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Does the U.S. Outsource Polluting Industries?

Polluting industries' share of U.S. manufacturing output has declined in recent decades. That is good news for environmental quality in the United States. However, the fact that the decline has coincided with falling trade barriers has given rise to suspicions that the United States has outsourced its polluting industrial processes to developing countries. In **Trade Liberalization and Pollution Havens** (NBER Working Paper No. 10585), authors **Josh Ederington**, **Arik Levinson**, and **Jenny Minier** ultimately refute the notion that domestic manufacturing is cleaner today because trade agreements have allowed the United States to use "pollution havens" in the developing world to do its dirty work.

"We find no evidence that domestic production of pollution-intensive goods in the U.S. is being replaced by imports from overseas," they state. On one hand, Ederington, Levinson, and Minier understand how the "casual observer" could see a link between lower tariffs and a cleaner U.S. manufacturing sector. After all, while U.S. manufacturing was growing by 51 percent — even as total emissions of many pollutants were growing at half that rate or actually dropping — U.S. tariffs were falling dramatically. Between 1978 and 1994, tariffs on manufactured products were reduced 50 percent on average. But if trade liberalization were simply allowing dirty industries to relocate offshore, then the proportion of U.S. imports produced by pollution-intensive industries would rise as tariffs fell. Yet the opposite occurred.

Imports overall grew by 318 percent during the period. But according to World Bank data that

characterizes industries by their pollution intensity, imports of goods manufactured in highly polluting processes grew at a much slower rate. In other words, just as the U.S. manufacturing sector was growing while simultaneously shifting toward clean industries, the same thing was happening to our imports: they were rising, but the percentage of goods coming from polluting industries was going down. "The cleaner U.S. manufacturing composition is not offset by dirtier imports," the authors write. "Rather, the composition of imports has also become cleaner."

Importantly, their conclusion holds firm even when they limit the

manner in which they are negotiated. The general concern that trade liberalization is causing developed countries to outsource dirty manufacturing processes to the developing world has sparked heated protests against the World Trade Organization. Furthermore, the perceived link has prompted U.S. officials to require detailed "environmental reviews" of trade agreements as part of the negotiating process.

Ederington, Levinson, and Minier note that some may find fault with their findings by arguing that past tariff reductions are not representative of probable future trade agreements. If future trade agree-

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analysis to trade with developing countries. Imports from developing countries grew by 344 percent, but imports of pollution-intensive goods from developing countries grew much more slowly.

Ederington, Levinson, and Minier believe that, if anything, lower tariffs might be actually slowing the U.S. shift to cleaner industries, because imports of goods made from pollution-intensive processes have not kept pace with the overall rise in imports. Thus, surprisingly, one potential environmental consequence of tariff reductions is that U.S. industries are dirtier than they otherwise would be.

This refutation of the conventional wisdom — that tariff reductions reduce pollution in rich countries by sending the problem to poor countries — has considerable implications for both public perceptions of trade agreements and the

ments reduce U.S. tariffs on polluting goods by more than tariffs on clean goods, then the expected patterns may emerge. Polluting industries will relocate away from the United States, where pollution will be reduced at the expense of environmental quality elsewhere.

But even when the authors consider a hypothetical future in which tariffs on all manufactured goods are dropped from current levels down to zero, they still find no evidence that the change would spark a disproportionate shift in polluting industries from the United States to developing countries. "Once again, we find little basis for the fear that tariff reductions themselves will generate large shifts in the composition of U.S. manufacturers away from polluting industries."

— Matthew Davis

The Cost of Entrenched Boards

In **The Costs of Entrenched Boards** (NBER Working Paper No. 10587), researchers **Lucian Bebchuk** and **Alma Cohen** ask if the market value of publicly traded corporations is related to whether a firm's board of directors is strongly protected from removal by shareholders. They find that a strong protection from removal is associated with, and indeed even partly responsible for, an economically significant reduction in a firm's value.

The level of protection from removal that directors of public companies enjoy depends substantially on whether the firm has a staggered board. A firm with a unitary board requires all directors to stand for election (or re-election) at each annual shareholders meeting. By contrast, a staggered board most often has three classes of directors, with only one class of directors standing for election (or re-election) at each annual meeting. In that case, to gain control over the board via a proxy contest, a challenger has to win at least two elections, one year apart.

In addition, directors protected by a staggered board typically have an advantage in defending against a hostile takeover bid. Because incumbents can use a poison pill to prevent the bidder from purchasing shares, a hostile bidder's chief hope likely lies in replacing the resistant board of directors with a team that would redeem the pill and make an acquisition possible. With a staggered board, however, even if the bidder dangles an attractive offer before the shareholders and suggests board candidates favoring the takeover, replacing the incumbents remains a lengthy and difficult process. A staggered board therefore makes gaining control of a company — either in a proxy contest or in a hostile takeover — much more difficult.

The majority of U.S. companies have staggered boards, but over the past 10 years staggered boards

have met increasing resistance from institutional investors. During this period, shareholders have generally been unwilling to approve charter provisions that establish a staggered board in companies without such provisions. Shareholders also have increasingly been voting for advisory resolutions that recommend dismantling staggered boards.

Bebchuk and Cohen studied the association of staggered boards and firm value between 1995, when the rules giving such boards their protective powers were firmly in place, and 2002, the last year for which pertinent data are available. As a proxy for firm value, they use Tobin's Q , a standard valuation

measure based on market-to-book ratios. Their study is based on data gathered by the Investor Responsibility Research Center (IRRC), which analyzes governance provisions in all of the S&P 500 companies and in other significant firms as well. Bebchuk and Cohen find not only that staggered boards have a decidedly negative effect on firm value, but also that this effect is several times larger than that of some two dozen other management-favoring provisions identified by the IRRC.

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The researchers determine that even after controlling for firm value in 1990, having a staggered board in 1990 is associated with a significantly lower value during the period 1995-2002. This finding is consistent with staggered boards bringing about a lower firm value and not merely being selected by low-value firms.

Moreover, the researchers find that the extent to which staggered boards are associated with reduced firm value depends on whether such boards are established in the firm's

charter, which shareholders cannot amend, or in the firm's bylaws, which shareholders can change. Most staggered boards are established in company charters, but about 10 percent of staggered boards are set up in company bylaws. Bebchuk and Cohen find that bylaws-based staggered boards do not show the same negative correlation with firm value as charter-based boards do. Bylaws-based staggered boards provide the same commitment to continuity and stability in board composition that supporters of staggered boards favor, but they do not provide the same insulation from removal by determined shareholders as charter-based stag-

gered boards. This feature of bylaws-based staggered boards might explain the lack of correlation with reduced firm value. Bebchuk and Cohen note that their study does not examine other factors affecting levels of protection for corporate board members. For example, among firms that do not have effective staggered boards, some have arrangements whereby shareholders can remove the board immediately, while in other frameworks shareholders have to wait until the next annual meeting in order to remove a board. The Bebchuk and Cohen study has not identified which of these two groups tends to have firms with higher value, but they say this is clearly deserving of further analysis. Because staggered boards are a key feature of corporate governance, Bebchuk and Cohen suggest, it is worth inquiring how staggered boards affect various corporate decisions, and why firms going public include staggered boards in their IPO charters.

— Matt Nesvisky

School Accountability Raises Educational Performance

When teachers and their schools are held accountable for the educational performance of their pupils and face consequences when the children do not measure up to goals, student grades in reading and mathematics do improve. However, the insistence by many American states in the 1990s on educational standards and testing for primary school students has not narrowed the educational gap between blacks and whites, although it did trim the Hispanic-white achievement gap.

These are the key findings of **Does School Accountability Lead to Improved Student Performance?** (NBER Working Paper No. 10591) by **Eric Hanushek** and **Margaret Raymond**. Their analysis of state achievement growth, as measured by the National Assessment of Educational Progress (some times referred to as the “Nation’s report card”), is highly relevant to the drive by the federal government to improve educational performance across the nation. A central campaign theme of George W. Bush in his first bid for the White House was to expand educational accountability to all states. This goal was put into law with the No Child Left Behind Act of 2001 (NCLB).

The majority of states had instituted some sort of accountability system by the time NCLB was passed. Only 12 states had such systems in 1996. By 2000, 39 had these programs. The new federal law expanded accountability by requiring all states to have annual testing of students in grades 3 to 8, by mandating disaggregated reporting of data on student performance for all schools, and by adding new sanctions when student performance falls short. States have used their

own systems as the basis for implementing the federal law. Thus, analysis of past state results provides insights into the potential impact of NCLB.

In looking state-by-state, Hanushek and Raymond find that the introduction of accountability systems leads to higher achievement growth than would have occurred without accountability. But simply reporting results of tests has a minimal impact on performance. The systems are much more effective if poor educational results have adverse con-

sequences for the schools, thus supporting the contested provisions of NCLB that impose sanctions on failing schools. Hispanic students gain most from accountability while blacks gain least.

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The analysis relies on the National Assessment of Educational Progress testing of fourth and eighth graders in reading and math. The data provide performance information for whites, blacks, and Hispanics. In their analysis, Hanushek and Raymond separate the effects of accountability from the impacts of the racial composition, of family characteristics of students, and of other state policies on achievement. For instance, throughout the 1990s, attendance of white students in large urban school systems has decreased and minority concentration has grown, and the authors find that black educational performance appears to be hurt when

they attend less integrated schools.

The disaggregated results of accountability present a policy challenge. Accountability increased the black-white gap a little, because the performance of blacks improved less than that of whites. “Achieving multiple objectives with a single policy instrument is not generally feasible,” the authors conclude.

Accountability policy has been controversial. Some assert that the new policy has distorted school decisions in undesirable ways, such as leading to higher drop-out rates,

more cheating on tests, and undesirable narrowing of what is taught, although evidence on these effects is currently limited. Another charge is that it has prompted schools to weed out poor achievers by placing more students in special education classes — those for the educationally handicapped — and thereby improve the regular achievement score for the school and its classes, regardless of efforts to upgrade actual teaching. The Hanushek-Raymond study finds no such effects at the state level. Between 1980 and 2001 the proportion of students assigned to special education classes rose from 10 percent to over 13 percent. But this trend, one going on for two decades now, was not altered by the introduction of accountability across states in the 1995-2000 period.

— David R. Francis

Better Health Increases Foreign Direct Investment

Foreign direct investment (FDI) is increasingly viewed as a way to reduce poverty and spur economic growth among developing countries. It provides not only employment and financial capital, but also a means of transferring technology and skills, and increasing access to global markets. Yet poorer countries are relatively less successful at attracting FDI than their wealthier counterparts. This observation, coupled with the disparate health indicators between industrial and developing countries, prompted **Marcella Alsan, David Bloom, and David Canning** to investigate **The Effect of Population Health on Foreign Direct Investment** (NBER Working Paper No. 10596). The authors analyze data from 74 countries, industrial and developing, over 1980 to 2000, to determine whether health influences FDI flows. They find that good population health — measured by average life expectancy — has the extra merit of attracting more FDI.

Health, the authors note, is an integral component of human capital that enhances economic performance and productivity for the individual and thereby for the nation as a whole. Healthy workers are generally more physically and mentally robust than those afflicted with disease or disability. They are less likely to be absent from work because of personal or household

illness. Healthier children tend to learn more easily and are less likely to be absent from school. Thus, they become better educated, higher earning adults. Healthier workers, with lower rates of absenteeism and longer life expectancies, acquire more job experience.

Foreign investors, apparently recognizing the merits of good health and its positive impact on potential workers, sink more money into new plant and equipment in countries with relatively good health standards. In addition to seeing the impact of good health on worker

write, lengthier epidemics, such as HIV/AIDS or malaria, could have severe, long-term effects on FDI.

To reach the conclusion that health affects FDI inflows, the authors attempt to sort out health from other factors that are likely to influence foreign investors. These factors include openness of the economy, infrastructure, geography, quality of governance, education level, population, and GDP per capita. The authors find that life expectancy ranks second only to GDP per capita in its level of correlation with the inflow of gross

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productivity, foreign investors may shun areas where disease is rampant and where access to health care is limited, out of fear of endangering their own health and that of expatriate staff. One recent example of how disease, or even the fear of disease, can dampen investment is shown with the outbreak in China of Severe Acute Respiratory Syndrome (SARS). FDI inflows into mainland China declined by US\$2.7 billion during 2003 and FDI into Hong Kong declined by 62 percent for one quarter. These trends were quickly reversed once the outbreak was controlled. But, the authors

FDI. Over the full sample of 74 countries (rich and poor), one additional year of life expectancy increases FDI inflows by about 7 percent. Moreover, among a restricted sample of low- and middle-income countries, a one-year higher life expectancy results in a 9 percent increase in gross FDI inflows. These results could be of special interest to developing countries where attracting FDI is a higher priority because of their low savings rate and income levels.

— David R. Francis

Why Do Firms Pay Dividends?

In **Dividend Policy, Agency Costs, and Earned Equity** (NBER Working Paper No. 10599), authors **Harry DeAngelo, Linda DeAngelo, and René Stulz** document that, for the 25 largest long-standing dividend payers in 2002, a decision to retain earnings instead of paying dividends would have resulted in firms with little or no long-term debt and enormous cash balances, far outstripping any rea-

sonable estimate of their attractive investment opportunities. Had they not paid dividends, those firms would have had cash holdings of \$1.8 trillion (51 percent of total assets), up from \$160 billion (6 percent of assets), and \$1.2 trillion in excess of their collective \$600 billion in long-term debt. Paying dividends also prevented these firms from having significant agency problems — the incremental costs

and inherent conflicts of having managers make decisions for investors — because the retention of earnings would have given managers command over an additional \$1.6 trillion without access to better investment opportunities and with no additional monitoring.

Agency theory assumes that large-scale retention of earnings encourages behavior by managers that does not maximize shareholder

value. Dividends, then, are a valuable financial tool for these firms because they help avoid asset/capital structures that give managers wide discretion to make value-reducing investments. The evidence presented in this paper uniformly and strongly supports this view of dividend policy.

This view also makes sense when one considers the rationale behind agency theory. Managers acquire control over corporate resources either from outside contributions of debt or equity capital, or from earnings retentions. From an agency perspective, one advantage of contributed capital is that it comes with additional monitoring, because rational suppliers of outside capital will not be forthcoming with funds at attractive prices if they believe that managers' policies merit low valuations.

Earned equity is not subject to the same ongoing, stringent discipline. Accordingly, potential agency problems are higher when a firm's capital is largely earned, since the more a firm is self-financed through retained earnings, the less it is subject to the ongoing discipline of capital markets.

Looking forward, firms with a greater demonstrated ability to self-finance most likely are also firms with a greater ability to internally fund projects that reduce stockholder wealth. Such potential waste is limited by ongoing distributions that reduce the cash resources under managerial control. A regular stream of dividends reduces the threat of agency problems that

ty to total equity (and to total assets), even after controlling for firm size, current and recent profitability, growth, leverage, cash balances, and dividend history.

The relationship between earned equity and the decision to pay dividends is significant economically as well as statistically, with the difference between high and low values of earned equity translat-

“Earned equity has an economically more important impact on the dividend decision than do profitability or growth... firms pay dividends to mitigate the agency costs associated with the high cash/low debt capital structures that would eventually result if they did not pay dividends.”

become increasingly serious as earned equity looms ever larger in the firm's capital structure.

For publicly traded industrials during 1973-2002, the proportion that paid dividends was high when the ratio of earned equity to total common equity (or to total assets) was high. It fell with declines in either ratio, coming close to zero when a firm had little or no earned equity. The authors consistently find a highly significant relationship between the decision to pay dividends and the ratio of earned equi-

ing to a substantial difference in the probability of paying dividends. In fact, earned equity has an economically more important impact on the dividend decision than do profitability or growth, variables that are typically emphasized in the literature on empirical corporate payout. Overall, the results support the theory that firms pay dividends to mitigate the agency costs associated with the high cash/low debt capital structures that would eventually result if they did not pay dividends.

— Les Picker

SEC Regulation FD Raises the Cost of Capital for Small Firms

Well-functioning capital markets depend heavily on the free and efficient flow of economic and financial information between firms and investors, analysts, and the public. From this perspective, the Securities and Exchange Commission's Regulation Fair Disclosure (FD) of 2000, which aims to stop the practice of “selective disclosure” by firms of material information to only a few analysts and institutional investors before disclosing it publicly, would have seemed a welcome move. Yet, its adoption was highly controversial. Supporters argued that selective disclosure was unfair and undermined the integrity of financial markets, while detractors asserted that the flow of information between firms and investors

would deteriorate without it.

In **SEC Regulation Fair Disclosure, Information, and the Cost of Capital** (NBER Working Paper No. 10567), co-authors **Armando Gomes, Gary Gorton, and Leonardo Madureira** examine the impact of Regulation FD on the production and transmission of information in financial markets, on security prices, and the cost of capital; they also ask whether these effects differ according to the size of the firms in question. The authors use quarterly NYSE and NASDAQ firm data between for the 1997-2002 period, and break it down into small, mid-sized, and large firms. They analyze the effects of Regulation FD on various market variables (analyst following,

firms' use of pre-announcements, and forecast errors and volatility at earnings announcements).

Before highlighting their findings, the authors explain how information traditionally flows from firms to markets. Beyond mandatory firm disclosures, information flows in four main ways: 1) firms can provide information voluntarily to the public; 2) firms can selectively disclose information (for example, through telephone calls or one-on-one meetings; 3) “sell-side analysts” produce reports which are released to the public; 4) outsiders produce private information and then trade on that basis. Regulation FD sought to curb the second channel under the assumption that the same information would flow to the market

through other channels, particularly channel 1.

“Our main finding,” explain the authors, “is that there was a reallocation of information-producing resources and that this reallocation had asset-pricing effects.” Specifically, they found that on average small firms lost 17 percent of their analyst following after the adoption of Regulation FD, while large firms increased their following by 7 percent. They also found that large firms became almost twice as likely to make voluntary earnings announcements, whereas small firms did not significantly increase their voluntary announcements. Also, after the adoption of Regulation FD, small firms experienced higher forecast errors and more volatile market responses to their earnings announcements — consistent with a greater information gap — whereas large firms did not experience a significant increase in these categories. “These results suggest that big firms were able to replace the loss of channel (2) with channels (1) and (3), but that small firms were not able to do so.”

Gomes, Gorton, and Madureira show that increases in the costs of producing information affected the asset prices of small firms; in particular, the stocks of small firms that lost analyst coverage after the adoption of Regulation FD experienced significant increases in the costs of capital. The authors cite possible

underlying reasons: first investors tend to demand a higher return on stocks where more private (and less public) information is available; second, improved disclosure might reduce information asymmetries between well informed and uninformed investors, so that overall investors are more confident that stocks will trade at a “fair” price.

Why does the impact of Regulation FD differ according to firm size? Surveys seem to confirm the authors’ findings. A 2001 survey of members of the securities bar of

become larger.

The authors also find that more complex firms — as measured by their level of intangible assets — are more adversely affected by Regulation FD than less complex firms, suggesting that complex information is better delivered in one-on-one interaction rather than through broad public pronouncements. However, they find no significant difference in the regulation’s impact on firms according to the quality of their governance when assessing pre-announcements, forecast errors,

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the American Bar Association found that 67 percent of respondents believed regulation FD had a greater impact on small and mid-cap companies than on large-cap companies; and a 2001 survey by the National Investor Relations Institute found that more firms believed that small firms were providing less information following Regulation FD, as compared to small and mid-sized firms. Theoretically, economists have argued, large firms have greater incentives to create better disclosure policies, and because the production of information involves fixed costs, the costs per unit of size become smaller as firms

volatility, and the cost of capital.

Following the adoption of Regulation FD, the authors summarize, “some small firms just completely stopped being followed by analysts, and... the cost of capital increased for those firms.” They conclude that different information channels (such as public announcements versus private one-on-one communication) are hardly perfect substitutes. “Overall, our results suggest that Regulation FD had unintended consequences and that ‘information’ in financial markets may be more complicated than current finance theory admits.”

— Carlos Lozada

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