POLLUTION AND HUMAN CAPITAL MIGRATION:

EVIDENCE FROM CORPORATE EXECUTIVES

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Abstract

We study the impact of pollution on the migration of high human capital employees. We link data on the opening of toxic-emitting plants with the career paths of executives at S&P 1500 firms. We discover that toxic-emitting plant openings increase executive departures from neighboring firms with adverse effects on stock prices. The results: are larger when polluting plants and firms are geographically closer, hold only for executives physically-based at treated firms, hold only for the opening of polluting plants, do not reflect other local factors or prior stock price performance, and are larger among executives with more general human capital.

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1. Introduction

Pollution imposes costly externalities. Exposure to toxic pollutants increases infant mortality, neurodevelopmental disorders, respiratory and cardiovascular disease, cancer rates, and premature death (e.g., Chay and Greenstone 2003; Currie and Neidell 2005; Knittel, Miller and Sanders 2016; Schlenker and Walker 2016; Isen, Rossin-Slater, and Walker 2017; Qian et al 2017; and Landrigan et al 2017). Indeed, the World Health Organization attributes about one in six deaths in 2012 to air pollution. According to the American Lung Association's State of the Air 2017 report, more than 40% of the U.S. population live in counties with unhealthful levels of air pollution. Consequently, researchers examine the benefits of environmental protection regulations and the costs of those regulations on economic activity and business profitability (e.g., Becker and Henderson 2000; Greenstone 2002; Auffhammer and Kellogg 2011; Walker 2013; and Greenstone, Hornbeck and Moretti 2010).

In this paper, we examine an additional potential consequence of pollution: The migration of highly-valued employees from firms that are geographically close to polluting plants. Given that exposure to toxic pollutants has adverse health effects, the opening of a toxic emitting plant could trigger the migration of workers from neighboring firms and this migration could harm the firm from which they are separating. While research shows that people migrate away from polluted areas (Chen, Oliva, and Zhan 2017) and many doctors urge their patients to leave highly-polluted cities (Dewey 2000), we are unaware of systematic research into the impact of pollution on the migration of highly-valued employees and the resultant effects of those separations on their former firms.

To evaluate the impact of pollution on human capital migration and the stock market's reaction to those departures, we focus on corporate executives. We focus on executives—and not on employees more generally—for two reasons. First, executives exert a significant impact on corporate policies and performance (e.g., Bertrand and Schoar 2003; Malmendier and Tate 2009; Kaplan, Klebanov and Sorensen 2012; Graham, Harvey and Puri 2013). Second, we can trace the career paths of executives over time and across corporations. Thus, we ask: When a plant starts emitting toxic pollutants, does this trigger executives in neighboring firms to leave and migrate to areas with less pollution, and are these executive departures associated with a drop in firm value? By linking environmental economics with corporate finance, we provide additional evidence on the effects of pollution.

To address these questions, we create a unique database on the career paths of executives and combine several datasets on toxic emissions. First, we assemble data on the career paths for all executives at S&P 1500 firms over the period from 2000 through 2014 from BoardEx and ExecuComp. Thus, we know where executives work, when they depart, and to which firms they migrate. Second, we identify plants that emit airborne toxic pollutants using the Environmental Protection Agency's (EPA's) Toxic Release Inventory (TRI) program. Since 1986, the Emergency Planning, Community Right to Know Act requires that plants in particular industries that use specific toxic chemicals in sufficient quantities and that have ten or more full-time equivalent employees report their emissions of TRI-listed toxins. Third, to obtain precise information on the opening and location of these TRI-plants, we match data from the EPA's TRI program with National Establishment Time-Series (NETS) data, which contains information on the universe of U.S. establishments (over 58.8 million) during the past two decades. The matched sample yields the exact location and opening dates of 48,317 TRI plants. Fourth, we use data from EPA outdoor monitors on the concentration of airborne pollutants. Critically, we show that TRI plant openings are associated with a material increase in airborne pollutants close to those new TRI plants.

The key challenge to identifying the impact of toxic emissions on executive migration is omitted variable bias. An omitted factor could account for both toxic emissions in a locality and executive migration from that locality, potentially leading to spurious inferences about the impact of pollution on executive migration. We use a series of empirical strategies to address this concern.

We begin our analyses by examining the impact of TRI plant openings on the percentage of executives who leave geographically close firms.[1] In these analyses, the dependent variable is the percentage of executives who separate from an S&P 1500 firm one

[1] Currie et al (2015) evaluate the impact of TRI plant openings on housing prices, building on early work examining the connections between pollution and housing prices by Chay and Greenstone (2005) and Greenstone and Gallagher (2008).

or two years after the TRI plant opening. The main explanatory variable measures the degree to which the S&P 1500 firm is exposed to TRI plant openings. To measure exposure, we use indicators of whether a TRI plant opens within one (or two) miles of an S&P 1500 firm. Critically, the regressions control for city-year effects, so that we are comparing S&P 1500 firms within the same city and year that are differentially exposed to TRI plant openings due to their distance from the plant. The regressions also control for (a) industry-year fixed effects since industries might concentrate geographically and have distinct pollution and executive migration tendencies, (b) firm fixed effects, and (c) time-varying firm traits, e.g., firm size, growth, leverage, and cash-flow volatility.

From these initial analyses, we find that exposure to TRI plant openings is associated with a sharp increase in executive migration. The firm-level analyses indicate that TRI plant openings are associated with a material increase in the percentage of executives who leave neighboring S&P 1500 firms. For example, the estimates indicate that if one TRI plant opens within one mile of an S&P 1500 firm, the proportion of executives who leave during the next year rises by 4.2%, which is large since only 12% of executives leave the average firm each year.

Although we control for city-year fixed effects—as well as assortment of other controls, omitted variable concerns remain: There might be time-varying, within-city local factors that trigger both executive separations and the opening of TRI plants. Consequently, we employ several strategies to better identify the impact of the exposure of executives to air pollution on their decisions to migrate. First, we exploit the distance between the firm and the new toxic-emitting TRI plant. As discussed in Currie et al. (2015), the density of air pollution dissipates with distance. Thus, if exposure to toxic pollutants triggers executive migration, then the impact of TRI plants on executive migration should be larger for firms that are geographically closer to the new TRI plants. This is what we find. For example, there is no relationship between executive migration from a firm and TRI plants opening between two to five miles of the firm and the estimated impact of TRI plant openings on executive migrations is twice as large for TRI plant openings within one mile of the firm as for plant openings between one and two miles from the firm.

As a second strategy, we implement a placebo test that focuses on corporate leaders who are not physically based at the firm. If a firm's leaders migrate because they are exposed to pollution from a neighboring TRI plant, then leaders who are physically present at their firms should be more likely to leave than those who are typically not physically present at those firms. To test this, we examine non-executive directors, leaders who are less likely than executives to be physically present at the firm on a regular basis. Consistent with the view that physical exposure to toxic air pollutants triggers executive migration, we find no relationship between TRI plant openings and the migration of non-executive directors from neighboring firms.

Third, we implement a different placebo test by examining the impact of non-TRI plant openings on the rate of executive migration from neighboring firms. If exposure to pollution drives the results on executive migration, then we should not find executive migration from S&P 1500 firms when non-TRI plants open close by. That is, if migration is caused by pollution emitted by TRI plant openings—and not by some other factor associated with new plant formation, then the opening of non-TRI plants should not trigger executive migration from geographically close firms. Consistent with the view the exposure to pollution drives executive migration, we find no evidence that the opening of non-TRI plants induces executive from neighboring firms to leave.

Fourth, we were concerned that TRI plant openings might be more likely to occur around failing S&P 1500 firms and failing firms are more likely to fire executives. Although our findings that geographic proximity down to a mile and the placebo test of non-executive directors mitigate such concerns, we can also directly address concerns about firm performance. Specifically, we eliminate S&P 1500 firms that were performing poorly during the year prior to TRI plants opening close to those firms. If the earlier results were driven by poor firm performance driving both executive migration and TRI plant openings, then the results should weaken after we exclude poorly performing firms. This is not what we find. Even when eliminating poorly performing firms, the results hold and the estimated coefficients are very similar. This is consistent with the view that exposure to pollution, not prior firm performance, accounts for the findings.

We next conduct a different set of analyses and examine individual executives. Rather, than testing whether TRI plant openings increase the percentage of executives who leave geographically close firms, we assess whether an executive is more likely to separate from a firm with greater exposure to TRI plant openings. To conduct this assessment, we use a linear probability model where the dependent variable is an indicator variable that equals one if the executive leaves the firm during the next year (or two). The main explanatory variable is again a measure of firm exposure to TRI plant openings. In addition to including all of the control variables employed in the firm-year analyses, these individual-level analyses also control for individual fixed effects as well as the executive's age and tenure with the firm. Moving to individual-year analyses focuses on the separation experiences of individual executives and allows us to condition out all time-invariant executive traits.

The results from these individual-level analyses confirm the firm-level findings: executives are more likely to leave their firms when a TRI plant opens close to them. The estimated effects are large. If one TRI plant opens within one mile of an executive's firm, our estimates indicate this increases the probability that the executive leaves the firm during the next year by about 5%. This is large, as only about 13% of executives leave firms over the average year.

To address additional identification concerns, we differentiate among executives within the same firm by the degree to which they have general human capital skills—skills that are valued by other firms. Specifically, if the results are driven by exposure to toxic air pollutants, then we expect that executives with more general human capital skills—and therefore executives that are likely to have comparatively appealing employment options in less polluted areas—should be more likely to separate from firms exposed to TRI plant openings than executives with more firm-specific human capital skills. This is what we find. Using Custodio, Ferreira and Matos's (2013) measure of the degree to which an executive's skills are transferrable across firms and industries, we find that exposure to TRI plant openings is associated with greater migration of executives with more general human capital skills. By examining whether executives with different human capital skills within the same firm respond differently to the same TRI plant openings, we reduce concerns that an omitted variable is biasing our results, as any such variable would also have to account for this differential response.

Finally, we extend the results along two dimensions to shed additional light on the mechanisms linking pollution and executive migration. First, one interpretation of our findings is that TRI plant openings increase pollution and this pollution prompts executives to leave; that is, these executive separations are triggered by pollution, not by poor executive performance. This interpretation implies that executive departures from firms exposed to TRI plant openings should reduce the stock prices of those firms. This is what we find. Firms' cumulative abnormal returns (CARs) fall markedly when executives announce their departures following geographical close TRI plant openings—and the drop in CARs associated with executive departures following TRI-plant openings is much greater than the drop associated with executive departures from firms unexposed to TRI-plant openings. This is consistent with the view that voluntary executive resignations (from greater pollution) have more adverse effects on stock prices than forced executive departures (e.g., Warner, Watts and Wruck 1988, and Denis and Denis 1995). Second, the view that toxic emissions encourage executive migration also has predictions about where those executives go. If executives leave S&P 1500 firms because of pollution, then we should observe these executives moving to firms in less polluted areas. We confirm this prediction: Executives who leave S&P 1500 firms after TRI plant openings systematically move to firms in less polluted locals.

Our examination of the impact of air pollution on executive turnover and corporate valuations relates to broader questions about the degree to which people "vote with their feet" and the magnitude of the impact of the migration of high human capital individuals on economic performance (e.g., Tiebout 1956; Epple and Sieg 1999; and Banzhaf and Walsh 2008). For example, Moretti and Wilson (2017) show that U.S. state corporate taxes shape the migration patterns of star scientists, while Kleven, Landais and Saez (2013), Kleven, Landais, Saez and Schultz (2014), and Akcigit, Baslandze and Stantcheva (2016) examine the international migration of highly skilled individuals in response to differences in personal income tax rates. In our paper, we quantify (a) the sensitivity of the migration of corporate executives to TRI plant openings that emit toxic air pollutants and (b) the impact of these executive departures on corporate valuations.

Our research also relates to research on the causes and consequences of executive turnover. This research focuses on corporate performance, executive compensation, and executive turnover (e.g., Warner, Watts and Wruck 1988; Weisbach 1995; Jenter and Kanaan 2015; Dai et al 2018). We examine a different factor shaping the decision of executives to voluntarily leave a firm: the opening of geographically close plants that emit toxic pollutants. We show that the resultant executive migrations have large adverse effects on the firm's stock returns.

Our work also contributes to research on the economic implications of pollution and the political economy of environmental regulations. As noted above, a growing body of research dissects the various costs and benefits of environmental protection regulations. Research also examines how different interest groups compete in shaping environmental policies (e.g., Baumol and Oates 1988; Oates and Portney 2003). Our results indicate that corporations exposed to the toxic emissions of other plants experience costs in terms of the migration of high human capital individuals and stock price reductions. These costs could factor into cost-benefit assessments of environmental regulations and the formation of corporate interest groups favoring stricter environmental laws.

2. Data, Variable Construction, and Descriptive Analyses

2.1. Toxics Release Inventory Plants, Monitors, and NETS Data

The EPA's Toxic Release Inventory (TRI) program mandates that all U.S. plants that meet specific criteria report how much of each toxic chemical they release into the air, water, or soil in each year. The EPA mandates that any plant that (1) manufactures, processes, or otherwise uses a TRI-listed chemical in quantities above threshold levels in a given year, (2) has 10 or more full-time equivalent employees, and (3) is in the mining, utility, manufacturing, publishing, hazardous waste, or federal industry must report the emissions of each TRI-listed toxic chemical. The TRI program makes this information publicly available, along with the latitude and longitude of each TRI plant.

To determine the year when a TRI plant opened, we augment the EPA's data. In particular, a plant enters the TRI database in the year that it meets all three criteria mentioned above. However, a plant could be emitting toxic pollutants before it enters the TRI database but only enters the TRI database, for example, after it has ten employees. Thus, to establish the year when the TRI plant began operations, we merge the EPA's TRI database with the National Establishment Time-Series (NETS) data. NETS provides data on U.S. plants and their parent companies, including the year when each plant was established, the geographic location of each plant, as well as data on sales, number of employees, ownership, etc. The NETS dataset has information on over 58.8 million U.S. establishment-year observations during the past two decades. The matched TRI-NETS dataset allows us to infer the opening year of each TRI plant.[2] Given the other data in our analyses, we use data on the opening of TRI plants from 2000 through 2014.

The EPA also provides annual data on pollutant density as recorded by each of its air monitors. A single air monitor records the density of multiple pollutants at a fixed location every hour. We compute the average hourly density of each pollutant at each monitor over each year. These monitors have the capacity to record 894 different pollutants, but every monitor does not record every pollutant every year. Therefore, we examine the most heavily monitored pollutants. Specifically, we sort the pollutants by how often they are monitored across all monitor-year observations and select the top 10 pollutants: PM10 Total 0-10um STP (STP: standard temperature and pressure), Suspended Particulate (TSP: total suspended particulates), Carbon monoxide, Ozone, Lead (TSP) STP, Sulfur dioxide, Benzene, Toluene, PM10 – LC (LC: local conditions), and Ethylbenzene. The EPA provides the latitude and longitude of each monitor.

2.2. S&P 1500 Firms

We follow the career paths of all executives at S&P 1500 firms between 2000 and 2014. We obtain data on executives in each year from BoardEx and ExecuComp. By

[2] There might be concerns that a plant was operating for several years and only started emitting toxic pollutants in the year that it entered the TRI program. In this case, it would be inappropriate to use the date from NETS when the plant was first established. Consequently, we have conducted all of the analyses using the date when a plant first appears in the TRI database and obtain very similar parameter estimates and p-values.

comparing the lists in successive years, we identify those executives who leave and join firms. We also collect information on each executive over time, including age, experience, tenure in each firm, positions in the firm (e.g., CEO, chair of the board, etc). In this way, we trace out the career paths of each executive over time and across S&P 1500 firms.

We assemble detailed data on all S&P 1500 firms from different data sources. From the Compustat database, we obtain *Total Assets*, *Leverage* (liabilities/total assets), *Operating Cash Flow / Total Assets*, *Sales Growth*, *Cash Flow Volatility* (standard deviation of cash flows during the last five years). We identify the historical address of each firm's headquarters using several databases. We start from the database compiled by McDonald and Yun, who have parsed all of the fields appearing in headers for 10-K forms (available on the SEC's EDGAR website) to determine the precise historical location of each listed firm's headquarters.[3] For firms that are not in the McDonald and Yun database, we use the Compustat Snapshot database and WRDS SEC Analytics Suite to determine historical locations. Because the SEC did not require electronic filings that contain the street and city address of each corporation's headquarters until May 1996, our sample starts then. From the address, we compute longitudinal and latitudinal coordinates.

2.3. TRI Plant Openings Near S&P Firms

We construct and examine two time-varying measures of the exposure of S&P 1500 firms to toxins emitted by the opening of TRI. First, *TRI Open within 1 Mile*$_{f,t}$ equals one if there is at least one TRI plant opening within one mile of S&P1500 firm *f* in year *t* and zero otherwise, where the TRI plant is not owned by S&P1500 firm *f*. Second, *TRI Open within 2 Miles*$_{f,t}$ equals one if there is at least one TRI plant opening within two miles of S&P1500 firm *f* in year *t* and zero otherwise, where again the TRI plant is not owned by the S&P1500 firm *f*. As a robustness test, we also confirm that the results hold when using alternative measures of the geographic proximity of TRI plant openings to S&P 1500 firms. In particular, we confirm the paper's findings when using either the number of TRI plant openings or the

[3] https://www3.nd.edu/~mcdonald/10-K_Headers/10-K_Headers.html

distance-weighted number of TRI plant openings, where each opening is weighted by the inverse of the distance between the TRI plant and the S&P 1500 firm.

2.4. Descriptive Information

Table 1 provides detailed variable definitions, Table 2 gives summary statistics, and Figure 1 illustrates the distribution of TRI plants across the United States. It includes plants that opened at some point since 1996. Plants are largely distributed in the New York, Boston, Chicago, and Detroit metropolitan areas. Other areas with a high density of plants include Atlanta, Charlotte, Minneapolis, Salt Lake City, Phoenix, Denver, Houston, Dallas, Seattle, Portland, San Francisco, Los Angeles, Tampa, and Orlando. There are approximately 2,000 – 4,000 openings and closings each year. The total number of plants remains relatively stable at between 22,000 and 25,000, with no clear trend over time.

3. Empirical Results

3.1. Effect of TRI Plant Openings on Major Pollutants

Before assessing the impact of TRI plant openings on the separation of executives from geographically close S&P 1500 firms, we first establish that TRI plant openings are associated with increases in air pollution near those plants. We examine the density (in nanograms/m^3) of each pollutant at air monitors close to each TRI plant. Specifically, for each monitor in each year, we identify all TRI plant locations within one or two miles. For each of these monitor-plant pairs in each year, we assign the density of the pollutants recorded by the relevant air monitor, so that we have multiple observations for each TRI plant in a year when there is more than one monitor within one or two miles of the plant. If two TRI plants are within one or two miles of the same monitor, we assign each of these monitor-plant pairs the same pollutant density. Thus, we define $p_{m,l,t}$ as the density of pollutant p measured at monitor m that is within one or two miles of plant l in year t. Our main explanatory variable, *Dummy (Plant is Operating),* is a dummy variable that equals zero in the years before a TRI plant opens and one afterwards. The regressions also control for year fixed effects (δ_t) and monitor-plant fixed effects ($\delta_{m,l}$), so that

$$p_{m,l,t} = \alpha + \beta Dummy(Plant\ is\ Operating)_{l,t} + \delta_t + \delta_{m,l} + \varepsilon_{m,l,t}, \quad (1)$$

where α is a constant, $\varepsilon_{m,l,t}$ is the error term, and the estimated value of β provides information on the impact of a TRI plant opening on pollution levels at monitors within one or two miles of the plant. Table 3 reports the results of ten regressions, one for each pollutant.

Table 3 shows that TRI plant openings induce a statistically significant and economically large increase in pollution. The TRI plant openings trigger an increase in each of the specific air pollutants, as measured by air pollution monitors within both one and two miles of the plant, except for lead. The last column of Table 3 provides information on the economic magnitudes of the estimated coefficient on *Dummy (Plant is Operating)* for each pollutant by computing the estimated change in the pollutant as a percentage of the pollutant's average across all monitors in the country. For example, when examining the toxin *Benzene* within two miles of a plant, the estimated coefficients indicate that a TRI plant opening is associated with an increase of 9.69 nanograms/m^3 of lead in the air, which is 18.3% of the mean density of lead recorded by an average monitor.

3.2. TRI Plant Openings and Executives Migration: Firm-year Analyses

We next examine the relationship between TRI plant openings and the percentage of executives who leave neighboring S&P 1500 firms. As noted above, these TRI plant openings do not include plants owned by the neighboring S&P 1500 firm. For brevity, we refer to S&P 1500 firms as "firms," and use the designator "*f*." The dependent variable is either (1) $E^1_{f,t}$: the percentage of executives who leave firm *f* during year *t*, (i.e., the number of executives who leave the S&P 1500 firm between the end of year *t-1* and the end of year *t* divided by the total number of executives in that firm, *f*, at the end of year *t-1*) or (2) $E^2_{f,t}$: the percentage of executives who leave firm *f* during years *t* and *t+1* (i.e., the number of executives who leave the firm during the two years between the end of *t-1* and the end of *t+1* divided by the total number of executives in *f* at the end of year *t-1*).

Thus, we estimate the following regression:

$$E^z_{f,t} = \alpha + \gamma TRI\ Open_{f,t} + \theta \boldsymbol{X}_{f,t} + \delta_{c,t} + \delta_{k,t} + \delta_f + \epsilon_{f,t}, \quad (2)$$

where the dependent variable is either $E^1_{f,t}$ or $E^2_{f,t}$, and *TRI Open*$_{f,t}$ is one of the two time-varying measures of the exposure of S&P1500 firms to toxins emitted by the opening of TRI plants: *TRI Open within 1 Mile*$_{f,t}$ or *TRI Open within 2 Miles*$_{f,t}$, $\boldsymbol{X}_{f,t}$ represents the following characteristics of S&P 1500 firm *f* in year *t*: *Total Assets, Leverage, Operating Cash Flow / Total Assets Ratio*, *Sales Growth*, and *Cash Flow Volatility*. We show that the results are robust to excluding or including these time-varying firm traits. All regressions also control for city-year ($\delta_{c,t}$), industry-year ($\delta_{k,t}$), and firm δ_f fixed effects, where we use the headquarter city (c) and the industry (*k*) of firm *f*.[4] Standard errors are double clustered at the city and year levels.[5]

This specification addresses three potential concerns with identifying the impact of TRI plant openings on the proportion of executives who depart from firms geographically close to the toxic emitters. First, there might be concerns that (a) businesses choose to open toxic emitting plants in economically depressed localities and (b) executives are more likely to separate from firms in economically declining areas, so that any relationship between TRI plant openings and executive migration reflects something about local economic conditions and not the impact of pollution from TRI plant openings on executive separation decisions. Thus, we control for city-year fixed effects. By including city-year effects, we compare S&P 1500 firms within the same city and year that are differentially exposed to TRI plant openings. That said, there might be concerns that omitted within-city factors account both for where businesses open toxic emitting plants and executive migration from firms. We address such omitted variable concerns below.

Second, there might be concerns that time-varying industry characteristics explain both the increases of executive turnover and pollution. If particular industries congregate geographically and have different distinct pollution and executive turnover patterns, then this could impede our ability to draw inferences about the impact of TRI plant openings on executive migration. Although city-year fixed effects will help address this concern,

[4] All of the results hold when using Metropolitan Statistical Area-year fixed effects instead of city-year effects. The city-year analyses are more granular, as the average city is only 25 square miles. There are 552 cities with at least one S&P 1500 headquarters, 226 cities with two or more headquarters, and 69 with five or more.

industries might congregate geographically even within cities. Thus, we control for industry-year fixed effects to further reduce concerns that omitted factors, e.g., time-varying industry characteristics, create a spurious correlation between TRI plant openings and executive migration.

Third, firm-specific characteristics might affect the self-selection of executives out of particular geographical areas. To condition out all time-invariant firm traits, we control for firm fixed effects. Below, we address additional concerns with these evaluations of the relationship between TRI plant openings and executive departures.

Panel A of Table 4 shows that TRI plant openings are associated with an economically large and statistically significant increase in the percentage of executives who leave S&P 1500 firms close to the new TRI plants. Across all specifications, each of the three measures of *TRI Open* enters positively and significantly. This holds when the dependent variable is either the proportion of executives who leave the firm during year *t* ($E^1_{f,t}$) or the proportion of executives who leave during year *t* and *t+1* ($E^2_{f,t}$). Furthermore, the results are robust to excluding or including the time-varying firm characteristics and the estimated coefficients on the *TRI Open* variables change little when conditioning on firm traits. The estimated coefficients are economically meaningful. For example, using regression (4), if one TRI plant opens within one mile of an S&P 1500 firm, the proportion of executives who leave during the next year rises by 4.23%, where 11.9% of executives leave the average firm every year.

3.3. Addressing Additional Identification Concerns

We next conduct several tests to address additional identification concerns. First, we differentiate firms by their distances to TRI plant openings. If exposure to toxic pollutants triggers executive migration, then the impact of the opening of toxic-emitting TRI plants on executive migration should be larger for firms that are closer to the new TRI plants. To evaluate this hypothesis, we use the same specification as in equation (2) except that the explanatory variable is either (a) a dummy variable that equals one if a TRI plant opened within one mile of the firm (*TRI Open Within 1 Mile*, (b) a dummy variable that equals one if a TRI plant opened *between* 1 and 2 miles of the firm (*TRI Open Between 1 and 2 Miles*), and (c) dummy variable that equals one if a TRI plant opened *between* 2 and 5 miles of the firm (*TRI Open Between 2 and 5 Miles*). Since the density of pollution dissipates with distance (see, e.g., Currie et al., 2015), we test whether the relationship between TRI plant openings and executive migration falls as the distance between the TRI plant and the firm grows.

As shown in Panel B of Table 4, the results are consistent with the view that physical exposure to pollution induces executives to leave. Besides repeating the finding that *TRI Open Within 1 Mile*, the results show that the estimated relationship between TRI plant openings and the rate of executive migration from S&P 1500 firms falls when the distance between the plant and firm is larger. Indeed, when examining firms between two and five miles from the TRI plant, we find (1) no significant increase in the rate of executive departures following TRI plant openings, i.e., the coefficient on *TRI Open Between 2 and 5 Miles* enters insignificantly. Furthermore, the absolute value of the estimated coefficient on *TRI Open Between 1 and 2 Miles* is much smaller than that on *TRI Open Within 1 Mile*. For example, when considering executives that leave within one year of the TRI plant opening while including firm controls, the estimated coefficient on *TRI Open Between 1 and 2 Miles* is only about one-third of the coefficient estimate on *TRI Open Within 1 mile*.

Second, we distinguish between a firm's leaders who are more likely to spend considerable time at the firm's headquarters from leaders who are typically not physically present at corporate headquarters on a regular basis. If a firm's leaders migrate when a TRI plant opens close by because they are physically exposed to pollution, then we should not observe an increase in the rate of migration among corporate leaders who are not physically present at their firm's headquarters on a regular basis. To conduct this placebo test, we examine non-executive directors, who do not typically work at the firm's headquarters on a daily basis, and evaluate the impact of TRI plant openings on the rate of non-executive director departures. We define the rate of non-executive director migration as the percentage of non-executive directors who leave firm *f* during year *t* (or during years *t* and *t+1*), divided by the total number of non-executive directors in that firm, *f*, at the end of year *t-1*).

As shown in Panel C of Table 4, the results of the placebo test are consistent with the interpretation that physical exposure to pollution drives executive migration. For non-executive directors—those who are less likely to be physically present at their S&P 1500 firms on a regular basis, we find no relationship between TRI plant openings and migration. However, as shown in Panel A, for executives, there is a strong, positive relationship between the opening of a TRI plant and the rate of executive departures.

As a third test, we examine the impact of non-TRI plant openings on the rate of executive migration from neighboring S&P 1500 firms. If the results are driven by pollution—and not by some other factor associated with new plant formation, then the opening of non-TRI plants should not influence the migration of corporate leaders from geographically close S&P 1500 firms. To conduct this placebo test, we use the NETS data and identify the location of all non-TRI plant openings during the same sample period and conduct the same analyses as those reported in Table 4 Panel A.

As shown in Panel D of Table 4, the results are consistent with the view that it is the opening of toxic emitting TRI plants—and not the opening of plants in general, the drive executive migration. Consistent with the placebo hypothesis, there is no evidence that the opening of non-TRI plants close to S&P 1500 firms induces executive migration from those firms.

Finally, we address the concern that executives might separate from firms involuntarily because of poor firm performance, not because they are exposed to pollution. If TRI plant openings are more likely to occur around failing S&P 1500 firms and failing firms are more likely to fire executives, then the Panel A results in Table 4 could reflect the impact of poor firm performance on both executive separations and TRI plant opening, not the impact of pollution on executive migration.

To address this concern, we eliminate S&P 1500 firms that were performing poorly during the year prior to TRI plants opening close to those firms. In particular, in Panel E of Table 4, we conduct the same analyses as those in Panel A except that we exclude firms that experienced over a 10% reduction in their stock prices in the year prior to TRI plant openings. If TRI plant openings are more likely to occur around failing S&P 1500 firms and failing firms are more likely to fire executives. In this way, we exclude firms that were performing poorly—firms for which involuntary executive separations are more likely than in better performing S&P 1500 firms. If the earlier results are driven by poor firm performance driving both executive migration and TRI plant openings, then the results should dissipate after we exclude poorly performing firms. In contrast, if the results are driven by exposure to pollution, then eliminating the poorly performing firms should not materially affect the results.

As shown in Panel E of Table 4, we continue to find a strong impact of TRI plant openings on executive migration after excluding poorly performing firms. In unreported robustness tests, we find that these results hold when using other stock price reduction cutoffs besides 10%. The results in Tables 3 and 4 are consistent with the view that TRI plant openings increase pollution around geographically close S&P 1500 firms and executives working in those firms have higher probabilities of leaving those exposed firms, regardless of the firm's stock price performance before the TRI plant opening.[6]

3.4. TRI Openings and Executive Migration: Individual-year Analyses

To provide more information on the relationship between TRI plant openings and executive departures from neighboring firms and to address additional identification concerns, we turn our focus from the proportion of executives leaving firms and instead trace the decisions of individual executives over time. In these individual-year analyses, we evaluate the change in the probability that an executive leaves an S&P 1500 firm when a TRI plant opens nearby. By studying individuals rather than the group of executives at firms, we control for all time-invariant, and several time-varying, traits of each executive.

In these regressions, the dependent variable is either $L^1_{i,f,t}$, which equals one if executive *i* leaves firm *f* in year *t*, and zero otherwise, or $L^2_{i,f,t}$, which equals one if executive *i* leaves firm *f* during year *t* or *t+1*, and zero otherwise. As above, we separately examine the exposure of firm *f* to TRI plants in year *t* using *TRI Open within 1 Mile*$_{f,t}$ or *TRI Open within 2 Miles*$_{f,t}$. Furthermore, the regressions control for the time-varying S&P 1500 firm

[6] We were also concerned that the results might differ by the power or prestige of the firm. Thus, we conducted the analyses while splitting the sample between S&P 500 firms and other firms. The results hold in both groups and the estimated coefficients are of similar magnitudes in the two groups of firms. These results are available on request.

characteristics discussed above ($\boldsymbol{X}_{f,t}$), as well as two characteristics of each executive ($\boldsymbol{C}_{i,f,t}$), *Tenure* and *Age*, that might independently influence the rate of separation between the executive and firm. We provide the results with and without $\boldsymbol{X}_{f,t}$ and $\boldsymbol{C}_{i,f,t}$.

Thus, we estimate the following linear probability models:

$$L^{z}_{i,f,t}, = \alpha + \gamma Dummy(TRI\ Plant\ Open)_{f,t} + \theta \boldsymbol{X}_{f,t} + \lambda \boldsymbol{C}_{i,f,t} + \delta_{c,t} + \delta_{k,t} + \delta_{i,f} + \epsilon_{i,f,t}, \quad (3)$$

where the dependent variable is $L^{1}_{i,f,t}$ or $L^{2}_{i,f,t}$. All regressions include city-year ($\delta_{c,t}$), industry-year ($\delta_{k,t}$), and individual-firm ($\delta_{i,f}$) fixed effects, where we use the city and industry (k) of the S&P 1500 firm (f) in which individual i is an executive.[7] The regressions are estimated using OLS, and standard errors are double clustered at both the city and year levels.

Consistent with the firm-level analyses, the results from the individual-level analyses reported in Table 5 indicate that executives are more likely to leave their firms when a TRI plant opens close to them. Each of the three measures of *TRI Open* enters positively and significantly. These results hold when examining either the indicator of whether the executive leaves during the year that the TRI plant opens or the indicator of whether the executive leaves in the two years following the TRI plant opening. With respect to the economic sizes of the estimated coefficients, consider the impact of one TRI plant opening within one mile of an executive's firm. The results reported in regression (3) indicate that this is associated with an almost 5% increase in the probability that the executive leaves the firm within the next year, where 12.7% of executives leave every year in the average firm.

3.5. Differentiating by Generalist and Specialist Executives

We next assess whether executives with different human capital skills respond differently to TRI plant openings. We hypothesize that when TRI plant openings increase toxic air pollutants, executives at nearby firms who have skills that are in stronger demand at other firms will be more likely to relocate than executives with more firm-specific skills. This hypothesis predicts that when executives are "treated" with air pollution, the executives with

[7] We can include individual by firm fixed effects ($\delta_{i,f}$) because some individuals are executives in more than one firm during the sample period.

more general human capital will be more likely to leave the firm than executives with more firm-specific human capital.

To evaluate this hypothesis, we examine the degree to which CEOs have general human capital skills, i.e., skills that are valued highly at other firms. We use the *Generalist CEO Index* constructed and analyzed by Custodio, Ferreira, and Matos (2013) that gauges the extent to which a CEO's skills are transferrable across firms and industries. The *Generalist CEO Index* varies over time for each individual and reflects information on the numbers of past positions, firms, and industries and whether the executive was a CEO in the past and the complexity of the organizations in which the CEO was employed.[8] We then test whether there is a larger increase in the rate of departures of CEOs with more general human capital skills when a TRI plant opens nearby.

The regression specification and estimation procedures are the same as in equation (3) except that we add an interaction term between *TRI Open* and *Generalist CEO Index*. Specifically, we estimate the following equation:

$$L^{z}_{i,f,t'} = \alpha + \beta TRI\ Open_{f,t} * Generalist\ CEO\ Index_{i,t} + \phi Generalist\ CEO\ Index_{i,t} + \gamma TRI\ Open_{f,t} + \theta \boldsymbol{X}_{f,t} + \lambda \boldsymbol{C}_{i,f,t} + \delta_{c,t} + \delta_{k,t} + \delta_{i,f} + \epsilon_{i,f,t}, \quad (4)$$

where the variables are defined as above. If $\beta > 0$, then this would suggest that CEO departures are more likely in response to a TRI plant opening when the CEO has more general, and hence more transferable, skills.

As shown in Table 6, the evidence is consistent with the view that when firms are exposed to air pollution from the opening of a TRI plant, executives with more general human capital skills leave firms more frequently during the next years than executives with more firm-specific skills. These results are reported in regressions (5) – (8) of Table 6. The estimated coefficient on the interaction term between *TRI Open* and *Generalist CEO Index*

[8] The *Index* can, in some cases, vary over time while an individual is a CEO at one firm, as individuals occasionally take simultaneous positions at other firms. As a robustness test, we conduct all of the analyses below using the value of *Generalist CEO Index* for individual *i* in firm *f* during the first year that the individual is a CEO at firm *f*; thus, we eliminate any time variation in *Generalist CEO Index* for individual *i* at firm *f*. All of the results hold with very little change in the estimated coefficients, as there is very little within firm variation of the *Generalist CEO Index* for an individual.

enters positively and significantly for each of the three *TRI Open* measures and these findings are robust to including or excluding the time-varying firm and individual controls. The estimated economic effects are large. For example, compare two CEOs running exactly the same S&P 1500 firm, one at the 25^{th} percentile of the distribution of the *Generalist CEO Index* (-0.71) and the other at the 75^{th} percentile of distribution (0.54). The results from regression (8) indicate that the opening of a TRI plant within two miles of these CEOs would increase the probability of the CEO at the 75^{th} percentile of leaving the firm by 32% more than the CEO at the 25^{th} percentile of the *Generalist CEO Index* distribution, i.e., 32% = 0.257*(0.46 – (-0.79)). By differentiating executives by human capital and showing that they respond in a theoretically predictable manner to the same pollution shock, we reduce concerns that the findings on executive migration are driven by an omitted factor that simultaneously increases pollution and executive migration in city.

4. Extensions

We now extend the results by examining two additional implications of the view that TRI plant openings increase toxic emissions that induce executives at neighboring firms to leave. We explain each implication and then provide an empirical evaluation.

4.1. CARs around Executives' Turnover Announcement

First, if there are costs associated with replacing well-performing executives (e.g., Gabaix and Landier 2008) and air pollution triggers the departure of executives in general, and not simply the departure of poorly-performing executives, then air pollution-induced migration will tend to reduce the firm's stock price. That is, if air pollution is causing an otherwise sound executive to leave a firm, this is likely to have an adverse effect on the firm as suggested by the work of Warner, Watts and Wruck (1988) and Denis and Denis (1995). Since we showed (Table 4) that TRI plant openings trigger the departure of executives in general, not the departure of executives from poorly performing firms in particular, we now assess what happens to the stock prices of S&P 1500 firms when executives announce their departures, both departures associated with TRI plant openings and departures that are unassociated with such openings.

We examine the relationship between the announcement date of executive departures and their firm's cumulative abnormal returns (CARs). To obtain announcement dates, ExecuComp provides some of those dates and we hand-collected most dates from Factiva news and 8-K filings. In particular, using the announcement dates from ExecuComp, our sample is 1,772. We confirm each of these announcements using separate sources (Factiva and 8-K filings). We then searched Factiva and 8-K filings for information on each executive at S&P 1500 firms over our sample period to discern the announcement date of other executive departures. This increased our sample to 4,365, for which we can compute the firms' CARs around those dates. We report the results with our larger sample, and note that the results hold with the smaller, ExecuComp-only sample.

To compute the CARs, we use security prices from the Center for Research in Security Prices (CRSP) database. We examine CARs over the 5-day window from two days before until two days after the announcement day. Setting the announcement day as day 0, the CAR window is therefore indicated as (-2, +2). We use three standard models to compute abnormal returns. The 1-factor abnormal return is computed as the firm's return minus the market index return. Following Brown and Warner (1985), we define 3-factor and 4-factor abnormal returns by using the difference between actual and projected returns. To compute projected returns, we (1) regress the firm's daily return on the value-weighted returns on the CRSP equally weighted market portfolio over the 200-day period from the 210th trading day through the 11th trading day before the announcement date of each deal and (2) use the estimated parameters to compute the projected returns during the 5-day event window (-2, +2). For the 3-factor model, we use the Fama-French benchmark factors of Rm-Rf, SMB, and HML as regressors, where Rm-Rf is the value-weighted market return minus the one-month Treasury bill rate, SMB (Small Minus Big) is the average return on three small portfolios minus the average return on three big portfolios, and HML (High Minus Low) is the average return on two value portfolios minus the average return on two growth portfolios. The numbers are obtained from Kenneth R. French's website. The 4-factor model adds the Fama-

French momentum factor, which is constructed from six value-weighted portfolios formed using independent sorts on size and prior returns of NYSE, AMEX, and NASDAQ stocks.[9] We report the results in Table 7 using the 4-factor model, but all of the results hold using either the 1- or 3-factor models to construct 5-day CARs around the announcement date.

Table 7 provides regression results where the dependent variable is the 5-day CARs around the announced departure dates of executives from S&P 1500 firms and the main explanatory variable is a dummy variable that equals one if a TRI plant opened close to the S&P 1500 firm. In particular, the main explanatory variable is either *TRI Open within 1 Mile* or *TRI Open within 2 Miles*. All regressions include firm and year dummy variables. As indicated, we also provide regressions conditioning on time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio*, *Sales Growth*, and *Cash Flow Volatility*) and time-varying Individual controls (*Tenure* and *Age*). Thus, Table 7 provides tests of whether there are significant differences between the CARs around announced departures of executives from (1) firms exposed to TRI plant offerings and (2) firms unexposed to such openings.

As shown, when executives announce their departures from S&P 1500 firms exposed to TRI plant openings, the CARs of those firms fall significantly more than when executives depart from unexposed firms.[10] This is consistent with the views that (a) the toxic releases from TRI plant openings induce some otherwise well-performing executive at neighboring firms to separate from those firms, so that the distribution of executive departures following TRI plant openings at neighboring firms has a higher proportion of these voluntary departures than the executive departures from firms unexposed to TRI plant opening and (b) voluntary executive departures have a larger adverse influence on stock prices than executive departures for other reasons, including poor firm performance or expected poor performance.

[9] The momentum factors is defined as 1/2 (Small High + Big High) - 1/2 (Small Low + Big Low), and is available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_mom_factor_daily.html.

[10] Besides finding that the CARs of firms with executive departures following TRI-plant openings fall more than the CARs of firms with executive departures that were not exposed to TRI-plants, we also find that the CARs of firms with executive departures following TRI-plant openings fall. These results are consistent with the extensive literature on executive departures in general and are available on request.

These findings suggest that TRI plant openings have material effects on the executives and shareholders of neighboring firms.

4.2. Comparison of Pollutant Density between New Areas and Old Areas

Finally, the view that pollution triggers executive migration provides predictions about where those departing executives go. If executives leave S&P 1500 firms because of pollution, then we should observe these executives moving to firms in less polluted areas. To assess whether this holds, we first identify the location of the executive's new firm through BoardEx and ExecuComp. We then compute the pollutant levels in the first year after the executive moves to the new firm using EPA monitor data. Specifically, for each pollutant, we compute the pollutant's level at the executive's "old firm" and its level at the new firm, where monitor nearest to the firm measures the pollutant level. Since not all executives who leave S&P 1500 firms following TRI plant closings migrate to other S&P 1500 firms, these analyses materially reduce the sample size. Thus, we simply provide the results for executives leaving S&P 1500 firms after a TRI plant opens within two miles of the firm.

As shown in Table 8, executives who leave S&P 1500 firms after a TRI plant opens nearby tend to move to firms in less polluted parts of the country. These findings are not surprising given that (a) TRI plants increase pollution and (b) executives have a higher propensity to migrate following the opening of TRI plants close their firms. Nevertheless, it is valuable to confirm that when executives leave a firm following the opening of a geographically close toxic emitting plant, they tend to find new executive positions in firms located in areas with lower pollution levels.

5. Conclusion

In this paper, we examined the impact of toxic emissions on the migration of corporate executives from neighboring firms. We merge data on TRI plant openings—plants that emit toxic air pollutants—with information on the career paths of executives at all S&P 1500 firms. We then ask: When one firm starts emitting toxic pollutants, does this induce the migration of corporate executives from neighboring firms and are such migrations associated with a drop in the CARs of those firms?

We discover that the opening of toxic emitting plants increases the rate at which executives leave geographically close firms. These findings are especially pronounced among executives with more general human capital skills and are not driven by executives at firms experiencing poor stock price performance. We also show that increases in executive migration following the opening of geographically close toxic emitting plants hold for executives who are most likely to work regularly and physically at the firm. Indeed, the findings do not hold for non-executive directors, who are unlikely to be physically present at the firm on a regulator basis and therefore less likely to be affected by the TRI plant-induced increase in air pollution. In addition, we show stock returns fall when executives announce their departures following the opening of toxic-emitting plants. These analyses suggest that an additional, costly externality of air pollution is the migration of executives from geographically close firms.

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Figure 1: Locations that Had Toxic Release Inventory (TRI) Plants Between 1996 and 2014

Notes: This figure maps the location of the 58,094 TRI plants that operated between 1996 and 2014. Each dot represents a TRI plant location.

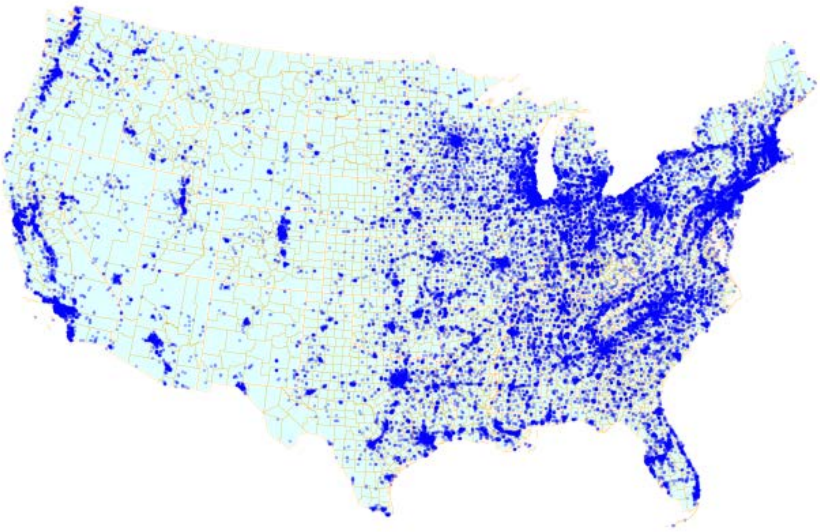

Table 1 Sample Construction and Variable Definition

This table (1) describes the construction of the three samples (Monitor-Plant-Year Sample, Firm-Year Sample, and Person-Year Sample) and (2) provides variable definitions of the dependent, independent, and control variables. The variables are ordered according to when they appear in the tables.

Sample Construction

Firm-Year Sample	Each row is an S&P 1500 firm's observation in a year. Data are constructed from EPA, BoardEx and Compustat.
Monitor-Plant-Year Sample	For each functioning monitor in a year, we match the TRI plant location with it and construct monitor-plant pairs. Each row is a pollutant's density (in nanogram/m^3) in a monitor-plant pair in a year. A dummy shows whether the plant is operating or not within 10 miles of the monitor in a given year. Data are from EPA.
Person-Year Sample	Each row is an executive's observation in an S&P 1500 company in a year. Data are constructed from EPA, BoardEx and Compustat.

Dependent Variables

1-factor (3-factor, 4-factor) CAR (-2，+2)	5-day CAR during the window (-2, +2), where day 0 is the date that an executive announces her leaving. We define abnormal returns by using the difference between actual and projected returns, where we estimate projected returns as follows: (1) based on 1-factor (3-factor, 4-factor) stock abnormal return model, regress the S&P 1500 firm's daily return on the returns on the CRSP value-weighted market portfolio over the 200-day period from the 210th trading day through the 11th trading day before the announcement date and collect the estimated coefficients and (2) use the estimated coefficients to compute the projected returns during the 5-day event window (-2, +2). Data are from CRSP.
All Other Compensation	The value of an executive's all other compensation. In thousand USD. Obtained from BoardEx and ExecuComp.
Dummy (Leave the Company in One Year)	In the person-year level data, for each executive that was in the S&P 1500 company in year *y-1*, the dummy equals one if she was in the company in year *y+1*, and equals zero if she was not in the company in year *y+1*. Constructed from BoardEx and ExecuComp.
Dummy (Leave the Company in Two Years)	In the person-year level data, for each executive that was in the S&P 1500 company in year *y-1*, the dummy equals one if she was in the company in year *y+2*, and equals zero if she was not in the company in year *y+2*. Constructed from BoardEx and ExecuComp.
Percentage of Executives Who Left the Companies in One Year	In the firm-year level data, for each S&P 1500 firm, first construct the list of all executives from BoardEx and ExecuComp in year *y-1* (say *n* executives in total), and the list of all executives in year *y+1*; then construct the list of executives who were in the company in year *y-1* but not in year *y+1* (say there are *m* executives who have left the company); then the percentage of executives who left the company is defined as *m/n*. Constructed from BoardEx and ExecuComp.

Percentage of Executives Who Left the Companies in Two Years	In the firm-year level data, for each S&P 1500 firm, first construct the list of all executives from BoardEx and ExecuComp in year *y-1* (say *n* executives in total), and the list of all executives in year *y+2*; then construct the list of executives who were in the company in year *y-1* but not in year *y+2* (say there are *m* executives who have left the company); then the percentage of executives who left the company is defined as *m/n*. Constructed from BoardEx and ExecuComp.
Percentage of Non-executive Directors Who Left the Companies in One Year	In the firm-year level data, for each S&P 1500 firm, first construct the list of all non-executive directors from BoardEx and ExecuComp in year *y-1* (say *n* non-executive directors in total), and the list of all non-executive directors in year *y+1*; then construct the list of non-executive directors who were in the company in year *y-1* but not in year *y+1* (say there are *m* non-executive directors who have left the company); then the percentage of non-executive directors who left the company is defined as *m/n*. Constructed from BoardEx and ExecuComp.
Percentage of Non-executive Directors Who Left the Companies in Two Years	In the firm-year level data, for each S&P 1500 firm, first construct the list of all non-executive directors from BoardEx and ExecuComp in year *y-1* (say *n* non-executive directors in total), and the list of all non-executive directors in year *y+2*; then construct the list of non-executive directors who were in the company in year *y-1* but not in year *y+2* (say there are *m* non-executive directors who have left the company); then the percentage of non-executive directors who left the company is defined as *m/n*. Constructed from BoardEx and ExecuComp.
Proportion of Being a Chairperson of Board	The average proportion of whether a person has been a Chairperson of Board in the current or previous companies. Obtained from BoardEx and ExecuComp.
Proportion of Being a CEO	The average proportion of whether a person has been a CEO in the current or previous companies. Obtained from BoardEx and ExecuComp.
Shares Compensation	The value of an executive's compensation in the form of granted shares. In thousand USD. Obtained from BoardEx and ExecuComp.
Total Current Compensation (Salary + Bonus)	The total current compensation of an executive, including salary and bonus. In thousand USD. Obtained from BoardEx and ExecuComp.
Years of Being an Executive	The total number of years that the person has been an executive in the current or previous companies. Obtained from BoardEx and ExecuComp.

Independent Variables

TRI Open within 1 Mile	Dummy variable. At the firm-year level, it equals one if there is at least one TRI plant open within 1 mile of an S&P 1500 firm’s headquarter location in a given year, and equals zero otherwise.
TRI Open within 2 Miles	Dummy variable. At the firm-year level, it equals one if there is at least one TRI plant open within 2 miles of an S&P 1500 firm’s headquarter location in a given year, and equals zero otherwise.
Dummy (Plant is Operating)	In the monitor-plant-year sample, this dummy shows whether the plant is operating (=1) or not (=0) within 5 miles of the monitor in a given year.
Generalist CEO Index	General Ability Index defined in Custodio, Ferreira, and Matos (2013) winsorized at 1%. It captures the skills of the CEO that are transferrable across firms and industries, instead of firm-specific skills. The index gives close to equal weights to the past number of positions, firms, and industries and a lower weight to the past CEO and conglomerate experiences.

Control Variables	
Age	Age of an executive. Obtained from BoardEx.
Cash Flow Volatility	Standard deviation of cash flows in the past five years. Obtained from Compustat. In million USD.
Leverage	Liabilities divided by total assets. Obtained from Compustat.
Operating Cash Flow / Total Assets Ratio	Operating cash flow divided by total assets. Constructed from Compustat.
Sales Growth	Obtained from Compustat.
Tenure	The number of years that an executive has served in the company. Constructed from BoardEx.
Total Assets	Obtained from Compustat. In million USD.

Table 2 Summary Statistics

	Obs	Mean	Std. Dev.	25%	Median	75%
Dependent Variables						
Firm-Year Level Data						
Percentage of Executives Who Left the Companies in One Year	17,047	11.855	14.023	0	12.5	20
Percentage of Executives Who Left the Companies in Two Years	15,953	22.653	19.174	0	20	33.33
Percentage of Non-executive Directors Who Left the Companies in One Year	17,047	2.096	12.203	0	0	0
Percentage of Non-executive Directors Who Left the Companies in Two Years	15,953	4.146	17.635	0	0	0
Person-Year Level Data						
Dummy (Leave the Company in One Year)	86,282	0.127	0.333	0	0	0
Dummy (Leave the Company in Two Years)	73,900	0.183	0.386	0	0	0
Monitor-Plant-Year Level Data, Mean Density (nanograms)						
PM10 Total 0-10um STP	340,935	11627.1	14695.0	0	0	23721.3
Suspended particulate (TSP)	237,410	13393.2	26476.2	0	0	0
Carbon monoxide	173,052	358.1	526.4	0	0	608.739
Ozone	147,325	22.6	22.0	0	32.236	43.554
Lead (TSP) STP	204,712	42.4	406.4	0	0	5.7765
Sulfur dioxide	198,377	2204.5	3496.6	0	0	3448.9
Benzene	161,053	959.2	2354.0	0	0	1201.48
Toluene	158,603	2482.2	6865.3	0	0	2498.64
PM10 - LC	170,226	4526.9	10286.3	0	0	0
Ethylbenzene	156,428	383.2	1118.2	0	0	338.235
Key Independent Variables						
Firm-Year Level Data						
TRI Open within 1 Mile	17,047	0.034	0.182	0	0	0
TRI Open within 2 Miles	17,047	0.064	0.245	0	0	0
Person-Year Level Data						
TRI Open within 1 Mile	86,282	0.502	1.078	0	0	0
TRI Open within 2 Miles	86,282	0.136	0.481	0	0	0
Generalist CEO Index	12,565	-0.063	0.952	-0.706	-0.147	0.544
Monitor-Plant-Year Level Data						
Dummy (Plant is Operating)	30,312,380	0.189	0.391	0	0	0

Table 2 Summary Statistics (Continued)

	Obs	Mean	Std. Dev.	25%	Median	75%
			Control Variables			
			Firm-Year Level Data			
Total Assets	15,768	19.423	105.082	0.839	2.577	8.747
Leverage	15,524	0.225	0.192	0.064	0.200	0.336
Operating Cash Flow / Total Assets Ratio	15,546	0.102	0.083	0.053	0.094	0.142
Sales Growth	15,720	1.251	6.595	1.000	1.076	1.170
Cash Flow Volatility	14,838	2.004377	60.3	0.000	0.004	0.039
			Person-Year Level Data			
Total Assets	78,148	19.692	105.649	0.945	3.101	14.006
Leverage	77,100	0.226	0.193	0.097	0.226	0.351
Operating Cash Flow / Total Assets Ratio	69,864	0.103	0.083	0.057	0.096	0.145
Sales Growth	78,007	1.234	6.197	1.009	1.084	1.187
Cash Flow Volatility	73,593	1.669	53.5	0.489	4.249	49.267
Tenure	83,946	4.364	3.998	2	5	8
Age	77,586	51.162	7.726	48	53	59

Table 3: TRI Plant Openings and Major Pollutants

This table reports the effect of TRI plant openings on air pollution. To measure air pollution, we use the annual density of major air pollutants recorded by EPA monitors within one (Panel A) or two (Panel B) miles of each TRI plant. The table reports the estimated coefficient on $Dummy(Plant\ is\ Operating)_{l,t}$, which is a dummy variable that equals zero in the years before a TRI plant opens and one afterwards. The last column of Table 3 provides information on the economic magnitudes of the estimated coefficient on *Dummy (Plant is Operating*) for each pollutant by computing the estimated change in the pollutant as a percentage of the pollutant's average across all monitors in the country. All regressions control for year fixed effects and monitor-plant fixed effects. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

Panel A: Annual density of major air pollutants recorded by EPA monitors within one mile of each TRI plant

Chemical Name	Dummy (Plant is Operating)		Constant	Year Dummy	Monitor-Plant Dummy	R-squared	Observations	Mean Density (Nanograms)	Additional % of Pollutant from One More TRI Plant
PM10 Total 0-10um STP	504.81**	(2.06)	Yes	Yes	Yes	0.458	114,764	11627.050	4.34%
Suspended particulate (TSP)	1,381.78***	(3.04)	Yes	Yes	Yes	0.412	80,549	13393.240	10.32%
Carbon monoxide	24.04*	(1.89)	Yes	Yes	Yes	0.481	50,607	358.102	6.71%
Ozone	1.29**	(2.29)	Yes	Yes	Yes	0.501	44,446	22.597	5.71%
Lead (TSP) STP	11.06	(1.44)	Yes	Yes	Yes	0.116	69,870	42.355	26.11%
Sulfur dioxide	769.88***	(9.83)	Yes	Yes	Yes	0.490	60,667	2204.460	34.92%
Benzene	90.08*	(1.86)	Yes	Yes	Yes	0.258	50,354	959.239	9.39%
Toluene	516.72***	(3.46)	Yes	Yes	Yes	0.249	48,354	2482.186	20.82%
PM10 - LC	132.54	(0.64)	Yes	Yes	Yes	0.411	54,757	4526.893	2.93%
Ethylbenzene	84.71***	(3.67)	Yes	Yes	Yes	0.200	47,858	383.226	22.10%

Panel B: Annual density of major air pollutants recorded by EPA monitors within two miles of each TRI plant

Chemical Name	Dummy (Plant is Operating)		Constant	Year Dummy	Monitor-Plant Dummy	R-squared	Observations	Mean Density (Nanograms)	Additional % of Pollutant from One More TRI Plant
PM10 Total 0-10um STP	571.93***	(3.81)	Yes	Yes	Yes	0.415	340,935	11103.350	5.15%
Suspended particulate (TSP)	392.35	(1.45)	Yes	Yes	Yes	0.402	237,410	12473.680	3.15%
Carbon monoxide	19.38***	(2.68)	Yes	Yes	Yes	0.453	173,052	322.829	6.00%
Ozone	0.79**	(2.52)	Yes	Yes	Yes	0.478	147,325	21.684	3.64%
Lead (TSP) STP	4.08	(0.70)	Yes	Yes	Yes	0.146	204,712	39.829	10.24%
Sulfur dioxide	82.84*	(1.77)	Yes	Yes	Yes	0.480	198,377	2076.380	3.99%
Benzene	92.99***	(3.08)	Yes	Yes	Yes	0.218	161,053	890.236	10.45%
Toluene	317.65***	(3.66)	Yes	Yes	Yes	0.219	158,603	2266.939	14.01%
PM10 - LC	251.94**	(2.16)	Yes	Yes	Yes	0.393	170,226	4159.733	6.06%
Ethylbenzene	44.45***	(3.33)	Yes	Yes	Yes	0.179	156,428	343.336	12.95%

Table 4: Executives Departures and TRI Plant Openings

Panel A: Core results on TRI plant openings and executive departures

This table presents OLS regression results of the relation between the percentages of executives who leave their S&P 1500 firms in the one or two years following the opening of a nearby TRI plant. The dependent variables are the percentages of executives who leave their S&P 1500 firms in the indicated time period. The main independent variables include the dummy variables of TRI plant opening within 1 or 2 miles of the S&P 1500 firm respectively. All regressions include time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio*, *Sales Growth*, and *Cash Flow Volatility*), as well as city-year, industry-year and firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Percentage of Executives Who Left the Companies in One Year				Percentage of Executives Who Left the Companies in Two Years			
TRI Open within 1 Mile	3.53***		4.23***		5.55***		6.56***	
	(4.54)		(5.37)		(4.10)		(4.14)	
TRI Open within 2 Miles		1.90**		2.22**		3.09***		3.56**
		(2.82)		(2.47)		(3.21)		(2.89)
Firm-year Controls			Yes	Yes			Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,047	17,047	13,487	13,487	15,953	15,953	12,519	12,519
R-squared	0.636	0.635	0.688	0.688	0.701	0.701	0.752	0.751

Panel B: TRI plant openings and executive departures, differentiating by distance between TRI plants and S&P 1500 firms

This table presents OLS regression results of the relation between the percentages of executives who leave their S&P 1500 firms in the one or two years following the opening of a nearby TRI plant. The dependent variables are the percentages of executives who leave their S&P 1500 firms in the indicated time period. The main independent variables are respectively (a) a dummy variable that equals one if a TRI plant opened within one mile of the firm, (b) a dummy variable that equals one if a TRI plant opened between 1 and 2 miles of the firm, and (c) dummy variable that equals one if a TRI plant opened between 2 and 5 miles of the firm. All regressions include time-varying Firm Controls (*Total Assets, Leverage, Operating Cash Flow / Total Assets Ratio, Sales Growth*, and *Cash Flow Volatility*), as well as city-year, industry-year and firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Percentage of Executives Who Left the Companies in One Year						Percentage of Executives Who Left the Companies in Two Years					
TRI Open within 1 Mile	3.53***			4.23***			5.55***			6.56***		
	(4.54)			(5.37)			(4.10)			(4.14)		
TRI Open Between 1 and 2 Miles		1.58**			1.70**			2.93**			3.45***	
		(2.48)			(2.16)			(2.66)			(5.36)	
TRI Open Between 2 and 5 Miles			0.51			0.91			0.55			0.09
			(0.67)			(0.90)			(0.89)			(0.15)
Firm-year Controls				Yes	Yes	Yes				Yes	Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,047	17,047	17,047	13,487	13,487	13,487	15,953	15,953	15,953	12,519	12,519	12,519
R-squared	0.636	0.635	0.635	0.688	0.687	0.687	0.701	0.701	0.701	0.752	0.751	0.751

Panel C: TRI plant openings and executive departures, a placebo test of less exposed executives

This table presents OLS regression results of the relation between the percentages of non-executive directors who leave their S&P 1500 firms in the one or two years following the opening of a nearby TRI plant. The dependent variables are the percentages of executives who leave their S&P 1500 firms in the indicated time period. The main independent variables include the dummy variables of TRI plant opening within 1 or 2 miles of the S&P 1500 firm respectively. All regressions include time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio*, *Sales Growth*, and *Cash Flow Volatility*), as well as city-year, industry-year and firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Percentage of Non-executive Directors Who Left the Companies in One Year				Percentage of Non-executive Directors Who Left the Companies in Two Years			
TRI Open within 1 Mile	0.61		-0.12		2.48		2.04	
	(0.78)		(-0.17)		(1.00)		(0.69)	
TRI Open within 2 Miles		0.42		0.40		1.36		1.85
		(1.09)		(0.78)		(1.62)		(1.60)
Firm-year Controls			Yes	Yes			Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,047	17,047	13,487	13,487	15,953	15,953	12,519	12,519
R-squared	0.561	0.561	0.561	0.561	0.561	0.610	0.610	0.610

Panel D: TRI plant openings and executive departures, a placebo test of non-TRI plant openings near S&P 1500 firms

This table presents OLS regression results of the relation between the percentages of executives who leave their S&P 1500 firms in the one or two years following the opening of a nearby non-TRI plant. The dependent variables are the percentages of executives who leave their S&P 1500 firms in the indicated time period. The main independent variables include the dummy variables of non-polluting plant opening within 1 or 2 miles of the S&P 1500 firm respectively. All regressions include time-varying Firm Controls (*Total Assets, Leverage, Operating Cash Flow / Total Assets Ratio, Sales Growth*, and *Cash Flow Volatility*), as well as city-year, industry-year and firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Percentage of Executives Who Left the Companies in One Year				Percentage of Executives Who Left the Companies in Two Years			
Non-TRI Plants Open within 1 Mile	0.45		0.03		1.71		1.32	
	(0.50)		(0.04)		(0.77)		(0.46)	
Non-TRI Plants Open within 2 Miles		0.22		0.24		1.79		1.94
		(0.38)		(0.30)		(1.71)		(1.75)
Firm-year Controls			Yes	Yes			Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,047	17,047	13,487	13,487	15,953	15,953	12,519	12,519
R-squared	0.557	0.557	0.611	0.611	0.630	0.630	0.686	0.686

Panel E: TRI plant openings and executive departures, accounting for poorly performing firms

This table presents OLS regression results of the relation between the percentages of executives who leave their S&P 1500 firms in the one or two years following the opening of a nearby TRI plant, excluding the firms with over 10% stock price drop in the lagged year. The dependent variables are the percentages of executives who leave their S&P 1500 firms in the indicated time period. The main independent variables include the dummy variables of TRI plant opening within 1 or 2 miles of the S&P 1500 firm respectively. All regressions include time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio, Sales Growth*, and *Cash Flow Volatility*), as well as city-year, industry-year and firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Percentage of Executives Who Left the Companies in One Year				Percentage of Executives Who Left the Companies in Two Years			
TRI Open within 1 Mile	3.30**		4.30***		6.09***		6.92***	
	(2.91)		(5.04)		(3.68)		(4.09)	
TRI Open within 2 Miles		1.61***		2.49***		3.61**		3.65*
		(3.20)		(3.17)		(2.74)		(2.12)
Firm-year Controls			Yes	Yes			Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,937	7,937	6,196	6,196	7,279	7,279	5,622	5,622
R-squared	0.676	0.675	0.675	0.676	0.675	0.726	0.726	0.726

Table 5: Executive Departures and TRI Plant Openings: Individual-level Analyses

This table presents OLS regression results of the relation between each executive's decision to leave or remain in their S&P 1500. The dependent variable is a dummy variable that equals one for executives leaving the firm during a one (or two) year period and zero otherwise. The main independent variables include the dummy variables of TRI plant opening within 1 or 2 miles of the S&P 1500 firm respectively. All regressions include time-varying Firm Controls (*Total Assets, Leverage, Operating Cash Flow / Total Assets Ratio, Sales Growth*, and *Cash Flow Volatility*), time-varying Individual controls (*Tenure* and *Age*), as well as city-year, industry-year and individual-firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dummy (Leave the Company in One Year)				Dummy (Leave the Company in Two Years)			
TRI Open within 1 Mile	0.0486***		0.0469***		0.0623***		0.0625***	
	(5.1855)		(5.3105)		(4.9967)		(3.3968)	
TRI Open within 2 Miles		0.0481***		0.0806***		0.0370***		0.0540***
		(6.7305)		(7.2835)		(5.3731)		(5.6493)
Firm-year Controls			Yes	Yes			Yes	Yes
Individual-year Controls			Yes	Yes			Yes	Yes
City-Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Individual Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	86,282	86,282	48,169	48,169	73,900	73,900	40,873	40,873
R-squared	0.418	0.418	0.418	0.418	0.418	0.430	0.432	0.431

Table 6: Individual Probability of Leaving and TRI Plant Openings: Interaction with Generalist CEO Index

This table presents OLS regression results of the relation between each CEO's decision to leave or remain in their S&P 1500 firm, while differentiating CEOs by the degree of general human capital. The dependent variables are dummies that equal one for the CEO leaving the company in one/two year(s) and zero otherwise. The main independent variables are (a) the dummy variables of TRI plant opening within 1 or 2 miles of the S&P 1500 firm respectively and (b) the interaction of these TRI plant opening variables with the Generalist CEO Index. The Generalist CEO Index measures the skills of the CEO that are transferrable across firms and industries. All regressions include time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio*, *Sales Growth*, and *Cash Flow Volatility*), time-varying Individual controls (*Tenure* and *Age*), as well as city-year, industry-year and individual-firm fixed effects. Table 1 provides variable definitions. Standard errors are double clustered at the city and year level. Robust t-statistics are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dummy (Leave the Company in One Year)				Dummy (Leave the Company in Two Years)			
TRI Open within 1 Mile*Generalist CEO Index	0.1810***		0.2762***		0.2759***		0.3619***	
	(3.57)		(4.48)		(4.11)		(4.79)	
TRI Open within 1 Mile	0.2648***		0.3230***		0.2582***		0.2403**	
	(3.24)		(3.83)		(4.08)		(2.41)	
TRI Open within 2 Miles*Generalist CEO Index		0.2325***		0.2906***		0.1741***		0.2574***
		(3.58)		(3.62)		(2.92)		(3.05)
TRI Open within 2 Miles		0.1740***		0.2116***		0.1500**		0.1662***
		(3.15)		(4.41)		(2.63)		(3.58)
Firm-year Controls			Yes	Yes			Yes	Yes
Individual-year Controls			Yes	Yes			Yes	Yes
City-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Double Cluster by City and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,813	3,813	2,681	2,681	3,598	3,598	2,518	2,518
R-squared	0.705	0.718	0.751	0.767	0.768	0.770	0.798	0.804

Table 7: CAR around Executives' Turnover Announcement

The dependent variable is the 4-factor CARs around the announcement dates of executive departures from S&P 1500 firms. The dependent variable is the 5-day CARs around the announced departure dates of executives from S&P 1500 firms and the main explanatory variable is a dummy variable that equals one if a TRI plant opened close to the S&P 1500 firm. The explanatory variable of focus is either a dummy variable that equals one if a TRI plant opened within one mile of the S&P 1500 firm (*TRI Open within 1 Mile*) or a dummy variable that equals one if a TRI plant opened within two miles of the S&P 1500 firm (*TRI Open within 1 Mile*). All regressions include firm and year fixed effects. As indicated, regressions (3) and (4) also condition on time-varying Firm Controls (*Total Assets*, *Leverage*, *Operating Cash Flow / Total Assets Ratio, Sales Growth*, and *Cash Flow Volatility*) and time-varying Individual controls (*Tenure* and *Age*). Robust t-statistics clustered at firm level are in parentheses. *, **, *** indicate significance at 1%, 5% and 10%.

	(1)	(2)	(3)	(4)
	4-factor Cumulative Abnormal Return (-2, +2)			
TRI Open within 1 Mile	-0.0194***		-0.0308***	
	(-2.8228)		(-2.8497)	
TRI Open within 2 Miles		-0.0160***		-0.0210***
		(-3.3430)		(-2.5829)
Firm Controls			Yes	Yes
Individual Controls			Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes
Observations	4,365	4,365	4,365	4,365
R-squared	0.268	0.267	0.268	0.270

Table 8: Comparison of Pollution Levels of the Location of Departing Executives

This table compares the pollution levels at the locations of the departing executive's original and new firms. The sample includes executives who left S&P 1500 firms following a TRI plant opening within 2 miles of the firm in the past one year (upper panel) or in the past two years (bottom panel).

Executives leaving S&P 1500 firms with at least one plant opening within 2 miles

Executives who left the S&P 1500 firms with at least one plant opening within 2 miles in the past one year					
Pollutant	New Area	Original Area	Diff	t stat	Obs
PM10 Total 0-10um STP	24.15	24.68	-0.529	-0.591	77
Suspended particulate (TSP)	56.3	47.73	8.574	1.317	15
Carbon monoxide	0.6	0.661	-0.0613**	-2.266	86
Ozone	0.0401	0.0409	-0.000779	-0.855	104
Lead (TSP) STP	0.0313	0.0388	-0.00746	-0.267	22
Benzene	2.116	2.374	-0.258**	-1.722	66
Sulfur dioxide	3.93	4.727	-0.797**	-2.189	66
Toluene	5.748	6.952	-1.204***	-2.552	65
PM10 - LC	22.48	23.92	-1.443**	-2.272	33
Ethylbenzene	0.923	0.933	-0.0101	-0.115	58

Executives who left the S&P 1500 firms with at least one plant opening within 2 miles in the past two years					
Pollutant	New Area	Original Area	Diff	t stat	Obs
PM10 Total 0-10um STP	23.47	24.69	-1.211*	-1.589	93
Suspended particulate (TSP)	50.04	55.79	-5.75	-0.827	13
Carbon monoxide	0.551	0.635	-0.0837***	-3.869	102
Ozone	0.0404	0.0387	0.00169	2.175	125
Lead (TSP) STP	0.0762	0.0414	0.0349	0.588	23
Sulfur dioxide	3.628	5.512	-1.884***	-4.623	63
Benzene	2.278	2.774	-0.496***	-2.557	69
Toluene	6.664	8.523	-1.859**	-2.297	68
PM10 - LC	22.69	22.4	0.29	0.566	51
Ethylbenzene	0.987	1.289	-0.302**	-1.759	58