgage delinquency and default decline as benefits rise. The impact of benefit payments during the Great Recession was substantial. The authors estimate that federal expansions of UI helped to avert about 1.4 million foreclosures and \$70 billion of associated costs between 2008 and 2012. Furthermore, they find that higher benefits improve credit access for the poor;

additional cash assistance to unemployed mortgagors include the Hardest Hit Fund

and similar programs proposed by housing economists. The findings in this study sug-

gest that such programs could help to stabilize the housing market during times of crisis.

—Les Picker

## Effects of Mortality on Fertility after 2004 Indian Ocean Tsunami

Natural disasters that increase child mortality also may cause aggregate fertility rates to rise. In **The Effects of Mortality on Fertility: Population Dynamics after a Natural Disaster** (NBER Working Paper No. 20448), Jenna Nobles, Elizabeth Frankenberg, and Duncan Thomas find a significant increase in aggregate fertility in their study area during the four years after the 2004 Indian Ocean

tsunami, as indicated by a 0.7 increase in the total fertility rate over the expected rate. They find that mothers who lost one or more children were significantly more likely to bear additional children after the tsunami, but this additional fertility accounted for just 13 percent of the aggregate fertility increase. The majority of the aggregate increase occurred because childless women in communities with high mortality rates were more likely to begin child-bearing than childless women in other communities.

The December 26, 2004, Sumatra-Andaman Islands earthquake was one of the largest ever recorded. Three tsunamis with waves 50 to 100 feet tall came ashore in the Indonesian provinces of Aceh and North Sumatra, killing an estimated 170,000 people. Differences in coastal topogra-

phy protected some communities even as neighboring communities experienced mortality rates of over 50 percent.

In early 2004, Statistics Indonesia conducted an annual, nationally representative socio-economic survey known as SUSENAS, which provided baseline data for the Study of the Tsunami Aftermath and Recovery (STAR), an international collaborative project of Indonesian and U.S. investigators led by Frankenberg and Thomas. The STAR team reinterviewed individual SUSENAS respondents in tsunami-affected areas, determined mortality status for 97.4 percent of the SUSENAS sample, and developed estimates of local community damage using satellite photos cross-validated by interviews with local authorities.

The authors analyzed the fertility of individual women in STAR in the pre-tsunami baseline survey and in five annual post-tsunami surveys. These surveys provided detailed information

In communities with high mortality, both women who lost children and women who were childless were more likely to have children.

about the mortality of household members. Researchers were able to contact 95 percent of those who survived the tsunami, obtaining complete pregnancy histories from women of reproductive age. Individual response to losing at least one child was estimated using pre-tsunami data on age, number of children, education, per capita household expenditure, and home and land

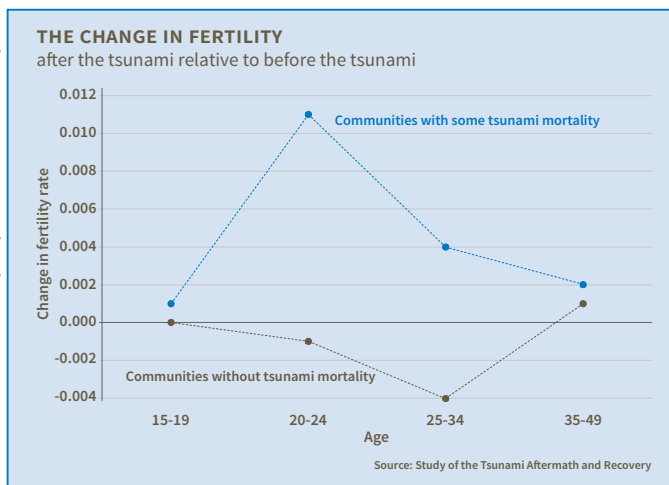
ownership. Individual experiences during the disaster were controlled for, using a variable recording whether a person had seen friends or family struggle or disappear in the water. Of the 2,301 women who were mothers at the time of the tsunami, just over 5 percent lost a child.

Mothers who lost a child were 37 percent more likely to have another child by 2009 regardless of the child's age. In communities where no one was

killed, women without children before the tsunami were less likely to have a child in 2006–09. In communities with high mortality, both women who had lost children and women who had not had any children before the tsunami were more likely to have children. As a result, an estimated 9,500 additional children were born by the end of 2009 in study-area communities that experienced substantial tsunami mortality.

The authors note that although a five-year, post-disaster follow-up allows them to assess the effect of the tsunami losses on older women, it is too early to tell whether the increase in fertility reflects a shift in fertility timing or will result in larger complete family sizes.

—Linda Gorman



## Who Benefits When States Cut Corporate Taxes?

State-level policymakers often adjust corporate income-tax rates to keep or lure businesses. Many of these changes are enacted without full understanding of the impact such tax moves and economic incentives have on companies, workers, and landowners.

In **Who Benefits From State Corporate Tax Cuts? A Local Labor Markets Approach With Heterogeneous Firms** (NBER Working Paper No. 20289), **Juan Carlos Suárez Serrato** and **Owen Zidar** find evidence that 40 percent of both the economic benefits of corporate-tax rate reductions and the costs of tax increases accrue to companies and their shareholders, while 35 percent accrue to workers and 25 percent are received by landowners.

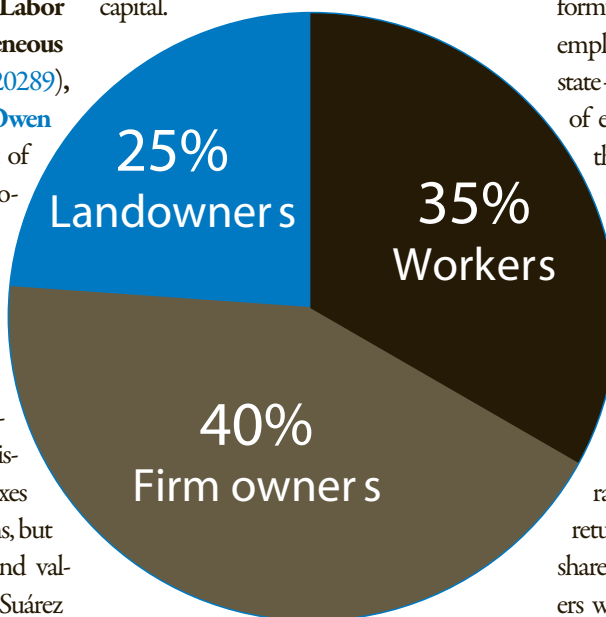
The standard analysis of corporate income taxes levied by small jurisdictions like states holds that such taxes are not likely to burden footloose firms, but will ultimately reduce wages and land values in the jurisdiction. In their study, Suárez Serrato and Zidar develop a new framework in which firms derive benefits from operating in particular localities, and so can't easily move in response to changes in the level of corporate taxes in a state. A classic example

is Silicon Valley firms that feel they need to operate in that region to take advantage

of how state-level corporate income taxes—which are complex and are apportioned

... 40 percent of the economic benefits accrue to companies and their shareholders, 35 percent to workers, and 25 percent to landowners.

of the concentration of skilled workers and capital.



INCIDENCE OF CORPORATE TAX CHANGES

Sources: Census Bureau, Bureau of Economic Analysis and others

Using data from the U.S. Census and various other sources, the authors esti-

mated how state-level corporate income taxes—which are complex and are apportioned across states using apportionment formulae that depend on the level of sales, employment, and fixed assets in each state—affect employment and the number of establishments in the state. They find that a 1 percentage point cut in a state's corporate tax rate is associated with a 3 to 4 percent expansion in the number of establishments over a 10 year period. Corporate tax hikes are correspondingly associated with slower growth in firm numbers.

The authors go on to estimate how the burden of state-level corporate income taxes ultimately affects the returns earned by corporations and their shareholders, the wages received by workers who live in a state, and landowners in the state.

“Our main result is that firm owners bear a substantial portion of the incidence of corporate taxes in an open economy,” the authors conclude.

—Jay Fitzgerald

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