The relative-age effect and career success: Evidence from corporate CEOs

Qianqian Du\textsuperscript{a}, Huasheng Gao\textsuperscript{b,}\textsuperscript{*}, Maurice D. Levi\textsuperscript{c}

\textsuperscript{a} Shanghai Advanced Institute of Finance, Shanghai Jiao Tong University, China
\textsuperscript{b} Nanyang Business School, Nanyang Technological University, Singapore
\textsuperscript{c} School of Business, University of British Columbia, Canada

\textbf{Abstract}

This paper finds that the number of CEOs born in June and July is disproportionately small relative to the number of CEOs born in other months. Our evidence is consistent with the "relative-age effect" due to school admissions grouping together children with age differences up to one year, with children born in June and July disadvantaged throughout life by being younger than their classmates born in other months. Our results suggest that the relative-age effect has a long-lasting influence on career success.

\section{Introduction}

There is mounting empirical evidence that children born right before the school admission date are at a disadvantage as a result of being up to a year younger and less physically and intellectually developed than classmates in their school grade. As a result, these children are selected for fewer leadership roles in school activities in their beginning school years. For example, other things being equal, children born in the months right before the cutoff date of school admission are less likely to be a sports team captain or be chosen for a speaking part in school plays. This well-documented condition has become known as the "relative-age effect" or the "birth-date effect".\textsuperscript{1}

\textsuperscript{*} Correspondence to: 53-81A-06, Nanyang Avenue, Singapore 639798, Singapore. Tel.: +65 6790 4653; fax: +65 6791 3697.
E-mail address: hsgao@ntu.edu.sg (H. Gao).

\textsuperscript{1} For sports, see Glamser and Vincent (2004) and Esteva et al. (2008) for example; for academic performance, see Bedard and Dhuey (2006) and Angrist and Krueger (1991) for example.
in this area, "...school entry cutoffs induce systematic within grade variation in student maturity, which in turn generates differences in the relative age effect, where younger children born in June and July are 4%–11% percent more likely to be high school leaders"; (Dhuey and Lipscomb, 2008). Kuhn and Weinberger (2005) also showed that students who acquired leadership skills during high school are more likely to have managerial positions 11 years later. Our paper is the first to investigate the importance of the relative-age effect in the context of selecting corporate CEOs.

2. Empirical analysis

In order to investigate the possible presence of a relative-age effect among high achieving US CEOs we collect birth-date information for the CEOs of S&P 500 companies between 1992 and 2009. Based on ExecuComp database, we first identify the names of the CEOs, and then search for their birth-date in the Biography Resource Center, which provides comprehensive biographical information of notable individuals in business, art, government, and other endeavors. We are able to identify birth-date information of 375 CEOs.

Table 1 shows the number of CEOs sorted by birth month. We see 45 of the 375 S&P 500 CEOs were born in June and July, representing only 12% of our sample CEOs. In determining the statistical significance of the number of CEOs born in June and July, we define a dummy, junelyJulyCEO, as one if the CEO is born in June or July and zero otherwise. With the null-hypothesis that the population birth number is uniformly distributed throughout the year, we conduct a two-tail t-test versus the null that junelyJulyCEO = 16.71%. The null is rejected at the 1% level.

In actual fact US births follow a seasonal pattern rather than a uniform distribution (Nunnikhoven, 1992). In order to more precisely judge the relevance of relative-age effects, we further compare the proportion of CEOs born in June and July to the proportions of the US population born in these two months.2 In the US, 16.71% of the population is born in June and July, which is slightly higher than 16.71% with a uniform distribution. It is apparent that the result that fewer CEOs are born in June and July is not because of the seasonality of births. Indeed, when we re-do the t-test with the null hypothesis: junelyJulyCEO = 16.91%, the null hypothesis is rejected at the 1% level.3

Further examining June and July separately, we find that 6.13% (22) of sample CEOs are born in June, which is significantly smaller than the uniformly-distributed birth rate \(30/365 = 8.22\%) or the actual US birth rate in June (8.16%). Similarly, 5.87% (23) of sample CEOs are born in July, significantly smaller than the uniformly-distributed birth rate \(31/365 = 8.49\%) or the actual US birth rate in July (8.75%).4

To the extent that most states began to have state-mandated cutoff dates for school entry after 1960, CEOs born in 1955 or later are more likely to be affected by admission cutoff policy. As a robustness check, we examine the subsample of 43 CEOs born in 1955 or later. Out of these 43 CEOs, only one CEO is born in June and two CEOs are born in July: the number of CEOs is distinctly underrepresented in June and July.

3. Conclusion

This paper contributes to a growing literature about the relative-age effect, whereby younger children born in June and July are at a disadvantage versus their older classmates born in other months in sports and academics. Based on a sample of S&P 500 CEOs we document that CEOs born in June and July are underrepresented. Our study extends the relevance of relative-age effects from school to the world of business, and suggests that relative-age effects have a long-lasting impact on career success.

Acknowledgments

We wish to thank the Biography Resource Center for providing the database from which we obtained the birth-date data, the anonymous referee, Lei Zhang, Daniel Wolfenzon (AFAs discussant), participants at the 2009 China International Finance Conference, the 2011 American Finance Association Annual Conference, and members of the Finance Workshop of the Sauder School of Business, University of British Columbia, for insightful comments. Generous financial assistance was provided by the Social Sciences and Humanities Research Council of Canada. An earlier version of this paper was circulated under the title of “Born Leaders: The Relative-age Effect and Managerial Success”.

References


---

2 We collect the information of monthly births of the US population during 1917–1968 (the range of CEOs' birth year in our sample) from the annual Vital Statistics of the United States, Natality Series, Volume 1, published by the Centers for Disease Control and Prevention (http://www.cdc.gov/nchs/products/vsus.htm).

3 We do not attempt to construct a regression model that controls for other characteristics that might influence the likelihood of a person attaining a CEO position because we would need the birth information for a control group, and this information cannot be found in any public database.

4 There are 32 CEOs born in August, which is not significantly different from the uniform-distributed birth rate or the actual US birth rate in August. This is consistent with some August-born children being held back for school entry, making August-born children among the youngest and oldest in class.


