Internet Appendix to Geography and the Market for CEOs

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This internet appendix provides technical details and additional analysis to the main text.

CEO origin

CEO U.S. state of origin is identified using the following logic and methodology. The data on CEO state of origin are hand collected by utilizing the "People Search" function for the Lexis Nexis online public records database. This search function utilizes data from nationwide bankruptcy records, deeds, motor vehicle registrations, phone records, voter registrations, judgments and liens, and UCC sources to locate and provide information on individuals.[1] Searches are conducted based on data from the Execucomp annual compensation database.

Specifically, for each firm year the CEO of the firm is identified as the executive who is CEO for all or most of the fiscal year (CEOANN="CEO"). First, middle, and last name, as well as the CEO's current age are used as inputs into the Lexis Nexis "People Search". The initial search is conducted on a nationwide basis as to not bias the results toward finding CEOs living in the same states as the firm headquarters. For most CEOs with complete data from Execucomp it is easy identify the CEO. For CEOs with common surnames the search process is more difficult, however, a unique first or middle name can make identifying even those individuals with common surnames quite easy.

If the CEO is not identified using only age and name, then an additional search is performed which includes the state of the firm's headquarters in the search field "previous state." This narrows the search to only those individuals for whom the database has some record of them occupying a residence in the state of the firm headquarters at some point in time.

The output from the search process typically lists both current and past addresses. Since many CEOs list their address as the company's headquarters address, an additional search is performed based on the address of the firm headquarters. For approximately, 800 of the sample CEOs the results are cross-checked with the data on CEO residences collected by Cronqvist, Makhija, and Yonker (2012), which aids considerably in the identification process.

In addition to current and previous addresses, the output from the people search also typically includes birth year, telephone numbers, the first five digits of the individual's social security number, and the year of social security number issuance. The data on the social security number provides a unique method by which to identify a person's state of origin, since social security numbers are non-random. The first three digits are linked to the state of issuance and digits four and five indicate

[1]Note that information that is subject to regulation by the Drivers' Privacy Protection Act, Gramm-Leach-Bliley Act, and other applicable state rules and regulations is not available to researchers unless a "permissible use" is selected. All data collected for this study used the search functionality that only searches unregulated data.

the sequence of issuance. So the first five digits of their social security number determine the state where each CEO in the sample resided at the time his card was issued.

There are two interesting cases in the sample where the CEO's origin may not necessarily be determined by where he obtained his social security card. The first is for foreign-born CEOs. The place where these CEOs obtained their social security numbers may not be where they grew up. However, since data are available on year of birth and the year each CEO obtained their social security card, I create a method for identifying foreign-born CEOs. I assume that a CEO is foreign-born if the age that he obtained his social security card is greater than 21 years of age. Twenty-one years of age is chosen, since it is possible that a U.S.-born CEO may not work until after the completion of college. The age at graduation for most individuals is 21 year of age, at which time most graduates begin work. In order to work, one needs a social security number. Thus, the identification of foreign-born CEOs relies on the assumption that domestic-born CEOs are employed at some point by the time they are twenty-one years of age. Note that this proxy for foreign-born CEOs will underestimate the number of CEOs who are actually foreign-born, but it will mitigate the problem of incorrectly associating foreign-born CEOs with the state in which they first entered the country.

The second interesting case is due to data unavailability. The data on the year in which the social security number was obtained is limited. For all those individuals who obtained their social security card between 1936 and 1952, the issue year is listed as 1936 to 1952. This makes the classification of foreign-born CEOs difficult for the sample of CEOs born prior to 1931, since for these CEOs it is impossible to determine whether or not they obtained their social security number prior to age 22. There are 116 (4.1%) such cases in the sample, which I classify as domestic born, since the bias produced by removing the oldest CEOs seems to outweigh the bias of incorrectly identifying a small percentage of foreign-born CEOs.

Hiring decisions

Hiring decisions are identified as those observations where the CEO of the firm changes from one fiscal year to the next. The hiring event occurs in the fiscal year of the change in CEO. Because data on the CEO for the previous year is necessary in order to identify hiring decisions using this method, observations occurring in 1997 are removed. Therefore, the sample of hires includes the fiscal years 1998 through 2007. In addition, for a few observations the identity the CEO in the previous year is

unknown. This makes it impossible to identify hiring decisions for these observations. Removing these observations reduces the sample to 11,054 observations for which CEO turnover data are available. For the years 1998 through 2007, there are 1,162 (10.5% of firm-year observations) hiring decisions in the sample.

External hires

Following Cremers and Grinstein (2009), internal hires are hires where the CEO joined the company at least two years prior to becoming CEO.[2] External hires are identified using two techniques.

For some CEOs Execucomp provides data on when these CEOs joined the firm. Under the first identification technique, if this data is provided, then a CEO is considered an external hire if he becomes CEO within two years of joining the firm. Of the 1,162 hiring decisions for only 618 (53.2%) of the hiring events, does Execucomp have complete data on when the CEO joined the company. Of these 618 events, 291 (47.1%) are categorized as external hiring decisions.

The second identification method uses Execucomp data on the top five executives of firms. If a hired CEO is one of the top five officers of the hiring firm for more than two years prior to becoming CEO, then he is categorized as internal. If a hired CEO is a top executive of a firm other than the hiring firm within two years of the hiring decision, then he is considered an external hire. If no prior company affiliation is found and a CEO can only be identified as an executive of the hiring firm for two years or less, then he is neither categorized as internal nor external. Using this methodology, an additional 428 hiring decisions are categorized. Of these 428 decisions, 76 (17.8%) are externally hired.

When combining these techniques, I am able to identify whether the CEO was hired internally or externally for 1,046 (90.0%) of the 1,162 hiring decisions. Of these 1,046 observations, for 367 (35.1%) the CEO is hired externally. This percentage of external hires is slightly greater than found in most of the literature,[3] however the literature finds an upward time trend in the decision to hire from outside the company.

[2]Others have used a more narrow definition of external hires. Parrino (1997) and Agrawal et al. (2006) determine inside hires as any hire where the CEO joined the company at least one year prior to becoming CEO.

[3]Cremers and Grinstein (2009) find that 30% of CEOs in their sample of hires between 1993 and 2005 are hired externally. Murphy and Zabojnik (2007) find the percentage of externally hired CEOs in their sample of large U.S. firms is 26.5% during the 1990s and 32.7% from 2000 to 2005. Frydman (2007) finds this figure to be 30.0% during the 1990s. The latter two studies document an upward time trend in the percentage of externally hired CEOs.

Hires external to the industry

The hired CEOs' previous employer and it's industry (by 2-digit SIC code) are extracted from the Execucomp database using the methodology outlined in the description of computing externally hired CEOs. Of the 367 external hiring decisions, I am able to identify the CEO's previous employer in 185 (50.4%) of the cases.

This methodology does not identify the previous employer of CEOs who were employed by smaller public firms and CEOs who were previously employed by private firms, however the identification process yields results similar to Cremers and Grinstein (2009), who find that 60.0% of their sample of external hires come from public firms. Of the 185 hiring decisions, 121 (65.4%) are categorized as external to the industry.[4] Hires are considered within the industry if the two-digit SIC code of the hired CEO's previous and new employer match.

Geographic desirability

The desirability of a location is measured by the average annual percentage of clear days in the location.[5] Although there are many other ways to proxy for location desirability, such as average temperatures or distinguishing between rural versus urban areas, this measure only implies one simple assumption: people prefer sunny to cloudy days. There is likely to be much less heterogeneity in people's preferences for sunshine than the other proposed measures of geographic desirability.

The data on the percentage of clear days are from the National Climatic Data Center (NCDC), which records city-level data on weather patterns. Most of the data are recorded at local airports or National Weather Service weather stations and are based on 50 or more years of observations. For the percentage of clear days per year in the city of the firm headquarters ($FirmHQPctClear$), data from the NCDC is matched with the city of firm headquarters. For firms headquartered in cities not covered by the NCDC, data is used from a covered city that is close to the firm's headquarters. For example, the headquarters of Wal-mart Stores is in Bentonville, Arkansas. This city is not covered by the NCDC, thus data from Fort Smith, Arkansas is utilized, which is approximately 85 miles south of Bentonville.

[4]Cremers and Grinstein (2009) find that 45 percent of external hires come from outside the industry, however their definition from within industry is more broad. They define an externally hired CEO to be within the same industry using the Fama French 10 industry group classification. When they use the Fama French 48 industry group classification they find that 61 percent of external hires are from outside the industry.

[5]Roback (1982) shows that the number of clear days in the city of employment is positively priced by U.S. workers using the hedonic price method of Rosen (1974).

Discussion of baseline turnover model

The baseline model specification is similar to that of Kaplan and Minton (2006), but instead of using the S&P 500 as the market return, the CRSP value-weighted index is utilized. The literature on CEO turnover has shown that poor stock market performance increases the likelihood of CEO turnover (Warner, Watts, and Wruck, 1988). Firm stock market performance is controlled for by decomposing annual stock market returns into the firm's return in excess of its industry's return ($FirmExRet$), the firm's industry's return in excess of the market return ($IndExRet$), and the buy-and-hold return on the market ($MktRet$), as in Kaplan and Minton (2006). CEO retirement is controlled for by including a dummy variable that equals one if the firm's CEO in year $t-1$ is 60 years of age ($Age60Dum$) or older. Weisbach (1988) shows that firms with greater board independence have higher CEO turnover, for this reason $PctOutsideDir$ is included in the baseline specification.

Discussion of baseline compensation model

CEO compensation is measured using total annual compensation from S&P's Execucomp database ($TotalComp$), which includes salary, bonuses, restricted stock grants, and the Black-Scholes value of stock options grants. Compensation is converted into 2003 dollars, by adjusting these amounts using the GDP deflator. Regressions use the natural logarithm of this compensation measure, since executive compensation is right-skewed and because the previous literature has shown that executive compensation follows a power function with regard to firm size (See Gabaix and Landier (2008) for a complete list of references on the relationship between executive compensation and firm size.)

Included in the benchmark model of CEO compensation are proxies for firm size, growth opportunities, performance, and firm risk. It is well documented that executive compensation increases with firm size. Size is measured with the natural log of the book value of assets computed in 2003 dollars ($Assets$). Prior empirical work documents a positive relationship between growth opportunities and executive compensation (Smith and Watts, 1992). Growth opportunities are measured by Tobin's Q (Q). Firm performance is measured using both accounting and a market measures, which are expected to be positively related to CEO compensation. ROA is operating income before depreciation over lagged assets. The expected sign on the coefficient on firm risk is unclear as theoretical models make competing predictions on the sign of this variable. Firm risk is measured by the standard deviation of daily stock market returns over the fiscal year ($StockVol$).

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Table IA.1: Firm location and CEO origin

The table reports the joint distribution of CEO state of origin and the state in which the firm is headquartered for the sample of 12,974 firm-year observations of non-regulated S&P 1,500 firms covered by the Execucomp database for the years 1997 through 2007. CEO state of origin is defined as the state in which the CEO's social security card was issued. Foreign-born CEOs are defined as any CEO, who received his social security card after 21 years of age. Firm location is the state of the firm's headquarter location during the observation year and is computed using data from Compustat and Compact Disclosure. State abbreviations follow U.S. postal code abbreviations and the abbreviation FB is used to indicate foreign-born CEOs.

| | Firm headquarters Location | | |

Table IA.2: Performance and firm value

This table examines the relationship between accounting performance (columns 1 through 3) and firm value (columns 4 through 6) and local CEO hires using the panel of firm-year observations composed of non-financial, non-utility firms from 1997 through 2007. The dependent variable is return on assets (ROA) in columns 1 through 3 and Tobin's Q, measured as market-to-book value, in columns 4 through 6. The variable of interest is *LocalCeo*. Firm level control variables are lagged by one year and are defined in the Appendix. Each model includes firm and industry-year fixed effects. The sample in columns 3 and 6 are limited to firm-year observations where externally hired CEOs run the firm. The table reports coefficient estimates and standard errors (in parenthesis) from OLS regressions. Also reported are the number of observations used in the estimation as well as the adjusted-R^2. The table reports White (1980) heteroskedasticity-consistent standard errors, clustered at the industry-level. Significance levels are denoted by c, b, a, which correspond to 10%, 5%, and 1% levels, respectively.

	Return on assets			Firm value		
	(1)	(2)	(3)	(4)	(5)	(6)
LocalCeo	0.002	0.005	-0.023	0.048	0.096^b	0.063
	(0.003)	(0.004)	(0.016)	(0.040)	(0.047)	(0.216)
Assets	-0.035^a	-0.038^a	-0.044^a	-0.947^a	-0.992^a	-1.117^a
	(0.002)	(0.002)	(0.005)	(0.027)	(0.031)	(0.069)
DividendDum	-0.003	0.000	-0.006	0.056	0.053	0.185
	(0.004)	(0.004)	(0.010)	(0.046)	(0.051)	(0.138)
RD	-0.249^a	-0.200^a	-0.221^a	3.674^a	3.284^a	2.160^a
	(0.021)	(0.022)	(0.038)	(0.259)	(0.284)	(0.514)
Capex	0.014	0.002	-0.097^b	-0.195	-0.413^c	0.735
	(0.017)	(0.018)	(0.042)	(0.212)	(0.238)	(0.578)
CapIntense	-0.046^a	-0.044^a	-0.025^a	-0.020	-0.055	-0.227^c
	(0.004)	(0.004)	(0.009)	(0.047)	(0.054)	(0.127)
SalesGrwth	0.011^a	0.016^a	0.027^a	0.069^b	0.081^b	0.121
	(0.003)	(0.003)	(0.005)	(0.032)	(0.036)	(0.074)
StockRet	0.011^a	0.008^a	0.010^a	0.224^a	0.223^a	0.270^a
	(0.001)	(0.001)	(0.003)	(0.016)	(0.017)	(0.035)
Q	0.018^a	0.019^a	0.011^a			
	(0.001)	(0.001)	(0.002)			
Roa				1.181^a	1.220^a	0.463^c
				(0.112)	(0.128)	(0.263)
InsideHire		0.008^b			0.037	
		(0.004)			(0.049)	
log(CEOAge)		0.004			-0.007	
		(0.010)			(0.133)	
FemaleCeo		-0.010			0.031	
		(0.010)			(0.136)	
CeoGAI		-0.006^a			-0.053^b	
		(0.002)			(0.023)	
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Sample of hires	All	All	External	All	All	External
$AdjR^2$	0.697	0.700	0.716	0.677	0.684	0.637
N	12,342	10,589	3,039	12,339	10,586	3,040