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## When Glory Is Something to Die For

Whether it's students receiving academic recognition in school or professionals winning prestigious industry awards for their achievements, human beings crave and welcome praise — and this can sometimes spur extraordinary effort.

In **Killer Incentives: Status Competition and Pilot Performance during World War II** (NBER Working Paper No. 22992), Philipp Ager, Leonardo Bursztyn, and Hans-Joachim Voth examine the victory scores of thousands of German fighter pilots during the Second World War and find that official praise of a pilot led to significantly better performances by his former squadron peers. However, this extra achievement came at a lethal status-competition cost: Non-ace pilots strove to overachieve and sometimes paid the price with their lives.

Positive recognition of individuals can lead to increased effort and output within an institution or company — and such motivational tactics are widely used at all levels of society. Praise also can have negative effects, such as damaging morale among those who are not recognized. And it can spur status competition, a sort of striving to "keep up with the Joneses." The negative effects of praise can be particularly troublesome in high-risk situations, especially if the status competition involves genuine danger.

This study measures the effects of both positive recognition and status competition, focusing on the spillover effects of praise on the performance and risk-taking of former squad-

ron peers in the German air force during World War II. Using war records compiled by the air force's high command (Oberkommando der Luftwaffe, or OKL) and now stored in the German Federal Archives (Bundesarchiv) in Freiburg, the researchers review data on more

than 5,000 fighter pilots, 53,008 claims of aerial victories, and a total of about 96,000 observation data points. They also identify and track official recognition of pilots by name in



**German WWII Pilot Performance**

■ Former peer mentioned in bulletin
■ No peer mentioned

Aerial victories per month

Source: Researchers' calculations using database of German fighter pilots during WWII

the daily bulletin of the German armed forces (Wehrmachtbericht), mentions that were considered one of the highest forms of recognition within the German military. They find that positive mentions in the daily bulletin of former peers who had been assigned to other

> Inspired by the accomplishments of German air force aces to try harder, average pilots won few additional victories but perished at a much higher rate.

Luftwaffe squadrons led to higher performance by these past squadron-mates and even among "birthplace peers" who grew up near a pilot who had received mention in the bulletin.

The extent of improved performance varied with the skill sets of the pilots. Aces, those ranked in the top percentile of German pilots, temporarily increased their victory scores by two-thirds. Those in the 90th percentile increased their scores by about one-fifth. At the lower end of the pilot skill distribution, pilots performed better after a former squadron peer was mentioned in the bulletin, but not by nearly as much as higher-ranked pilots.

The researchers study risk-taking by pilots by measuring the probability that they are no longer mentioned in the OKL reports, almost always a sign that they had perished or been injured. They found that the probability of such an exit more than doubled for average pilots, those below the 80th percentile, while it hardly increased at all for the best pilots.

The bottom-line findings: When a former squadron peer is mentioned, the very best pilots tried harder, scored more victories, and

died no more frequently, but average pilots won only a handful of additional victories and died at a much higher rate than their peers.

Thus, the researchers conclude that positive recognition of an individual can be a double-edged sword within institutions, particularly in high-risk, dangerous professions: "Our results suggest that the overall efficiency effects of non-financial rewards can be *ambiguous* in settings where both risk and output affect aggregate performance."

— Jay Fitzgerald

# Fed Pronouncements, Expectations, and Stock Prices

Monetary policy, Ben Bernanke once blogged, "is 98 percent talk and only two percent action." This underscores the challenge of deciphering how monetary policy announcements affect asset markets. A new study develops a way of measuring how speeches and other official pronouncements of Federal Reserve officials affect market predictions of future monetary policy, and how these expectations in turn affect stock prices.

The new measure, which its creators call the "slope factor," appears to predict future changes in interest rates as well as stock prices. For the latter, in weekly data, it has the same order of predictive power as the dividend-price ratio, the Chicago Board Options Exchange Volatility Index (VIX), and the variance risk premium. It also appears to be independent of those measures.

"Investors can achieve increases in weekly Sharpe ratios — a measure of risk-adjusted returns — of 20 percent conditioning on the slope factor," Andreas Neuhierl and Michael Weber write in **Monetary Policy and the Stock Market: Time-Series Evidence** (NBER Working Paper No. 22831).

The slope factor is constructed from the weekly differences in the values of two federal funds futures. It is computed as the residual from a regression of the change in the implied interest rate on the three-month federal funds futures on the change in the implied interest rate on the one-month futures. The changes in the futures prices at both maturities reflect market judgements about future monetary policy. The slope factor for a given week can be either positive or negative. When it is positive, it suggests that market participants in a given week have increased their expectations of three-month interest rates by more than their expectations of one-month interest rates. The larger the value of slope, the larger the difference between the value of the change in the three-month rate and the component of that rate that can be explained by the change in the one-month rate.

Many studies of how Fed pronouncements affect asset prices focus on only eight periods of the year, when the Fed's interest-rate setting Federal Open Market Committee meets. This study takes a different tack. The researchers find that Fed officials are constantly communicating to the markets about the direction of future interest rates. This has been especially true since 1994, when the Fed adopted a more transparent approach to communicating with market participants.

The researchers point out that the slope factor provides information that investors could use in portfolio construction. It predicts weekly excess returns, measured from Wednesday to Wednesday, on the value-weighted index of U.S. stock returns created by the Center for Research in Security Prices. After testing their model on data from 1988, when the federal fund futures market began, to 2007, the researchers conclude that "[t]he slope factor explains around 2 percent of the weekly variation in stock returns and is robust to the inclusion of lagged weekly returns."

With regard to the potential implications for portfolio practice, they write, "an investor conditioning on the slope factor can increase his weekly Sharpe ratio by more than 20 percent compared to a buy-and-hold investor … [T]rading based on the predictions of the slope factor is feasible and transaction costs are small."

— Laurent Belsie

A measure derived from the federal funds futures market appears to offer predictive power for stock price movements.

### Comparison of Sharpe Ratios, 1988-2007

| | Sharpe ratio |
|---|---|
| Annualized Sharpe ratio of buy-and-hold investor | 0.53% |
| Annualized Sharpe ratio of slope investor | 0.65% |

Source: Researchers' calculations using Center for Research in Security Prices and Chicago Mercantile Exchange data

# Active Asset Managers Earn their Keep, But …

Asset managers who actively manage large institutional investments outperformed benchmarks by 42 basis points after expenses, according to **Asset Managers: Institutional Performance and Smart Betas** (NBER Working Paper No. 22982). Researchers Joseph Gerakos, Juhani T. Linnainmaa, and Adair Morse estimate that they achieved this through "smart beta" strategies, which weight portfolios to track various factors and indices that have historically earned abnormal returns.

But the study also suggests that asset managers' advantage in offering these profitable smart beta strategies may be eroding because of the emergence of low-cost exchange-traded funds (ETFs), which can be used to replicate smart beta weightings with simple optimization calculations.

The researchers analyze data covering about $18 trillion in annual investments in institutional pooled funds from 2000 to 2012. They find that institutions paid outside asset managers $162 billion annually to handle their portfolios, or about 44 basis points (0.44 percentage points). These outside managers more than made up for their fees with average excess returns, relative to their benchmarks, of 86 basis points. Thus the net-of-fees return was 42 basis points. The researchers estimate net-of-fee returns that are higher than those in many previous studies of institutions' returns. They argue that this is because most other studies include portfolios that institutions manage in-house and typically look only at U.S. stocks, not foreign stocks or fixed-income investments. Their findings suggest that delegated investments, those managed by external managers, outperform those managed in-house at large institutions.

*… the edge they have enjoyed in offering profitable strategies may be eroding with the emergence of low-cost exchange-traded funds.*

The researchers examine the source of the returns to active management, and conclude that so-called "smart beta" portfolios are what help active asset managers outperform traditional benchmarks. They demonstrate this by constructing portfolios that mimic smart beta portfolios, and find that their performance closely tracks the estimated performance of the managers' funds. While this implies that the active portfolio weightings associated with smart beta strategies have outperformed the traditionally weighted benchmark portfolios, they also conclude that "the introduction of liquid, low-cost factor ETFs is likely eroding the comparative advantage of asset manager funds."

The researchers estimate that over their sample period, institutional asset managers earned an annual gross excess return (alpha) of 131 basis points relative to the overall equity market. This outperformance exceeds the 86 basis points of excess return relative to benchmarks, mentioned earlier, because some benchmarks also had higher returns than the market. Multiplying this excess return by assets under management suggests that, on average, institutional asset managers earned $469 billion from other market participants each year. Of this amount, $307 billion was earned by the institutions hiring the managers, and $162 billion remained with the asset managers as fees. Because the average return across all investors must be the market return, the favorable performance of institutional asset managers must imply underperformance for other investors. The researchers conclude that "the average non-institutional or non-intermediated dollar — that is, investments made through retail mutual funds or directly by individuals or institutions — underperformed the market by 53 basis points even before fees."

— Laurent Belsie



**Institutional Asset Manager Performance, 2000–2012**

Average fund returns, basis points

Values shown: 140, 120, 100, 80, 60, 40, 20, 0, -20

Gross returns / Net returns / Manager fee

Categories: U.S. public equity, Global public equity, U.S. fixed income, Global fixed income, All

Source: Researchers' calculations using data from a large global consulting firm

# Industrial Policy, Agglomeration, and Collusion in China's SEZs

Firms in the same industry often locate in the same geographic area. Alfred Marshall suggested in 1890 that such clustering reduced the cost of moving goods, people, and ideas. Subsequent work has found that clusters can enhance productivity by increasing competitive pressure. This result has been invoked to justify industrial policies that encourage agglomeration.

These considerations notwithstanding, Wyatt J. Brooks, Joseph P. Kaboski, and Yao Amber Li note that "there is an even older concern — dating back to at least Adam Smith — that gathering competitors in the same locale could instead lead to non-competitive behavior." In **Growth Policy, Agglomeration, and (the Lack of) Competition** (NBER Working Paper No. 22947), they test for non-competitive behavior associated with geographic concentration and cluster-encouraging policies.

The researchers study the pricing behavior of Chinese manufacturing firms in industrial clusters. They find strong evidence of non-competitive pricing in some clusters, and report that non-competitive behavior appears to be four times greater in China's special economic zones (SEZs) than in other areas. Firms are incentivized to form clusters in SEZs with tax breaks, infrastructure investment, and promises of local government cooperation.

The analysis focuses on firms' markups — the ratio of the firm's product price to its marginal cost. A competitive firm's markup will not depend upon the market share of other firms in its industry and, in many models of firm behavior, should rise as its market share increases. Because colluding firms consider the impact of their pricing on one another, each firm's markup will depend more upon the total market share of the set of colluding firms in its industry than on its own market share. Thus the researchers can test for the presence of collusion by exploring whether the pricing (markup) at a given firm depends only on its own market share, or on those of its rivals in the cluster.

The researchers apply their test to Chinese manufacturing firms included in the Annual Survey of Chinese Industrial Enterprises. Conducted by the National Bureau of Statistics of China, the survey covers all state-owned and private enterprises with annual sales of at least $750,000. From 1999 to 2009, the number of firms in the survey ranged between approximately 162,000 and 411,000. Survey records contain detailed information on revenue, fixed assets, labor, and geographic location. The researchers construct market shares using sales data, and they estimate firm markups.
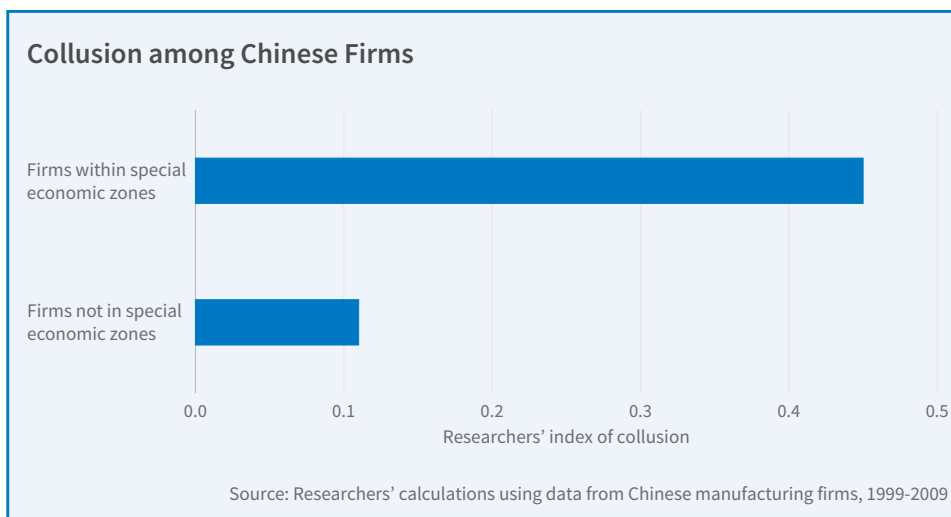
The authors evaluate their test using a series of validation and placebo tests. In particular, they show that their test correctly detects "collusion" among firms with a common owner, which are firms that clearly ought to be pricing cooperatively. Moreover, placebo tests return a lack of collusion, which demonstrates that this result is not spurious. Finally, they show higher rates of collusion in industries with differentiated goods. Previous literature has shown a tendency for

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**Firms in some Chinese industrial clusters, especially in special economic zones (SEZs), appear to engage in non-competitive pricing.**

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firms to formally collude in these industries, since firms in these industries cannot insulate themselves from competition through product differentiation. The test is a methodological innovation that can be applied to test for firm cooperation in other scenarios.

The results suggest that some clusters of firms, those in the same industry and geographic location, exhibit pricing that is consistent with collusive behavior. Markups at individual firms in these clusters are strongly related to both the firm's market share and to the market share of other firms in the cluster. For firms in some clusters in small geographic areas, markups depend less on a firm's own market share than on the market share of the geographic cluster. This suggests that firms in closer proximity are more likely to collude. This tendency was especially pronounced in China's special economic zones.

Incentives designed to create industrial clusters and foster innovation by bringing rival firms into close proximity are ubiquitous in both the developing and developed world. The researchers do not consider the effect of these programs on economic growth, but they conclude that programs designed to enable cooperation among firms can also have the unintended side effect of encouraging collusion.

— Linda Gorman

**Collusion among Chinese Firms**

Firms within special economic zones

Firms not in special economic zones

0.0     0.1     0.2     0.3     0.4     0.5

Researchers' index of collusion

Source: Researchers' calculations using data from Chinese manufacturing firms, 1999-2009

# Where Children Grow Up Affects How Much They'll Earn

**P**arents move their families for job opportunities, bigger houses, and better schools. Those who believe that where their children are raised will affect their future earnings are right. That's what Raj Chetty and Nathaniel Hendren find in **The Impacts of Neighborhoods on Intergenerational Mobility II: County-Level Estimates** (NBER Working Paper No. 23002).

Using data on the variation in the age of children when families move, the researchers estimate how growing up in each of 3,000 U.S. counties affects a child's earnings at age 26. For instance, they find that children who moved from Manhattan to Queens at younger ages have higher earnings. After ruling out other potential explanations such as residential sorting, they argue that this suggests Queens has a positive impact on future earnings. They find that, for children whose parents are at the 25th percentile of the national income distribution, each additional year of childhood spent in a county that is one standard deviation (SD) "better" than the average county increases mean annual earnings at age 26 by 0.5 percent, or $135. If a child lives in a one-SD-better county for 20 years, they predict annual income would be, on average, 10 percent higher at age 26. Likewise, children at the 75th percentile of the parental income distribution would see an increase of 0.3 percent of their mean earnings, or $130, for each additional year spent in a one-SD-better county.

The findings allow the researchers to identify the best and worst areas to grow up for children from low-income

families. Among the 100 largest counties, the western suburbs of Chicago (DuPage County) rank as the best place for upward mobility — income at age 26 is 0.8 percent higher per year of childhood relative to an average county.
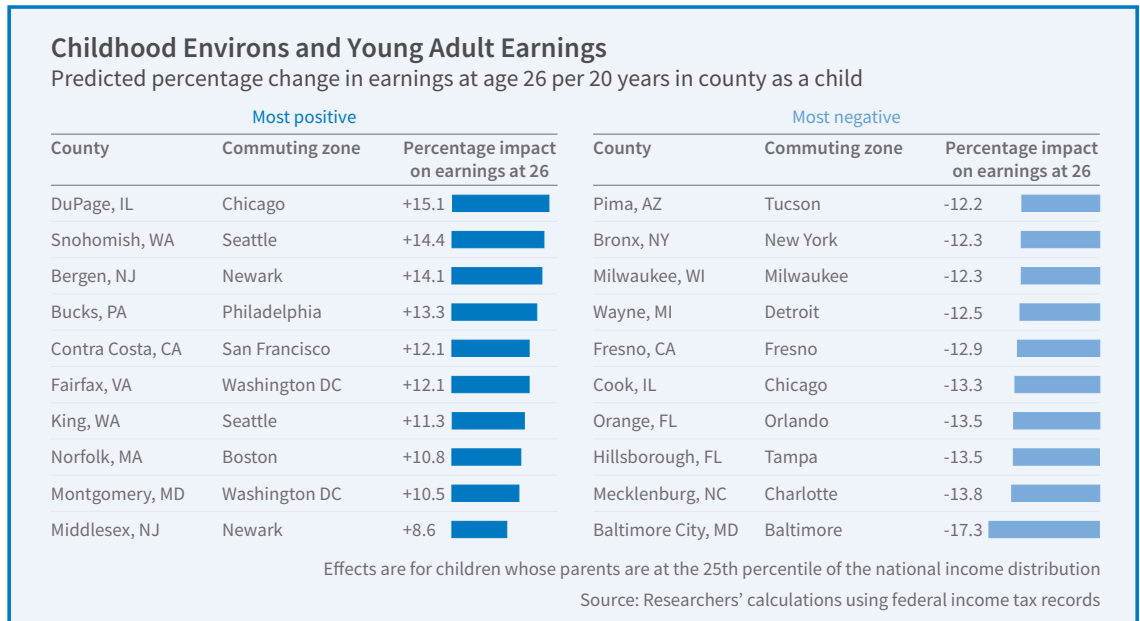
> On average, a child who moved from downtown Chicago to the city's western suburbs at birth would earn almost 30 percent more than one who grew up downtown.

Expanding this result over 20 years, the average income of children from DuPage County is 16 percent higher than the average over all locations. Growing up in downtown Chicago (Cook County), meanwhile, decreases earnings by 0.6 percent per year relative to an average county, or 13 percent over 20 years. Thus, a child who moved from downtown Chicago to the western suburbs at birth would have almost 30 percent higher average earnings.

The study documents the characteristics of places that exhibit the greatest upward mobility of children from low-income families. These are counties with less racial segregation, less income inequality, and higher quality schools.

Counties with better schools and higher levels of social capital improve outcomes. Differences in the places where blacks and whites are raised could explain about 20 percent of the black-white earnings gap. Place effects matter more for boys than for girls, especially in the areas with the lowest rates of upward mobility, such as Baltimore and Detroit.

The researchers note that the counties that are associated with greater upward mobility and higher income are often more expensive to live in, especially in large, segregated commuting zones. However, there are also some "opportunity bargains" — places that improve outcomes with less expensive rental costs. For example, Hudson County, New Jersey, increases earnings by 0.24 percent per year for low-income families relative to Queens, despite similar rents.

— Morgan Foy

## Childhood Environs and Young Adult Earnings
Predicted percentage change in earnings at age 26 per 20 years in county as a child

| Most positive | | | Most negative | | |
|---|---|---|---|---|---|
| County | Commuting zone | Percentage impact on earnings at 26 | County | Commuting zone | Percentage impact on earnings at 26 |
| DuPage, IL | Chicago | +15.1 | Pima, AZ | Tucson | -12.2 |
| Snohomish, WA | Seattle | +14.4 | Bronx, NY | New York | -12.3 |
| Bergen, NJ | Newark | +14.1 | Milwaukee, WI | Milwaukee | -12.3 |
| Bucks, PA | Philadelphia | +13.3 | Wayne, MI | Detroit | -12.5 |
| Contra Costa, CA | San Francisco | +12.1 | Fresno, CA | Fresno | -12.9 |
| Fairfax, VA | Washington DC | +12.1 | Cook, IL | Chicago | -13.3 |
| King, WA | Seattle | +11.3 | Orange, FL | Orlando | -13.5 |
| Norfolk, MA | Boston | +10.8 | Hillsborough, FL | Tampa | -13.5 |
| Montgomery, MD | Washington DC | +10.5 | Mecklenburg, NC | Charlotte | -13.8 |
| Middlesex, NJ | Newark | +8.6 | Baltimore City, MD | Baltimore | -17.3 |

Effects are for children whose parents are at the 25th percentile of the national income distribution

Source: Researchers' calculations using federal income tax records

# Managers' Bias and Workers' Job Performance

What happens to the job performance of minority workers when they are managed by someone who is biased against their group? In **Discrimination as a Self-Fulfilling Prophecy: Evidence from French Grocery Stores** (NBER Working Paper No. 22786), Dylan Glover, Amanda Pallais, and William Pariente follow workers at 34 outlets of a French grocery chain, tracking productivity, absences, and time worked to determine job performance. Their sample drew from new cashiers who had been hired for six-month trials on a government-subsidized contacts known as a Contrat de Professionnalisation, or CP — which meant they were quasi-randomly assigned managers and shifts.

Managers' degree of bias against minority groups was determined using an Implicit Association Test (IAT), a widely used method in which the speed of association between two concepts determines the level of bias. The researchers tested the association between what they described as "(1) traditionally French or North African sounding names and (2) words indicating worker competence or incompetence." They then linked the information on each manager's test results with data on the performance of the cashiers whose shifts that manager oversaw.

Because France precludes workplace queries regarding race, ethnicity, or religion, the researchers submitted the names of the cashiers to Inter Service Migrants, Centre d'Observation et de Recherche sur l'Urbain et ses Mutations, which specializes in discrimination testing, to determine each CP worker's minority status. That organization divided the names into these categories: European, North African, sub-Saharan African, mixed or undetermined, and other, including names of Turkish and Asian origin.

Using the store-tracked performance metrics, the researchers found that minority cashiers performed worse under biased than under unbi-ased managers, while the performance of non-minority cashiers was not affected by manager bias. Minority cashiers scanned items slower during shifts under biased managers and they

> Minority cashiers at a French grocery chain scanned articles slower when working shifts for managers who appear to be biased.

took more time between customers. Minorities were more likely to be absent when scheduled to work with biased managers and, when they did come to work, they spent less time at the store. While on average, minorities performed at the 53rd percentile of average worker performance, they performed at the 79th percentile when working with unbiased managers. Moreover, because cashiers are paid based on time worked, the authors estimate that manager bias leads minorities to earn 2.5 percent less.

In a telephone questionnaire conducted with former CP cashiers, minority cashiers did not report that the managers disliked them or that they disliked biased managers. In fact, biased managers were less likely to assign minorities to cleaning, the least pleasant of cashiers' tasks. Instead, biased managers simply appeared to interact less with minority cashiers, perhaps due to discomfort with members of the minority group or fear of appearing biased. And for these cashiers, worker-manager interaction is a very strong predictor of a worker's performance in a given shift.

— Jen Deaderick



**Worker Performance and Manager Bias**
Items scanned per minute

Minority workers

Majority workers

Less biased    More biased

Manager bias score

Manager bias score

*Larger circles denote larger numbers of data points*

Source: Researchers' calculations using data from a French grocery store chain