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Job Polarization and Jobless Recoveries

Two recent trends in the U.S. labor market — job polarization and jobless recoveries — are not only evident in the aftermath of the recent recession but also are linked, according to **Nir Jaimovich** and **Henry Siu** writing in **The Trend is the Cycle: Job Polarization and Jobless Recoveries** (NBER Working Paper No. 18334). Polarization — the loss of middle-skill jobs that concentrate on routine tasks — happens in spurts and essentially only during recessions. Because these jobs don't return once recessions are over, the rebound in the labor market is slow, and the result is a sluggish or "jobless" recovery.

"Jobless recoveries are observed only in these disappearing, middle-skill jobs," the authors write. "The high- and low-skill occupations to which employment is polarizing either do not experience contractions, or if they do, rebound soon after the turning point in aggregate output."

While the hollowing out of middle-skill positions has been ongoing for 30 years, it happens almost uniquely in recessions. Fully 92 percent of the loss of these jobs occurs within 12 months of NBER-dated recessions. Averaged over the last three decades, these jobs have accounted for more than half of all U.S. employment — so their disappearance represents a major drag on recoveries.

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The authors compare three early recessions (ending in 1970, 1975, and 1982) with three later ones (ending in 1991, 2001, and 2009). On average, employment took ten months to recover in the early downturns versus 21 months in the later recessions. In the most recent (and sharpest) recession, employment still hasn't recovered to pre-downturn levels.

This difference can't be explained by differences in the severity of the declines. On average, output regained half of its pre-recession high in seven months during the early downturns; it took only slightly longer — nine months — in the later downturns. What has changed is the behavior of employment in routine occupations.

Routine occupations bear the brunt of the loss in all of the downturns. In the 1982 recession, these occupations experienced an employment loss that was greater than the total employment loss in the recession, because employment in the non-routine occupations was actually growing. In early recessions, however, these occupations recovered; in later recessions, they have not, not even in the long term. Thus, the authors conclude, "jobless recoveries" are observed only in these disappearing routine occupations and only since job polarization began.

This phenomenon is not accounted for simply by the cyclical behavior and secular decline of manufacturing in the United States. Similarly, it is not merely a result of the employment experience of workers with low educational attainment. The authors write that "a trend in routine-biased technological change can lead to job polarization that is concentrated in downturns, and recoveries from these recessions that are jobless."

— Laurent Belsie

Pharmacy and the Evolution of a Family-Friendly Occupation

Some workers experience negative pressure on their earnings and job prospects when their respective industries and occupations undergo major technology and structural changes. But in **The Most Egalitarian of All Professions: Pharmacy and the Evolution of a Family-Friendly Occupation** (NBER Working Paper No. 18410), **Claudia Goldin** and **Lawrence Katz** find that the transformation of the pharmacy profession over the past half century, from one dominated by independent pharmacies to an industry overwhelmingly controlled by national pharmacy chains and hospitals, has made the occupation more family-friendly and female-friendly, with higher earnings and a lower gender earnings gap than other fields.

In the mid-1960s, only 8 percent of licensed pharmacists were female, and the industry was dominated by self-employed male pharmacists. About 40 percent of all pharmacists were self-employed, owning and working at independent pharmacies, and 70 percent of all pharmacists worked at independent pharmacies. Owners usually received a premium to compensate for the added risks, responsibilities, and workloads associated with being self-employed. The authors find that there was a hefty hourly earnings penalty for pharmacists who worked only part-time and part-year, such as women who tend to prefer flexible work hours, particularly during their child-rearing years.

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In subsequent decades, the pharmacy profession changed as a result of an increase in nationwide chains. In addition, prescription drugs were increasingly produced by pharmaceutical companies, not compounded in pharmacies and hospitals. And, the demand for pharmaceuticals in general increased for a variety of reasons, including an aging U.S. population, expanded Medicare coverage of prescription drugs, and more readily available drugs to treat a host of chronic diseases.

To measure how much the pharmacy profession has changed over the years, the authors use data from a number of sources, including surveys by the Midwestern Pharmacy Research Consortium of thousands of licensed pharmacists in the years 2000, 2004, and 2009. They find that the changes within the pharmacy profession have been stark. The overall self-employment rate for pharmacists declined from 40 percent in the mid-1960s to less than 5 percent in 2010. Meanwhile, the demand for pharmacists has increased and the percentage of pharmacists working part-time has soared. By the 2000s, nearly 65 percent of all licensed pharmacists could be classified as non-managerial employees, mostly working at national chains and hospitals, with the majority of the remaining pharmacists serving as managers.

For female pharmacists, the changes have been dramatic. Today, about 55 percent of all pharmacists are women. The share of recent graduates of pharmacy programs who are female has risen from about 14 percent in the mid-1960s to 65 percent today. The earnings of all employed pharmacists, both male and female, have increased over the decades relative to other professions, rising by about 41 percent from 1999 through 2010, despite an increase in the supply of pharmacists entering the profession. Significantly, the ratio of female-to-male pharmacists' earnings (median, for full-time, full-year workers) grew from 0.66 in 1970 to 0.92 in 2010, representing the lowest gender wage gap within health care, and considerably smaller than in most other high-wage professions.

The authors don't attribute these dramatic changes to legislation, anti-discrimination policies, licensing requirements, or regulations specific to the pharmacy profession. Instead, they find that the changes are primarily due to structural transformation of the profession's "compensation framework" over time, including the decline of earnings premiums flowing to self-employed pharmacists and the reduction of implicit earnings penalties for those who work part-time and part-year. Both of these developments generally have worked in favor of women. Pharmacists also are good substitutes for each other, which leads to more flexibility in work hours and scheduling than in many other professions.

— Jay Fitzgerald

Environmental Regulation and the Competitiveness of U.S. Manufacturing

The economic costs of environmental regulations have been widely debated since the United States began to restrict pollution emissions more than four decades ago through the Clean Air and Water Acts. Some claim that stricter environmental standards raise polluting firms' costs of production, weakening U.S. firms' position in international markets and raising the prices that consumers face. Others argue that more stringent regulations enhance productivity growth by causing firms to rationalize their operations.

In **The Effects of Environmental Regulation on the Competitiveness of U.S. Manufacturing** (NBER Working Paper No. 18392), authors **Michael Greenstone, John List,** and **Chad Syverson** analyze detailed production data covering nearly 1.2 million plant observations that come from the 1972–1993 Annual Survey of Manufactures. They find that the economic costs of air quality regulations are substantial. Among surviving polluting plants, the EPA's non-attainment designation is associated with a decline in total factor productivity (TFP), or a reduction in output for a given set of inputs (that is capital, labor, and materials). Ozone regulations have particularly large negative effects on productivity, although there

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are negative effects on productivity for emitters of particulates and sulfur dioxide, too. On the other hand, carbon monoxide non-attainment appears to increase measured TFP, especially among refineries. They also find that the impacts of one year's non-attainment designation on a plant's TFP are detectable two years later.

After allowing for the effect of regulation-induced price increases and associated output declines, and for the selective survival of firms that face regulation-induced cost increases, the authors conclude that environmental regulations have reduced TFP by approximately 4.8 percent for manufacturing plants in non-attainment counties. This translates to an economic cost of about $21 billion per year (in $2010) for manufacturing plants, or about 8.8 percent of manufacturing sector profits.

— Lester Picker

Endowment Shocks and Charitable Donations to Higher Education

Educational institutions are the second largest recipients of charitable donations in the United States. In **The Supply of and Demand for Charitable Donations to Higher Education** (NBER Working Paper No. 18389), **Jeffrey Brown**, **Stephen Dimmock**, and **Scott Weisbenner** estimate that in the 2008–9 academic year about $12 billion in capital gifts — money for long-run goals such as increasing endowments, supporting new construction, or endowing professorships — was donated to universities, with another $13 billion donated as current-use gifts that could be used to defray operating costs. They find that these two kinds of donations respond differently to changing economic conditions, a factor that is "important for universities to consider when planning and managing financial risks."

The authors determine that when macroeconomic conditions change, they create two partially offsetting effects on university endowments. First, because donors are often affected by the same "macroeconomic shock" as the endowment, their charitable contributions are correlated with general economic activity. So, for example, a 10 percent decrease in the average income in a university's home state coincides with a 5.2 percent decrease in donations to the university. A 10 percent decrease in home values in that state translates into a 1.3 percent decrease in donations. A 10 percent decrease in the stock returns of in-state companies is associated with a 0.7 percent decrease in donations.

Helping to partially mitigate this effect on university endowments, though, is the fact that donors respond to university needs. Controlling for donors' resources, in the year after a university experiences a "negative endowment shock" — a change in endowment income relative to university operating costs — equal to 10 percent of its annual operating budget, donors increase giving by 1 percent. The authors' estimates suggest that donations remain steady following positive endowment shocks.

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For this analysis, the authors combine data from multiple sources covering 1997–2009 and containing information on U.S. university characteristics, finances, and endowments, as well as state-by-state housing prices, incomes, and the return on the portfolio of stocks of companies headquartered in each state. The average university in their sample had operating costs of $288.6 million a year and an average endowment of $451.9 million. Average annual donations were $31.2 million, about 15 percent of costs.

— Linda Gorman

Land and House Price Measurement in China

In light of the role of the housing bubble in the most recent U.S. economic crisis, questions have begun to emerge about the stability of house prices in China where values have increased rapidly. In **Land and House Price Measurement in China** (NBER Working Paper No. 18403), **Yongheng Deng, Joseph Gyourko,** and **Jing Wu** construct constant-quality real land price indexes using data based on auction sales that took place in 35 major cities in China from 2003 to 2011. They provide the first comprehensive description of major local land markets in China and estimate a measure of housing price appreciation for eight of those cities.

They find that residential land values skyrocketed in China between 2003 and 2011. The typical market experienced an annual growth in real, constant quality land prices of 10 percent, with the top third of the sample reaching 20 percent annual growth. This phenomenon was not limited to big coastal markets such as Beijing and Shanghai. In fact, land prices tended to move in the same way across most markets in a given year, driven essentially by the macroeconomic environment and national market sentiment, rather than by local market factors. However, land prices were extremely volatile from year to year, with large drops in prices during the global financial crisis. Land prices fell by half by the end of the stimulus period (2009–10).

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The aggregate supply of space roughly doubled between 2008 and 2011 in the 35 cities in the sample. Political economy factors explain some of this variation in supply. Land sale volumes are higher when a new local Chinese Communist Party chief takes office, or when the local government is in budgetary deficit. In the first quarter of 2012, though, transaction volumes plummeted in most major Chinese cities, especially in coastal markets.

The authors also attempt to measure house price appreciation in China, as distinct from land price appreciation. They argue that because the Chinese housing market has much new construction and a relatively small number of repeat sales, a hedonic price model will generate a more accurate picture of house price growth in China than traditionally preferred repeat sale price indexes. The authors construct such an index for newly-built homes for eight major markets in China and then compare their index to existing house price series, which focus exclusively on newly-built housing units but make no attempt to control for housing characteristics such as location, density, and site quality. Their index suggests that housing price growth was very high in virtually all markets, exceeded the growth exhibited in existing indexes, and was driven by the land market rather than by construction costs or construction sector wages.

— Claire Brunel

Recessions, Older Workers, and Longevity

In **Recessions, Older Workers, and Longevity: How Long Are Recessions Good for Your Health?** (NBER Working Paper No. 18361), **Courtney Coile, Phillip Levine**, and **Robin McKnight** find that if workers experience an economic downturn in their late fifties, they may face several years of reduced employment before they reach Social Security eligibility at age 62, and may lose health insurance until they are eligible for Medicare. They conclude that this may contribute to higher mortality rates for these seniors.

Indeed, they find that experiencing a recession in the years preceding retirement results in a short period in which mortality is lower, but then a longer period in which mortality is higher. The overall result is lower survival rates for these individuals at older ages. For example, the authors find that a worker who loses his or her job at age 58 as a result of a recession is expected to live as much as three fewer years (19 years instead of 22) than a comparable worker who does not experience job loss. For workers in their late fifties through age 61, any short-term positive health benefits associated with a recession are temporary and ultimately are more than offset by subsequent health deterioration. The authors further find that a recession may present financial barriers to health care because the consequence of recession-related job loss is a reduced rate of health insurance coverage, which could last through the ages of early entitlement to Social Security and Medicare eligibility, respectively.

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To explore the longer-term consequences of recessions, Coile, Levine, and McKnight focus this analysis on individuals who are approaching retirement at the time an economic downturn begins. They use Vital Statistics mortality data for the period 1969 to 2008 to generate age-specific survival probabilities for older individuals, and they link these survival probabilities to labor market conditions at earlier ages. They also use data from the 1980–2010 March Current Population Surveys and the 1991–2010 Behavioral Risk Factor Surveillance System surveys to explore potential relationships between the health effect of recessions and job loss.

— Matt Nesvisky

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