

# Gender Differences in Executive Departure

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## Abstract

The underrepresentation of women in top-management positions has received substantial attention within the economics literature. Studies focusing on executive departure largely show that female executives exhibit higher departure rates. However, existing studies do not test whether this difference is explained by differences in ability. This study uses exogenous changes in firm performance to examine the potential role of ability in generating differential departure rates. I show that, following industry-wide contractions, the overall departure rate for female executives increases by approximately 2 percentage points while no change is observed in the departure rate for male executives. The data show that ability differences do not drive the difference in departure rates and also suggest that the gap is not explained by differences in fertility, early retirement, the glass cliff, differences in external hire rates, or female start-ups. I argue that one remaining channel that is consistent with the observed gender difference in departure rates is misplaced blame (e.g., attribution bias) on female executives.

*Keywords: gender, executive departure, corporate governance*

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# 1 Introduction

Over the past fifty years, the U.S. has seen substantial progress in narrowing the gap in the representation and compensation of women in the labor market (Bailey and DiPrete, 2016). However, a pervasive gender gap still persists at the top of the income distribution (Guvenen et al., 2014). One area that is especially conspicuous is the gap among top executives at publicly traded firms. A large body of research documents that women are generally paid less than their male counterparts and are underrepresented in top management positions.<sup>1</sup> Many explanations have been put forth to explain the underrepresentation of women at this level. Explanations include gender differences in preferences (e.g., fertility and family ties) and ability; discrimination and organizational barriers such as masculine work culture and exclusion from social networks (Kark and Eagly, 2010); and, more recently, it has been argued that behavioral differences such as differences in willingness to compete and confidence (Niederle and Vesterlund, 2007) as well as differences in negotiation (Babcock and Laschever, 2003) contribute to the gap.

While these are certainly important components to the underrepresentation of women in top management positions, they tend to focus only on differences in entry. It is not enough, however, to facilitate women's entry; we must also focus on their retention. A smaller set of studies focuses on exactly that (Becker-Blease et al., 2016, 2010; Gayle et al., 2012; Guest, 2016). Overall, the results consistently demonstrate that female executives exhibit higher departure rates than male executives. While the existing papers explore a variety of factors that may be correlated with the gender gap in departure, none of the studies provide evidence that allows us to rule out the simplest explanation for this observed difference: gender differences in ability.

This paper examines whether the observed gender differences in executive departure can be explained solely by gender differences in ability. To address this, I construct an instrument for firm performance that strips away the ability component and examine

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<sup>1</sup>See for instance Kark and Eagly (2010) or Blau and Kahn (2016) for review.

whether the gender gap in departure responds to exogenous changes in firm performance.

This instrument is constructed using industry mean performance (with the own-firm removed) to instrument for firm performance, as is done in the relative performance evaluation literature (Fee et al., 2015; Guay et al., 2014; Jenter and Kanaan, 2006, 2015), and is used to estimate the effect of firm performance on gender differences in departure probability. Given that this instrument is exogenous from executive ability within a firm, it allows identification of whether gender differences from departure are coming from factors outside of ability.

Using matched employer-employee data of S&P 1500 executives, and focusing primarily on industry contractions, the results show that following an exogenous decline in firm performance, the gender gap in executive departure rates increases by around 2 percentage points. Further, there is no effect on the departure rate for male executives, suggesting this increase in the departure rate gap is driven solely by an increase in female departure rates. Given a base departure rate for female executives of 13.6%, and a gender gap in departure rates of 2.2 percentage points, this amounts to approximately a 15% increase in the departure rate for female executives and a 90% increase in the departure rate gender gap following industry contractions.

Because the gender difference in departure rates is affected by exogenous changes in firm performance, this shows that the gender gap in executive departure cannot be explained by women's under performance alone. As such, it is not sufficient for policies focused on closing the gender gap in departures to simply target improving women's leadership skills. Instead, policies should target the underlying mechanisms that are driving the gender gap.

Given this result, the remainder of the paper explores alternative mechanisms and provides compelling evidence to rule them out. Specifically examined are the following: gender differences in fertility, early retirement, external hiring, the glass cliff (whereby

women may be in more tenuous positions to begin with), and female start-ups. Supported with findings from the literature, in addition to the data, it is clear that none of these potential mechanisms is likely to be driving the observed treatment effect.

One may ask, if none of the above mechanisms are driving the effect, what could remain? One possibility that remains consistent with the results in this paper is the conjecture of gender differences in misplaced blame.<sup>2</sup> While I am unable to identify this mechanism with the existing data, this mechanism would also align with existing literature that shows female executives' pay decreases more than that for male executives following negative firm performance, whereas the opposite pattern emerges following positive firm performance (Selody, 2010; Albanesi et al., 2015).

The rest of this paper proceeds as follows: in section 2, I provide an overview of the executive labor market, and discuss related literature on executive departures. In section 3, I discuss the data used in this study and how variables are coded. In section 4, I discuss my methodology. Section 5 presents the main results, while section 6 explores potential first-order mechanisms for the observed treatment effect. In section 7, I discuss blame as an alternative explanation for gender differences in departures. Finally, section 8 concludes.

## 2 Related Literature

### 2.1 The Executive Labor Market

Before discussing the details of the gender gap in executive departure rates, we must first define what constitutes a top executive position. Top executives are the highest ranked executives in a company and belong to the top management team (TMT) within

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<sup>2</sup>Examples of misplaced blame include attribution bias in which the board misattributes poor firm performance from industry shocks as being due to ability when the executive is female. Another possibility could be self-attribution bias in which female executives more frequently misattribute failures that are outside their control to internal factors.

the organization. As defined in (Castanias and Helfat, 1991), and in (Hambrick and Mason, 1984), a TMT consists of the CEO, and the senior executives that report directly to the CEO. These positions are typically at or above the level of vice president, including titles such as CFO, COO, etc.

According to Murphy (1999), the majority of top executive positions have pay packages with four distinct components in common. These components are a minimum salary, a performance-based yearly bonus, the option to purchase stocks at a discounted rate – which is particularly prevalent among U.S. executives, often comprising more of an individual executive’s total compensation than their minimum salary – and an incentivization scheme for encouraging long-term performance. Furthermore, unlike typical at-will employees, who comprise the low- and mid-level ranks of a company, top executives will usually have formalized contracts, lasting a certain number of years and stipulating the details of the above components, as well as potential severance packages.

Given these characteristics, particularly the existence of a formalized contract with severance, these positions will prove much more resilient to downsizing in times of economic downturn. According to Cameron et al. (1993), downsizing may encompass eliminating individuals or work assignments, organizational restructuring, partial dissolution, and full dissolution of the company. As discussed in Krishnan and Park (1998), when downsizing occurs, top management teams have the tendency to replace executives perceived as underperforming, rather than simply eliminating their positions entirely. As such, the reasons behind a top executive’s dismissal are more likely to be focused on the perception of the difference in their ability versus the abilities of their peers than they are to be focused on the simple redundancy of her position. This is perhaps self-evident, given that TMT positions are necessary for the operation of a firm regardless of size. As such, they cannot easily be made redundant.

## 2.2 Executive Departure

A number of factors have been shown to affect executive departure. Most obviously, it has been documented that executive departure is linked to the executive's performance – e.g., [Homroy \(2015\)](#), [Guay et al. \(2014\)](#). Involuntary departures have also been attributed to the adaptability of executives to long term industry shocks, such as changes in the industry concentration, with generalists having lower involuntary departure following such shocks than other executives ([Guay et al., 2014](#)).

Gender is also contributing factor to executive departure, with female executives exhibiting both higher voluntary and involuntary departure rates ([Becker-Blease et al., 2010, 2016](#); [Gayle et al., 2012](#); [Guest, 2016](#)). The gender gap in departure rates tends to be largest in smaller firms, firms with smaller boards, and firms with fewer independent directors ([Becker-Blease et al., 2010](#)). However, the effect is not necessarily limited to such firms. In fact, the gender difference in departure rates has significant effects on the representation and compensation of women in executive positions ([Gayle et al., 2012](#); [Becker-Blease et al., 2016](#)). This effect is great enough that [Gayle et al.](#) finds that the commonly documented gender difference in executive pay can be largely explained by these differences in executive departure.

Concordantly, researchers have been interested in exploring whether improving female representation among board members may help reduce this departure rate gap. It is unclear, however, whether increases in female leadership helps to attenuate the gender gap in departure rates. While some evidence suggests increased female representation on the board of directors leads to a decrease in the gender gap in departures ([Becker-Blease et al., 2010, 2016](#)), conflicting findings in [Guest \(2016\)](#) suggest that improved female leadership at the CEO or board level does not reduce the gender gap in departure. While it is important to identify factors that may help reduce the gender gap in departures, a first order question is whether this gap in departures can be rationalized by differences in ability alone. If the answer is 'yes,' then effecting organizational

change to reduce female departure rates is covering the hole rather than repairing it. Instead, research should focus on identifying factors such as systemic and institutionalized pressures which may be impacting women's ability.

To my knowledge, this is the first study to explore whether the observed gender differences in departure can be fully explained by gender differences in ability. Along with addressing this, my study contributes by investigating other, previously unexplored mechanisms that may contribute to gender differences in departure.

## 3 Data

### 3.1 Data Overview

This study uses data from Standard and Poor's Execucomp database of the S&P 500, S&P MidCap 400, and S&P SmallCap 600 companies. Execucomp is an annual dataset that is compiled by S&P Capital IQ using each included company's annual DEF14a proxy statement filed with the SEC. Execucomp contains compensation data on up to fifteen of the top executives within each firm in a given year, as determined by the executives' annual total compensation.<sup>3</sup> Commonly seen top executive officer titles within the sample include CEO, CFO, COO, President, Executive VP, and chairman of the board. This dataset contains unique executive and firm identifiers, allowing executives to be tracked if they move from one Execucomp company to another. In addition to providing information on annual executive compensation, Execucomp provides details on executive gender, title, and age. I merge Execucomp with Compustat data for more detailed firm level information and with data from the Center for Research in Security Prices data for annual stock returns values, my primary measure of firm performance.

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<sup>3</sup>DEF 14a SEC proxy statements require the firm to list the CEO, CFO, and top 3 non-CEO non-CFO executive officers (determined by total compensations) that were employed as of the end of the fiscal year. Firms also must include up to 2 non-CEO, non-CFO executives that would have been listed had they been employed by the end of the fiscal year. Some firms choose to report more executives than the number required by the SEC.

I restrict the sample to only include data from 1998 to 2015 due to the low number of female executives prior to 1998 and incomplete data from 2016 forward. As in [Selody \(2010\)](#), observations with missing data or negative observations for total compensation are dropped from the sample. Also restricted from the sample are executives with missing age data, a reported current age below 18, missing gender data, firms that have missing data on annual stock returns, firms with missing data on the number of employees, and all firms whose industry is classified as “other” per the Fama-French 48 industry classifications ([Fama and French, 1997](#)). Finally, in order to identify tenure for the executives in the sample, executives that appear as a top executive within the firm prior to 1997 are excluded. Tenure is measured as the number of years in which an executive appears among the top executives at the firm, as defined by the firms’ SEC proxy statement.<sup>4</sup> Doing this allows for the identification of tenure for all executives in the sample without incurring any left censoring of this variable. One caveat of this approach is that it creates a measure of tenure that does not identify an executive’s overall tenure as an employee within the firm, but rather their tenure as a top executive within the firm.

The final sample consists of 84,998 executive-firm-year observations. Within this sample, there exist 2,278 unique firms, 19,626 unique executive-firm pairs, and 18,504 unique executives. Thus, only a small portion of executives within the sample appear at multiple firms. Focusing on female executives, there are 6,846 executive firm-year observations with 1,805 unique female executive-firm pairs and 1,717 unique female executives. Thus, female executives comprise approximately 8.05% of the executive-firm-year observations, 9.2% of the executive-firm pairs, and 9.3% of the unique executive observations. The share of female executives observed in the sample is higher than the 4.5% observed in [Becker-Blease et al. \(2010\)](#); however, representation of women in top executive po-

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<sup>4</sup>Execucomp provides start date information for a subset of executives in the sample; however, this variable is often not reported. As a robustness check, I repeat the primary analysis including executives with earlier start dates. The results are largely unchanged by relaxing this restriction. See the robustness checks subsection in section 2.5.



sitions has increased over time.<sup>5</sup> Looking instead at studies using slightly more recent data, we can see that 9% is quite comparable to that observed in other samples using a more similar date range. For instance, [Selody \(2010\)](#) finds between 7 to 8% of top executives were female between 2004 and 2008.

### 3.2 Identifying Executive Departures

While Execucomp includes some departure dates in their data, the reporting of this information was never mandatory. Furthermore, Execucomp stopped collecting this information entirely after 2009. As a result, departure date information in Execucomp is largely incomplete prior to 2009 and nearly non-existent following 2009 ([Stefanescu et al., 2015](#)).<sup>6</sup> Thus, I construct an alternative measure of departure using the method described in [Guay et al. \(2014\)](#). An executive is flagged as having departed firm  $f$  in year  $t$  (DEPART) if the following two conditions are met: they are not listed as an executive at firm  $f$  for years  $t + 1$  and  $t + 2$ ; and the executive did not lose their job as a result of the firm shutting down.

The primary goal of this study, however, is to identify which factors may be contributing to differences in involuntary departure rates between male and female executives. Unfortunately, identifying involuntary departures poses its own set of challenges. Reasons behind executive departures are largely kept private, and — except under extreme circumstances — all departure events are generally referred to as resignations, without indication as to whether they were voluntary. Methods of coding involuntary departures in previous studies range from treating all departures as voluntary — unless they can be identified with a specific news event — to the other extreme: coding all departures as involuntary, unless given strong evidence to suggest otherwise. Given the sparse nature of news reports on executive resignation events, many researchers that rely on using

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<sup>5</sup>Focusing on my sample, only 4.6% of executives were female in 1998 compared to over 8% by 2008.

<sup>6</sup>Execucomp also provides reasons for departure on the executives they flag as having departed. These categories are quite coarse; they are limited to “deceased,” “retired,” “resigned,” and “unknown.”

news reports employ some version of the [Parrino \(1997\)](#) algorithm that dictates how to handle departure events for which no news article exists. One shortcoming of relying on news articles to categorize turnover is that news reporters may be subject to biases, as argued in both [Fee et al. \(2015\)](#) and [Jenter and Lewellen \(2010\)](#). In particular, [Fee et al. \(2015\)](#) argues that reports may be more likely to suggest a resignation was forced when the firm performance is negative, regardless of the actual reason for departure.

Potential biases on behalf of news reporters can become even more problematic when introducing the additional dimension of gender. For instance, a media analysis focused on news coverage of CEOs during times of transition found that the framing of stories is much more likely to attribute blame to the CEO when she is female ([The Rockefeller Foundation and Global Strategy Group, 2016](#)). In this instance, we have to be concerned not only with reporters having a greater inclination to report forced resignation when firm outcomes are negative; we must also be concerned with how any inherent gender biases on behalf of the reporters shade their news reports.

In light of potential biases that can be introduced through relying on media reports, I instead rely on a modified method from [Fee et al. \(2015\)](#), in which an executive is flagged as having “involuntarily” departed (INVOLUNTARY) if they satisfy the conditions for having departed (DEPART) and they do not reappear as a top executive at another Execucomp firm within two years of departure.<sup>7</sup> This measure attempts to rule out executive turnover from voluntary job changes by executives (e.g., lateral or upwards movements). This measure is not able to rule out executives that voluntarily leave the labor market. As such, in section 2.6 of this chapter, I explore the possibilities of fertility or early retirement. As an additional robustness check, I also construct a measure, INVOLUNTARY2, that includes the same restrictions as INVOLUNTARY, but does not mark as involuntarily departed the small set of executives that Execucomp has identified

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<sup>7</sup>The differences between using a one year and two year restriction for reappearances are small (refer to table 2.1). Using 2 years is a slightly more conservative definition, as it allows for any friction executives may experience in job transition and reduces the likelihood that executives taking leave for fertility reasons will be marked as departed.

as having departed due to being retired or deceased.<sup>8</sup>

### 3.3 Firm Performance

In order to identify gender differences in executive departure that are exogenous from executive ability, I construct an instrument for firm performance. For a given firm  $f$ , the instrument is equal to the mean performance of all firms in firm  $f$ 's industry with firm  $f$  removed from the average. Thus, this instrument represents the average industry performance for firm  $f$ 's peers defined at the industry level. Industries are defined using the Fama-French 48 industry classification (Fama and French, 1997).

Firm performance is measured using the firm's annual stock return as retrieved from CRSP. Stock returns are one of the most commonly used performance measures in studies of executive compensation and departure – e.g., Becker-Blease et al. (2010), Fee et al. (2015), Guest (2016), Jenter and Kanaan (2015). Unlike accounting-based measures, stock returns are more unpredictable and exhibit less mean reversion. As such, when using them as a measure, we do not need to account for lagged values of performance in our models. Stock returns are also an attractive performance measure because previous studies have shown that they are more predictive of executive turnover than accounting-based measures (Fee et al., 2015; Jenter and Kanaan, 2015). To adjust for the fact that stock return data has substantial outliers, I apply a log transformation.

### 3.4 Summary Statistics

In this section, I explore the differences and similarities between the personal and firm attributes of executives by gender. Perhaps unsurprisingly, male and female executives differ in their average age, length of tenure as an executive, and rank within their firm as determined by relative compensation. As seen in table 2.1, male executives are

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<sup>8</sup>I choose to use INVOLUNTARY instead of INVOLUNTARY2 as my main measure of departure, given the possibility for bias if the missing data on departures in Execucomp is non-random.

Table 1: Summary Statistics

	Mean Female	Mean Male	Diff.
Age	54.17	57.36	3.20***
Tenure as Top Executive (Years)	6.29	7.13	0.84***
Rank (1 is highest)	3.80	3.19	-0.61***
Depart (%)	0.15	0.13	-0.02***
Involuntary (%)	0.15	0.12	-0.02***
Involuntary2 (%)	0.14	0.11	-0.03***
Annual Stock Return (%)	0.17	0.18	0.01
Number of Employees (Thousands)	19.69	18.46	-1.22*
Industry Downturns (%)	0.27	0.26	-0.00
N (Executive-Firm-Year)	6848	78152	
Unique Executives	1717	16787	

Notes: Tenure is measured as the number of years the executive is listed as a top executive at the firm. Rank is the executives relative rank within the firm as determined by total compensation. An executive is listed as having departed in a given year if they do not return to the firm for two consecutive years. An executive is listed as Involuntary in a given year if they satisfy the criteria for depart and do not reappear at any Execucomp firm within two years. An executive is listed as Involuntary2 in a given year if they satisfy the criteria for Involuntary and they are not marked as retired or deceased. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

older, have longer tenure as a top executive, and are higher ranked than female executives in the sample. These results are largely consistent with findings in previous studies – e.g., [Bertrand and Mullainathan \(2001\)](#). Interestingly, while earlier studies found that female executives were more likely to be employed at smaller firms ([Bertrand and Mullainathan, 2001](#)), I find that female executives work at slightly larger firms.<sup>9</sup>

Importantly, however, there are not striking differences by gender in firm performance. While average annual returns seen by female executives is slightly lower than that seen by male executives, this difference is not statistically significant, suggesting that there are not substantial differences in the success of firms within the sample that employ male and female executives. Additionally, male and female executives do not experience different exposure rates to industry downturns.

<sup>9</sup>In addition to controlling for the number of employees to address the gender differences I observe in firm size, in my robustness checks I run a regression restricting the sample only to those firms that report between 4 to 6 executives in Execucomp (the most commonly observed range). The results largely remain unchanged.

Turning to the different measures of departure used in this study, there is a gender gap in executive departure as expected, given existing literature. The departure rate for female executives is approximately 3 percentage points higher than that for male executives. While an average departure rate of around 13% may seem high, this is quite close to other studies that look at CEO or executive departure. For instance, [Jenter and Kanaan \(2015\)](#) finds an annual CEO departure rate of 10.25% in their 1993-2009 sample; [Guay et al. \(2014\)](#) finds an annual CEO departure rate of 12% in their 1992 to 2008 sample; and [Fee et al. \(2015\)](#) finds an 11% annual CEO departure rate in their 1991-2007 sample. Keeping in mind that non-CEO executive departure rates tend to be somewhat higher than CEO departure rates, an average departure rate of 13% for top executives seems consistent with earlier studies.<sup>10</sup>

The difference in DEPART and INVOLUNTARY gives the unconditional reappearance rate for executives in the sample. The fact that this value is 1% suggests that only a small portion of the executives in the sample that depart reappear again at another Execucomp firm.<sup>11</sup> In fact, conditional on having departed, only around 7% of executives secure a new position with an Execucomp firm within two years of departure. While a conditional reappearance rate of 7% (or an unconditional reappearance rate of 1%) seems quite low, this is consistent with findings in existing studies. [Gayle et al. \(2012\)](#) finds an unconditional reappearance rate of 2% among top executives, while [Fee et al. \(2015\)](#) finds the CEO reappearance rate as a top executive conditional on having departed is 5.46%.

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<sup>10</sup>This study's departure rates are not comparable to [Becker-Blease et al. \(2010\)](#) due to the fact that they did not account for the missing departure data in Execucomp and thus only looked at Execucomp reported departures.

<sup>11</sup>There are no significant gender differences in the likelihood of reappearing at another Execucomp firm conditional on having departed. 7% of departing male executives reappear and 6.2% of departing female executives reappear. These differences are not significant according to a two-sided t-test ( $p=0.29$ ).

## 4 Methodology

Before discussing the details of the gender gap in executive departure rates, we must first define what constitutes a top executive position. Top executives are the highest ranked executives in a company and belong to the top management team (TMT) within the organization. As defined in (Castanias and Helfat, 1991), and in (Hambrick and Mason, 1984), a TMT consists of the CEO, and the senior executives that report directly to the CEO. These positions are typically at or above the level of vice president, including titles such as CFO, COO, etc. Unlike low-ranked employees and even middle management that can be downsized and their work reassigned to other employees, top executive positions are not disposable or interchangeable in the same sense. As such, dismissal decisions of TMT executives are unlikely to be due to cost-cutting by the board and are instead based on observed performance of top executives, as measured via firm performance.

Therefore, one method to identify whether the observed gender differences in executive departure are coming solely from differences in ability, is to strip away the ability component of firm performance and see if the exogenous portion of firm performance is still correlated with the departure of executives. To do this, I rely on the empirical framework created by the relative performance evaluation literature — i.e., Holmström (1982), Jensen and Murphy (1990), Bertrand and Mullainathan (2001), Jenter and Kanaan (2006).<sup>12</sup>

Suppose that the performance for firm  $f$ ,  $y_f$ , is a function of the firm's ability (and thus the top management team's ability)  $a_f$ , a firm-specific noise parameter  $u_f$ , and an

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<sup>12</sup>Under the relative performance evaluation (RPE) theory, optimal incentive schemes should depend only on the ability and/or actions of executives; any variation in industry level performance should be filtered out, and thus should not affect incentives. Papers focused on testing RPE construct instruments for firm performance that are exogenous from ability and look at how changes in instrumented firm performance affect various measures of executive incentives (e.g., bonuses, dismissals, etc.).

industry wide noise parameter  $o$ , represented as follows.

$$y_f = a_f + o + u_f$$

If ability is the only factor leading to gender differences in departure, variation in firm performance that occurs at the industry level (i.e., variations in  $o$ ) are exogenous from ability for any given executive within the firm and thus should not lead to different performance evaluations for male versus female executives. In other words, industry performance (with the own-firm removed) should be orthogonal to the interaction between gender and involuntary executive departure within a firm. Note that this method relies on the assumption that the firm's actions do not affect the performance of industry peers; [Jenter and Kanaan \(2015\)](#) uses the same data set that I do and finds that this assumption holds.<sup>13</sup>

Given that we see a higher departure rate among female executives, I am especially interested in what happens to the gender difference in departures following contractions firm performance. Looking at the relationship between departures and a continuous measure of exogenous performance interacted with gender will show whether there is a stronger relationship between exogenous performance and departures for females versus males. This measure will not, however, directly show whether there are higher departures for females relative to males as a result of negative exogenous changes in performance. As such, much of the analysis in this study focuses on the relationship between departures and a binary measure of exogenous performance. By allowing the binary measure of performance to equal one only when the annual return is negative, it is possible to identify whether we specifically observe an increase in the gender difference

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<sup>13</sup>The authors argue that were a firm's actions to affect the performance of industry peers, then the returns to industry performance for that firm should differ from returns for a firm that does not affect industry peer performance. Small firms within an industry are least likely to have an effect on the performance of industry peers whereas large firms are most likely to affect industry peer performance. [Jenter and Kanaan \(2015\)](#) shows that there is no difference to the returns for large versus small firms within an industry. [Bertrand and Mullainathan \(2001\)](#) also provides evidence in favor of this assumption.

in departure rates following industry contractions.

I focus on this measure because the change from an increase in annual stock value to a decrease relative to the prior year is a rather natural and salient cut-off. A large literature within psychology and behavioral economics on loss aversion demonstrates that the disutility individuals experience from a loss is typically larger than the utility experience from an equally sized gain.<sup>14</sup> As such, boards and investors may be more responsive to losses in firm value (as evidenced by a negative annual stock return) than gains. For robustness, I later consider an alternative definition of a negative shock to be instances where predicted firm performance is below the average industry mean performance across all years in the sample. This alternative definition can be motivated by a reference-dependence utility model in which the reference point is based on expectations about performance (Koszegi and Rabin, 2006). I show that the economic and statistical significance persists under this alternate specification.

More formally, I estimate departure probability for a given executive at a firm within a year as a function of the executive's gender, an indicator for whether firm performance is negative, the interaction between gender and an indicator for negative performance, and additional controls. Letting  $i$  represent executives,  $f$  represent firms,  $d$  industries, and  $t$  years, the estimating equation can be defined as follows.

$$depart_{i,f,t} = \beta_0 + \beta_1 NEG_{f,t} + \beta_2 F_i + \beta_3 NEG_{f,t} \times F_i + \theta \mathbf{X}_{i,f,t} + \delta_t + \varphi_d + \epsilon_{i,f,t}$$

$F_i$  is a dummy variable that takes the value of 1 if the executive is female,  $NEG_{f,t}$  is a dummy variable that equals 1 when the firm's annual return is negative, and  $\mathbf{X}_{i,f,t}$  is a vector of controls for executive  $i$  at time  $t$ .<sup>15</sup> Standard errors are clustered at the industry

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<sup>14</sup>Loss aversion was first introduced in seminal work by Kahneman and Tversky(1979). For a recent review of the loss aversion literature see DellaVigna(2009) or Marzilli Ericson and Fuster(2014)

<sup>15</sup>Controls include the number of employees within the firm, the executive's rank in the firm as determined using the executive's annual compensation relative to the other top executives within the firm, tenure as a top executive within the firm, and age. I include time fixed effects and industry fixed effects in all specifications except those without controls.



level to account for the fact that performance is highly correlated across firms within a given industry. If gender differences in departure stem solely from differences in ability, once we instrument for our measure of firm performance and its interaction with gender, we should find  $\beta_3 = 0$ . If, however,  $\beta_3 \neq 0$ , then the gender difference in executive departures is at least partially coming from a factor other than gender differences in ability.

Because firm performance is a function of both executive ability and exogenous factors, I instrument for negative firm performance using an indicator for when own-firm-removed industry performance is negative. As is standard when dealing with an interaction between an exogenous variable (Gender) and an endogenous variable (negative firm performance), I use the interaction between the exogenous variable and the instrument for the endogenous variable as an instrument for the interaction term. That is, I use the interaction between gender and an indicator for when own-firm-removed industry performance is negative to instrument for the interaction between gender and negative firm performance. More formally, for a given firm  $f$  in year  $t$  with  $n$  firms in the industry let own-firm-removed industry performance for firm  $f$ ,  $performance_{f,t}^{Industry}$  be defined as follows:

$$performance_{f,t}^{Industry} = \frac{1}{n-1} \sum_{j \in Industry_{f,t}, s.t. j \neq f} performance_{j,t}$$

From this definition,  $1\{performance_{f,t}^{Industry} < 0\}$  is used as an instrument for  $NEG_{f,t}$  and its interaction with executive gender is used as an instrument for  $NEG_{f,t} \times F_i$ . Although the endogenous variables used are both binary treatment variables, I employ a garden variety 2SLS methodology. This is the recommended course of action suggested by Angrist (2009).

## 5 Results

### 5.1 Main Result

Before discussing the main regression output, I first look at Figure 2.1, which plots the relationship between predicted firm performance (as computed using the first stage regression) and my preferred measure of executive resignations that excludes executives who move to new firms (i.e. INVOLUNTARY). This figure shows that, while departure rates increase for both male and female executives when firm performance is predicted to be negative, males only experience a 1.3 percentage point increase in departure whereas females experience a 3.8 percentage point increase in departure. Although this figure is suggestive of female executives having a higher likelihood of departure as a result of industry contractions, it does not control for any differences in executive characteristics or firm characteristics. Thus, to better understand the effect of industry contractions on gender differences in executive departure, we need to turn to our second stage regression results.

Table 2.2 presents the results from a 2SLS regression in which I instrument for negative firm performance and its interaction with gender. The first three columns report results from the second stage regression using my preferred measure of departure as the dependent variable. Across these three columns, regardless of whether we have neither controls nor fixed effects, only fixed effects, or both controls and fixed effects, the estimated gender gap in departure following downturns (measured by Negative X Female) remains quite stable.<sup>16</sup> Furthermore, the remaining two columns report results using my alternate two measures of departure. For all three measures of departure, female executives are predicted to have a higher overall resignation rate than male executives

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<sup>16</sup>Interestingly, the same is not true for male executives. While the male departure rate is predicted to increase following downturns in column 1, this effect is no longer significant after adding year and industry fixed effects. One potential interpretation for this is that male executives experience increased rates of departures following overall recessions; however, they do not experience increased departure rates from industry-specific downturns.

Figure 1: Departure by Gender and Exogenous Performance

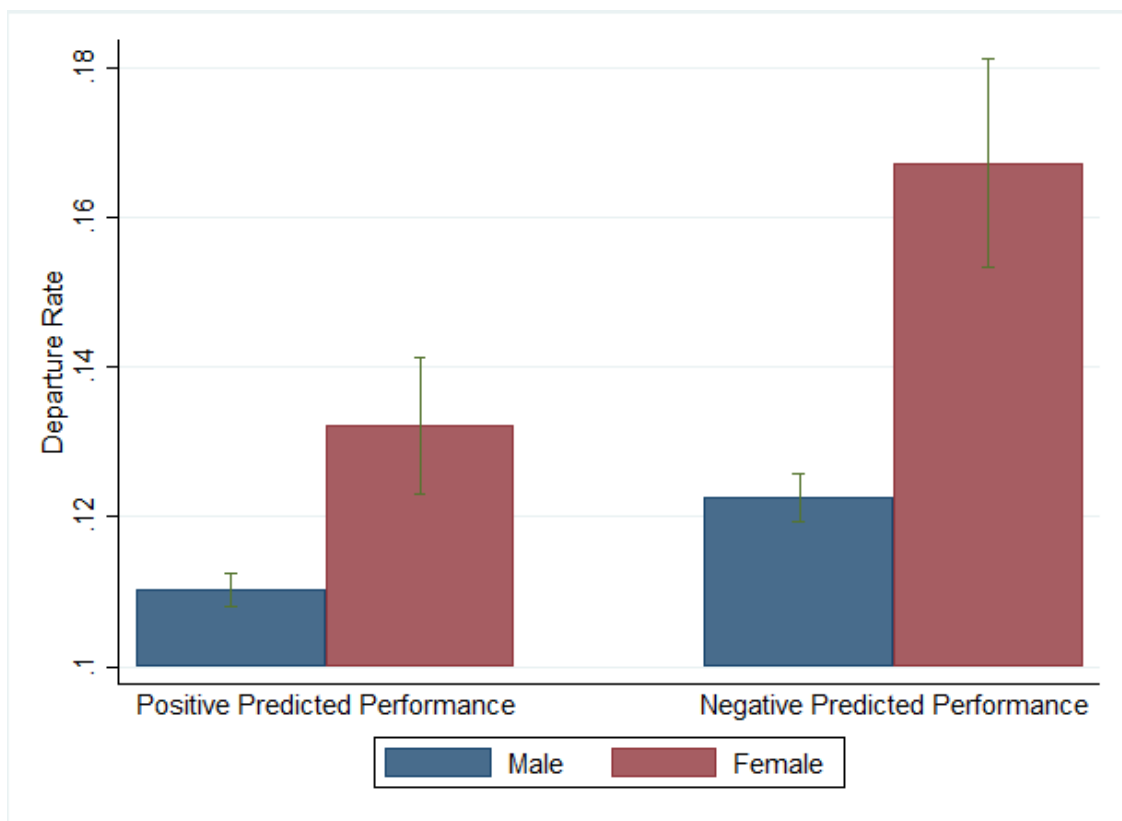


Table 2: Departure Probability:  
Results of Second-Stage Regressions

	(1) Involuntary	(2) Involuntary	(3) Involuntary	(4) Depart	(5) Involuntary2
Negative	0.023*** (0.005)	0.017 (0.020)	0.018 (0.018)	0.017 (0.020)	0.021 (0.018)
Negative X Female	0.050** (0.022)	0.051** (0.021)	0.050** (0.020)	0.037* (0.020)	0.056*** (0.020)
Female	0.012 (0.008)	0.007 (0.007)	0.003 (0.007)	0.008 (0.008)	0.001 (0.007)
Year FE	No	Yes	Yes	Yes	Yes
Industry FE	No	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes	Yes
N	84998	84998	84998	84998	84998

Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

following industry downturns. We can also see that overall departure rates for female executives are positive and significant. This matches what is shown in Figure 2.1.

Focusing now on my preferred measure of departure and specification in column 3, the estimated coefficients suggest that overall resignation rates for female executives are similar to that for male executives. When firm performance is negative however, the resignation probability of female executives increases by around 5 percentage points more than male executives. Recall from table 2.1 that, as measured by INVOLUNTARY, the average departure rate for female executives is 15%. Thus, the estimated increase in departure rates of female executives during contractions is both statistically significant and economically significant.

Recall, INVOLUNTARY does not code as departed those executives that leave their job and move to another Execucomp firm; INVOLUNTARY2 includes the same restrictions as INVOLUNTARY, but does not code as departed those executives that Execucomp flags as being retired or deceased. Thus, INVOLUNTARY2 is a tighter definition

of departures. In contrast, DEPART codes all executives that leave their job as departed. Thus, DEPART is a looser measure of departure than INVOLUNTARY. Looking across column 4 and column 5 of Table 2.2, the estimated treatment effect decreases in magnitude under the looser measure of departure and increases in magnitude under the tighter measures of departure. This suggests that the increase in female departure rates does not appear to be being driven by voluntary job changes. I am not, however, unable to rule out other voluntary explanations for the increase in departures (such as leaving the market to become a stay-at-home mom). I explore these alternative explanations in more detail in section 2.6.

Regardless of whether the increase in the gender gap in departures following exogenous decreases in firm performance is being driven by voluntary or involuntary departures, the fact that we see the gender gap in departures increasing following an exogenous change in firm performance allows us to conclude that the gender gap in departures is not driven solely by gender differences in ability. In section 2.6, I will discuss potential mechanisms that may be driving this effect. For the remaining discussion, unless stated otherwise, I will focus on my preferred measure of departure, INVOLUNTARY.

## **5.2 Robustness Checks**

I conduct a number of robustness checks in which I vary the specification, the sample restrictions, and check for omitted variable bias. Overall, the results are largely unchanged. In this subsection, I briefly discuss the robustness checks conducted and their findings.

The main specification in this study only allows for a discrete jump in departure rates following negative firm performance. One question is whether the results will change if an interaction between the continuous measure of performance and gender is included. Table 2.3 presents results from this specification and shows that the relationship is indeed

Table 3: Departure Probability  
with Continuous Performance  
Measures:  
Results of Second-Stage  
Regression

	(1)
Performance	-0.009 (0.012)
Performance X Female	-0.029* (0.017)
Female	0.027*** (0.005)
Year FE	Yes
Industry FE	Yes
Controls	Yes
N	84998

Notes: Performance is the log annual stock return and is instrumented for using mean industry performance with the own-firm removed. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

stronger for female executives and in order for positive annual returns to counteract the fact that female executive departure rates are predicted to be higher than that for males, the exogenous portion of log annual return would need to exceed a value of 1.

One potential concern is that the estimated treatment effect is being driven solely by differences near the discontinuity. Ideally, the observed increase in the gender gap in departure should hold even when we move away from this discontinuity point. To address this concern, I estimate the second stage regression excluding observations in a narrow band around the discontinuity. Columns 2 through 4 of Table 2.4 present results that exclude all observations in which firm performance is within 0.025, 0.05, and 0.075 of 0. In doing this, the results are largely unchanged. A related concern is that, while

zero is a natural and salient cut-off to use when defining negative performance, other cut-offs may also be worth considering. Column 5 presents results from a regression that redefines a negative shock to being instances in which performance is below historic mean returns. In other words, the cutoff is moved from being at zero to being at the overall mean historic return. While the treatment effect decreases some in magnitude, it remains both economically and statistically significant. This suggests that the results are not being driven only by large differences around the discontinuity nor are they being driven by the choice of cut-off.

Concerns may also arise regarding sample restrictions. Recall that in the primary specification, executives that have a start year as an executive that is before 1997 are excluded from the sample. Column 2 of table 2.5 shows that after relaxing this assumption, the effect remains economically and statistically significant. As an additional test, recall that there exist some gender differences in firm size and that the number of reported executives varies some by firm. One concern stemming from this is that there may be differences in the firing behavior of large versus small firms that are driving the treatment effect. To address this, column 3 of Table 2. 5 shows that the primary treatment effect persists even when the sample is restricted to only include firms that report between 4 to 6 executives (the range into which most firms fall).

Finally, I check for selection on unobservables stemming from omitted variables. Execucomp does not provide information on the background of executives. To address this, I first compare the primary regression to one without controls. Adding controls does not have a large effect on the estimated treatment effect. To more rigorously test for the robustness of the results, I use the method detailed in [Oster \(2016\)](#) to test how much variation in departures would need to be explained by unobservables in order to reduce the treatment effect to zero. The standard rule of thumb is to carry out this estimation with the assumption that the maximum possible R-squared (if all unobservables are included) is 1.3 times the R-squared observed in the regression with controls. Using

Table 4: Sensitivity of Departure Probability to Measure of Industry Shocks:  
Results of Second Stage Regressions

	(1) Baseline	(2) Exclude +/-0.025	(3) Exclude +/-0.05	(4) Exclude +/-0.075	(5) Alternate Cut-Off
Negative	0.018 (0.018)	0.023 (0.018)	0.025 (0.018)	0.028 (0.018)	
Negative X Female	0.050** (0.020)	0.042* (0.022)	0.043** (0.022)	0.040* (0.021)	
Female	0.003 (0.007)	0.009 (0.008)	0.008 (0.008)	0.010 (0.008)	0.007 (0.008)
Below Average					0.007 (0.014)
Below Average X Female					0.032* (0.017)
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
N	84998	80343	75789	71452	84998

Notes: Columns 2 through 4 exclude observations with predicted performance in the specified interval around 0. Column 5 reports results from a regression in which the definition of a negative shock is changed to be instances in which predicted performance is below the overall industry mean performance with the own-firm removed. Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Below Average is a dummy variable that equals 1 when predicted performance is below the overall industry mean performance with the own-firm removed. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .



Table 5: Additional Robustness Tests: Results of Second-Stage Regressions

	(1) Baseline	(2) Include Pre-1997	(3) Firms with 4-6 Executives
Negative	0.018 (0.018)	0.021* (0.011)	0.000 (0.017)
Negative X Female	0.050** (0.020)	0.042** (0.018)	0.048** (0.020)
Female	0.003 (0.007)	0.004 (0.007)	0.001 (0.007)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
N	84998	118982	72653

Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

this rule of thumb, estimates suggest that unobservables would need to explain over 160 times more variation in departures than observables in order to render the treatment effect null. As a more conservative test, I repeat the Oster test but instead assume the maximum possible R-squared is 1. Using this maximum R-squared, unobservables would need to explain 4.74 times more variation in departures than observables. Given that the standard cutoff for this test is 1, I can confidently reject the hypothesis that the treatment effect is being driven by omitted variable bias.

## 6 Mechanisms

So far, I have demonstrated that the gender gap in executive departure increases following industry downturns, and that this increase is driven solely by a change in the departure rate of female executives. Given that industry performance is exogenous from executive ability, the data suggest that this increase is not due to gender differences in ability.

This section discusses alternative explanations for the observed treatment effect. Given that the measure of departures used cannot rule out voluntary departure from the market of Execucomp firms, I first test whether fertility preferences or early retirement can explain the increases in gender gap in departures following industry contractions. Neither fertility nor early retirement appear to explain this increase. Next, I consider whether differences in hiring conditions might account for the increased rate of female departures and demonstrate that this also does not appear to be driving the observed effect. The subsequent section then discusses differences in attribution bias or blame as a plausible remaining explanation.

## 6.1 Fertility

In order to consider the total effect industry contractions may have on fertility behavior of female executives, we must separately consider the substitution and income effect. An industry-wide contraction will likely affect existing female executives' pay through reduced bonuses, as well as reduced stock values. This reduction in pay will reduce the relative cost of leaving the industry for child-rearing purposes and thus, via the substitution effect, executives will shift away from work and towards child-rearing. However, the decrease in pay will also reduce the overall income of executives and thus, via the income effect, will cause executives to work relatively more. Depending on whether the income or substitution effect dominates, we could see industry contractions increase, decrease, or not change the rate of departure for fertility reasons of female executives.

Looking at the relationship between the overall labor market and economic fluctuations, it seems unlikely that we would see an increase in fertility decisions by executives during industry contractions. Overwhelmingly, studies focused on the relationship between business cycles and fertility find that fertility rates decrease during recessions and are thus pro-cyclical (refer to [Jones and Schoonbroodt \(2016\)](#), [Schneider \(2015\)](#) for studies using recent data, and [Sobotka et al. \(2011\)](#) for an extensive survey of earlier studies). Furthermore, [Schaller \(2016\)](#) finds that the substitution effect is weakest among high-skilled women, suggesting that fertility rates should decline most among these women during economic contractions. Thus, in order for fertility to explain the increase in female executive departure rates during industry contractions, female executives would need to differ substantially from not only the average female worker, but also from the average high-skilled female worker.

The data provides further evidence against fertility being the primary mechanism behind the observed gender difference in departure rates. If female executives depart more for fertility reasons during economic contractions, then there should be a significant decrease in the magnitude and significance of the treatment effect when the sample

Table 6: Subsample Analysis using Older Executives:  
Results of Second Stage Regressions

	(1) Baseline	(2) Age > 40	(3) Age > 45	(4) Age > 51
Negative	0.018 (0.018)	0.019 (0.019)	0.015 (0.020)	0.022 (0.025)
Negative X Female	0.050** (0.020)	0.049** (0.021)	0.058*** (0.021)	0.088*** (0.031)
Female	0.003 (0.007)	0.004 (0.008)	0.004 (0.008)	-0.002 (0.012)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N	84998	82643	75415	56500

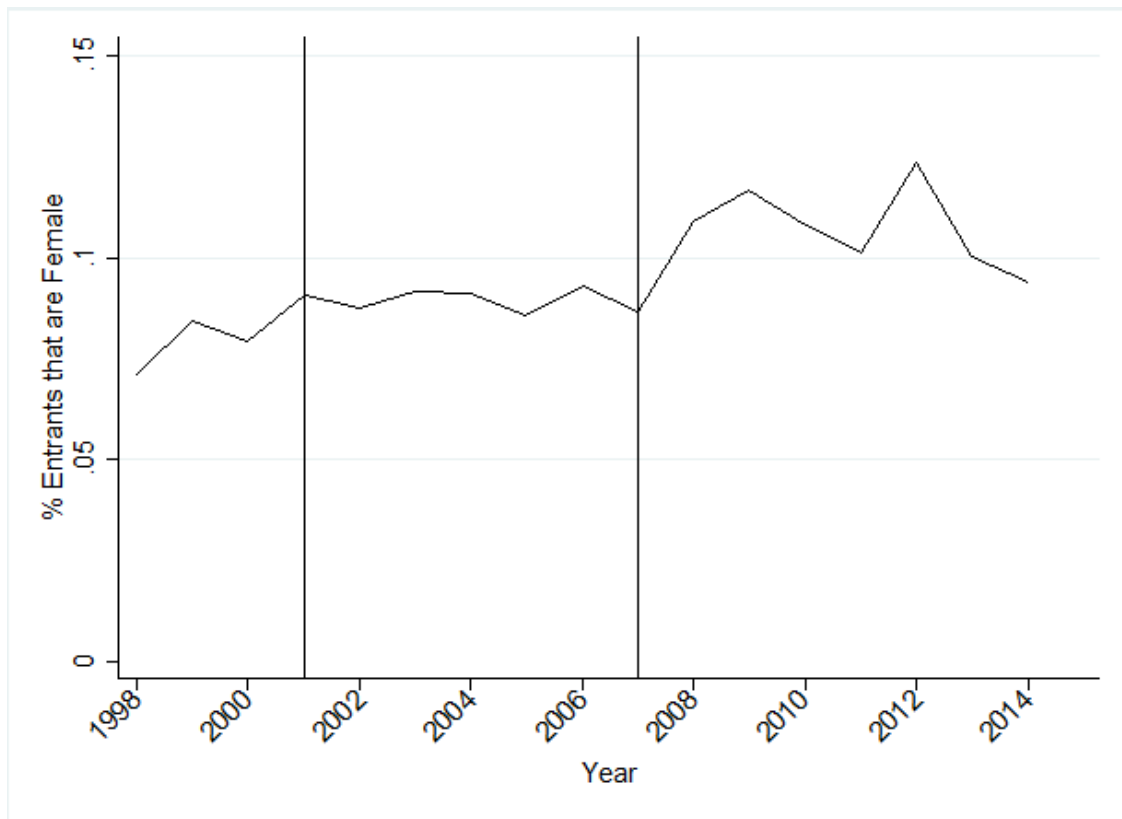
Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

is restricted to exclude younger executives that are more likely to be making fertility decisions. Table 2.6 presents results when the sample is restricted to executives over the age of 40 (column 2), over the age of 45 (column 3), and over the average menopausal age of 51 (column 4). Contrary to what one would expect if economic contractions are leading women to become stay-at-home moms, the effect of downturns on female executive departure remains both economically and statistically significant.

As additional tests for fertility as a mechanism, I explore the overall trends for executives by gender at the market level and look at what happens around the two recessions observed in the sample (2001 and 2007-2009). If fertility is driving the increase in departures during downturns, then the share of entrants that are women should decrease during recessions, as women move away from the labor market for fertility. Figure 2.2 shows that this is not occurring and that, if anything, the share of female entrants increased during the recessions. One may also expect to see the age of female entrants

increase during recessions as younger women choose not to enter the market for fertility reasons; however, as Figure 2.3 demonstrates, there is not a consistent relationship between the change in the age of female entrants across the two observed recessions. Finally, the average age of departing female executives decline during recessions if women in their fertile years leave the labor market. Figure 2.4 shows that there is no consistent relationship between the age of departing or non-departing female executives and recessions.

Figure 2: Percentage of Female Entrants by Year

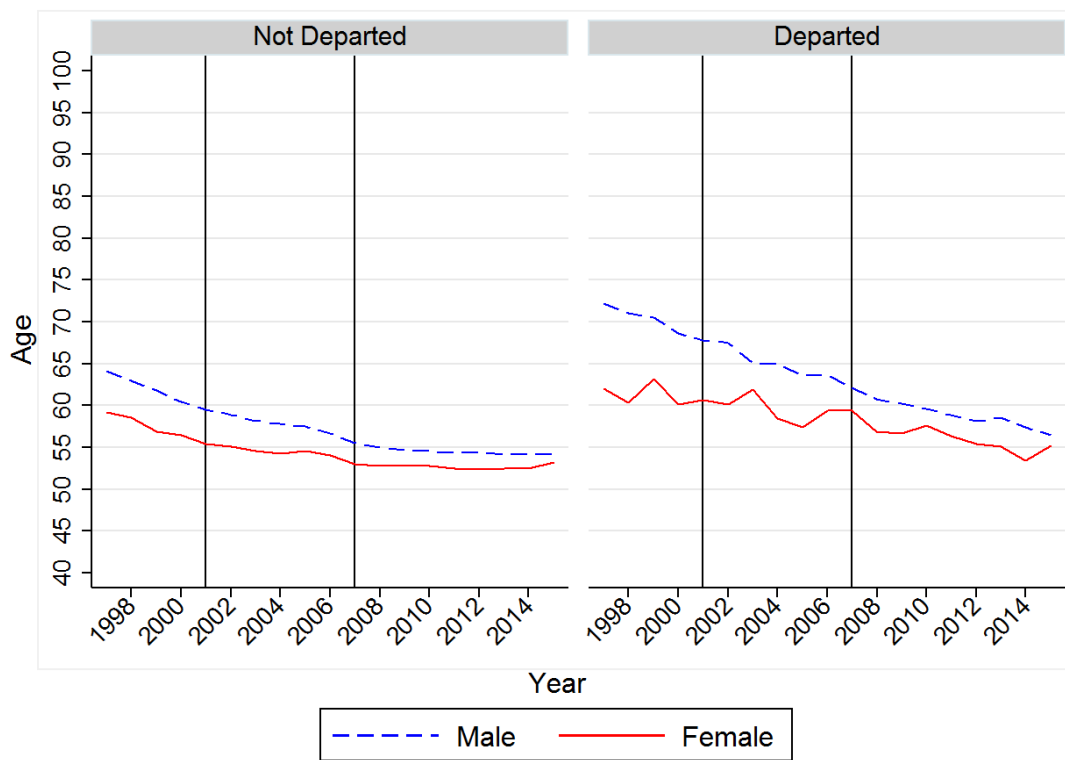


Overall, the data do not provide any evidence that is consistent with the fertility mechanism driving the treatment effect. Given the lack of evidence in favor of the fertility mechanism, in combination with the fact that existing literature suggests fertility is pro-cyclical, fertility does not appear to be the main factor driving increased female departure during industry downturns.

Figure 3: Average Age of Entrants by Year and Gender



Figure 4: Average Age of Executives by Year, Gender, and Departure Status



## 6.2 Early Retirement

Another possibility is that the observed increase in female departure rates following downturns is coming from early retirement by female executives. As with fertility, we need to consider both the income and substitution effects of industry downturns. While industry downturns will reduce the relative price of early retirement (as discussed in the fertility section), they also reduce the overall income of executives. In order to be the mechanism driving increased female departures for during downturns, it would need to be the case that the substitution effect dominates the income effect for female executives at retirement age, but not for male executives at retirement age. Furthermore, pension payments for CEOs and top executives are based on pay around the point of retirement. [Liebersohn \(2016\)](#) shows that executives take this into account when timing their retirements and, as a result, retirement among executives is lower during economic contractions relative to expansions.

Despite the fact that early retirement does not appear to be a likely explanation for the observed treatment effect given the results in [Liebersohn \(2016\)](#), I investigate it in more detail via subsample analysis and observation of trends for executives by gender at the market level. As a first step, I consider what happens to the gender gap in departures following downturns when I restrict the sample to executives below retirement ages. If early retirement is the mechanism driving increased female departures following downturns, the treatment effect should be reduced in magnitude and significance. As Table 2.7 shows, this does not occur. Restricting the sample to executives below the classic retirement age of 65 or the younger age of 60, we see that the treatment effect persists, suggesting early retirement is not the mechanism driving the increased gender gap in executive departures.

To provide additional evidence against the early retirement mechanism, recall that we did not see any systematic relationship between executive age and recessions (Figure 3 and Figure 4). Thus, there is no evidence that early retirement is driving the increase



Table 7: Subsample Analysis using Younger Executives:  
Results of Second Stage Regressions

	(1) Baseline	(2) Age < 65	(3) Age < 60
Negative	0.018 (0.018)	0.017 (0.017)	0.015 (0.019)
Negative X Female	0.050** (0.020)	0.049** (0.022)	0.054*** (0.019)
Female	0.003 (0.007)	0.000 (0.007)	-0.003 (0.006)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
N	84998	73608	60443

Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

in female departure rates during downturns.

### 6.3 Glass Cliff

Another possible explanation for the gender differences in executive departure during downturns is the glass cliff. This term was first introduced in [Ryan and Haslam \(2005\)](#), in response to an article in *The Times*, which suggested that female leaders negatively affect firm performance. [Ryan and Haslam](#) refute this claim and argue that women are more likely to be appointed into leadership positions during times of market contractions when firm performance relative to other firms is poor. Thus, female leaders have a higher likelihood of being appointed to more tenuous positions. [Ryan and Haslam](#) refer to this phenomenon as the glass cliff.<sup>17</sup>

While several studies have found evidence of the glass cliff phenomenon (e.g., [Kulich et al. \(2015\)](#); [Mulcahy and Linehan \(2014\)](#); [Haslam and Ryan \(2008\)](#)), there is also evidence suggesting that it may not persist in all settings and may be dependent on the sampling population and definition of “crisis” within a firm ([Adams et al., 2009](#); [Cook and Glass, 2014](#); [Hennessey et al., 2014](#)). Furthermore, much of the research on the glass cliff phenomenon focuses on female board members and CEOs. Thus, while it is possible the glass cliff is contributing to the gender differences in departure, it is also possible that the glass cliff is not a strong presence within the population of all top executives at publicly traded US firms.

To explore whether the glass cliff is driving the increase in departure probability of female executives during downturns, I restrict my attention to the subsample of executives that were hired when firms were doing better than their industry peers (i.e., when the residual from the first stage regression is positive), and also to the subsample of executives that were hired when firms were doing better than their industry peers for two

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<sup>17</sup>Reasons for the glass cliff phenomenon include a desire to signal change to investors ([Kulich et al., 2015](#)), selection bias ([Haslam and Ryan, 2008](#)), and implicit stereotypes that female executives are better in times of crisis – also known as, “think crisis – think female” ([Ryan et al., 2011](#)).

Table 8: Subsample Analysis using Executives Hired when Firm is Performing Well Relative to Peers: Results of Second-Stage Regressions

	(1) Baseline	(2) Industry-Adjusted Return Positive when Hired	(3) Industry-Adjusted Return Positive when Hired and Prior Year
Negative	0.018 (0.018)	0.040** (0.017)	0.050* (0.028)
Negative X Female	0.050** (0.020)	0.085*** (0.026)	0.079** (0.031)
Female	0.003 (0.007)	-0.010 (0.007)	-0.014* (0.009)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
N	84998	51376	35111

Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative.. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

consecutive years. These subsamples represent the set of executives that are least likely to be glass cliff hires for females, and thus we should no longer observe the treatment effect if the glass cliff is driving the results. Table 2.8 shows that this is not the case. Even among the set of executives hired in firms that are doing relatively well, female executives' departure probability increases during downturns.

As a secondary test of whether the glass cliff hypothesis is driving the treatment effect, I consider a subsample of executives with longer tenure. Given that glass cliff executives are hired into more tenuous positions, one may expect that their expected tenure is much shorter than that of non-glass cliff hires. As such, the effect of industry downturns on female departures should be weaker among executives with longer tenure. This subsample analysis is slightly trickier to interpret, because executives with longer

Table 9: Subsample Analysis using Executives with More Tenure:  
Results of Second-Stage Regressions

	(1) Baseline	(2) Tenure > 1 year	(3) Tenure > 2 years	(4) Tenure > 3 years
Negative	0.018 (0.018)	0.027 (0.017)	0.018 (0.020)	0.020 (0.022)
Negative X Female	0.050** (0.020)	0.051** (0.022)	0.069*** (0.022)	0.041* (0.024)
Female	0.003 (0.007)	-0.006 (0.008)	-0.013 (0.009)	-0.004 (0.009)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
N	84998	71472	58579	45310

Notes: Negative is a dummy variable that equals 1 when firm performance is negative and is instrumented for using a dummy variable that equals one when industry peer performance is negative. Controls include executive age, rank, tenure, and number of employees. Robust standard errors (clustered at the industry level) are reported in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ .

tenure are already, through selection, likely to be of better quality, and thus less sensitive to shocks. Regardless, focusing on Table 2.9, it only after the sample nearly in half – by restricting our attention to executives with more than 3 years of tenure – that the treatment effect declines in magnitude and significance. One would imagine that, if the glass cliff was the driving mechanism behind the increased departure rate of female executives during downturns, we would see the estimated treatment effect with a much earlier tenure restriction. Thus, the results from Table 2.9 also provide evidence against the glass cliff hypothesis.

Taking the results from Table 2.8 and the results from Table 2.9, the glass cliff hypothesis does not appear to be the mechanism behind the treatment effect. Thus, while female executives may be more likely to be hired into already tenuous positions, even those female executives hired into less tenuous positions experience an increase in departure probability following industry downturns. This suggests that regardless of whether female executives face a glass cliff or a solid ledge (Hennessey et al., 2014), both experi-

ence a precipitous drop when the ground starts to shake.

## 6.4 External Hires

There exists some evidence that, conditional on being appointed to a CEO position, females are more likely to come from an external appointment than males. In a sample of CEOs from 2004 to 2015, 77% of male appointments were internal, whereas only 68% of female appointments were internal (Study, 2016). Expanding to the set of all top executives, however, the picture is less clear. Quintana-García and Elvira (2017) finds that, in a sample of technology firms, female executives are actually less likely to be externally hired than male executives. In contrast, Fernandez-Mateo and Fernandez (2016) finds that, in a proprietary sample of firms that rely partially on an external hiring agent, female executives are more likely to be externally hired. One could expect that this may lead to those executives having weaker internal networks and thus being more exposed to exogenous declines in firm performance.

There is mixed evidence on whether being externally hired is detrimental to executive success. While on the one hand, externally hired executives tend to experience higher starting compensation than internal hires (Bidwell, 2011), this benefit is generally limited to males (Brett and Stroh, 1997; Dreher et al., 2011). In fact, Quintana-García and Elvira (2017) argues that externally hired female executives may fare worse with respect to compensation than internally hired female executives due to more discretion in pay setting for external hires. It is unclear, however, to what extent the results in Quintana-García and Elvira (2017) will generalize to executive departure, given that the disadvantage they find for female external hires stems from gender differences in pay-setting behavior.

Focusing more narrowly on departures, neither Dikolli et al. (2014) nor Yonker (2016) find a significant relationship between being externally hired and departure probability. In contrast, Guay et al. (2014) finds that externally hired CEOs experience higher overall

involuntary departure; importantly, however, this study also finds that externally hired CEOs are less likely to involuntarily depart following exogenous industry shocks. Thus, if anything, being externally hired would suggest a decrease in the departure probability following industry downturns.

Considering the overall literature on gender differences in external hire rates and the literature on the impact of being externally hired on labor market outcomes, it seems unlikely that differences in external hiring could be driving the gender differences in departure rates. Specifically, it is unclear whether, when considering all top executives, there exists a gender difference in external hire probabilities. It also appears that, even conditional on being an external hire, negative exogenous shocks to firm performance should at worst have no effect on the departure rates of external hires.

Unfortunately, identifying internal versus external hires in the sample is difficult. For many executives within the sample, there is missing information on when they first joined their company.<sup>18</sup> Importantly, however, looking at executives in the sample for whom I do have information on their join year, I do not observe an overall difference between male and female executives in the likelihood of being an external hire; 55.4% of males are externally hired whereas 53.7% of females are externally hired.<sup>19</sup> Thus, taking this in conjunction with the existing literature, this seems to be an unlikely mechanism for the observed treatment effect.

## 6.5 Female Start-Ups

One may also think a factor driving the observed treatment effect is a preponderance of female executives leaving their current positions to create their own startups during downturns. The argument would be that, due to the downturn, their salaries, pensions,

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<sup>18</sup>Within the sample, this information is missing for 71.9% of the executives and is missing more often for female executives (76.4%) than male executives (71.5%).

<sup>19</sup>I observe a higher share of being externally hired for female CEOs that closely matches the [Study \(2016\)](#).

and other perquisites are smaller, and the opportunity cost of leaving their current job is therefore reduced. However, in order for this explanation to be likely, the substitution effect of leaving one's job during a downturn to pursue a startup would have to outweigh the income effect of the downturn. Furthermore, (Ewing Marion Kauffman Foundation, 2017) finds no evidence of a higher number of female-created startups during recessions relative to the number of male-created startups. Therefore, it seems unlikely that the treatment effect is being driven by female executives leaving their positions to create startups during downturns.<sup>20</sup>

## 7 Misplaced Blame

If the increase in departure rates among female executives following downturns is not due to differences in leadership ability, fertility, retirement, the glass cliff, or differences in external hire rates, what could explain this treatment effect? One remaining explanation that is consistent with the results presented within this study, and supported by related findings within the literature on gender differences in labor market outcomes, is misplaced blame.

It may be the case that boards incorrectly attribute poor firm performance to executive ability when the executive is female. In other words, it is possible boards may have a higher likelihood of committing fundamental attribution errors when performance is poor and the executive in question is female.<sup>21</sup> Misplaced blame could also manifest

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<sup>20</sup>One may also be tempted to think that the increased departure rates for female executives during downturns could be attributed to gender differences in the size of golden parachutes – the pension and severance payments top executives receive upon termination. This relies on the argument that the board would choose to eliminate an executive's position as a cost-cutting measure during downturns. However, as discussed previously, unlike other positions, TMT are unlikely to be made redundant. As such, it is unclear what benefit firing an existing executive simply to replace them would serve.

<sup>21</sup>Existing literature on attribution bias has demonstrated this phenomenon with respect to perceived leaders whereby individuals exhibit tendencies to over-attribute the role of the leader in both positive and negative exogenous outcomes (Weber et al., 2001). Attribution bias may also manifest more in bad times and more often among outsiders (such as among women in top corporate roles during downturns) (Selody, 2010).

not as the result of attribution bias from the board, but rather via female executives being held to different performance standards (and thus punished more readily) relative to male executives. This could lead to female executives being blamed for outcomes they could not reasonably have control over or have foreseen. It may also be that the misplaced blame does not stem directly from the board, but could instead stem from CEO's being more likely to use female executives below them as scapegoats for poor performance. When considering the latter possibility, it is relevant to refer to the findings discussed in [Finkelstein et al. \(2009\)](#) that suggest performance does not provide a complete explanation for executive turnover. Indeed, [Finkelstein et al. \(2009\)](#) conclude powerful but underperforming CEOs will shift blame to their TMT executives, resulting in the replacement of those executives rather than the CEO. This behavior may also extend to gender whereby female executives may be blamed more often than males.

There are existing results that provide some evidence in support of women more frequently receiving misplaced blame. [Selody \(2010\)](#) and [Albanesi et al. \(2015\)](#) demonstrate that female executives' pay decreases more following negative changes in firm performance than does the pay for male executives, whereas male executive pay increases more than female pay following positive changes in firm performance. [Selody \(2010\)](#) further documents that male executives' bonuses increase more following exogenous increases in firm outcomes than do bonuses for female executives. Not only has research documented gender asymmetries in the extent to which executives are penalized or rewarded for their performance, there is also recent evidence documenting how women may be more harshly punished for blatant misconduct. Looking at financial advisors instead of executives, [Egan et al. \(2017\)](#) finds that women are more likely to be terminated for misconduct than men, despite the fact that women are less likely to engage in misconduct and are less likely to be repeat offenders. These results suggest that male and female employees receive differential treatment for successes and failures.

It is also possible that the differences in blame may not stem from the board or CEO,



but may instead be due to gender differences in self-attribution bias. Experimental economics literature has not found gender differences in the direction of asymmetric updating within ego-relevant tasks – e.g., [Eil and Rao \(2011\)](#), [Ertac \(2011\)](#), [Möbius et al. \(2014\)](#). However, looking instead to the psychology literature, several studies show women are more likely to attribute failure to internal factors and success to external factors, while men behave in the opposite manner – e.g., [Deaux \(1979\)](#), [Deaux and Emswiller \(1974\)](#). This difference in self-attribution behavior may cause female executives to take the blame for failures that are outside of their control, and thus lead to increased departure.

Identifying blame as a mechanism for increased departure, and separating attribution error on behalf of the board from attribution error on behalf of executives, is not possible given the existing data set. Thus, while the results are consistent with blame as a possible mechanism, I cannot rule out other mechanisms. Future research may wish to use experimental methodology in order to address these questions.

## 8 Conclusion

The underrepresentation of women in top-management positions has received substantial attention within the economics literature. While most studies have focused on differences in entry into management positions, a smaller set of studies have instead looked at departure. These studies have largely shown that female executives exhibit higher departure rates.

Why is it that female executives exhibit higher departure rates than male executives? One can think of many possible answers to this question. Perhaps the simplest explanation would be gender differences in ability. In order to test for this, one must examine gender differences in departure resulting from exogenous changes in firm performance.

In this study, I use exogenous changes in firm performance to rule out the ability channel and show that gender differences in departure still persist. Specifically, using

industry performance as an instrument for firm performance, I show that following industry-wide contractions, the overall departure rate for female executives increases by approximately 5 percentage points, while no change is observed in the departure rate for male executives. This increase in departure cannot be explained by differences in fertility, early retirement, the glass cliff, or differences in external hire rates. I argue that one remaining channel that is consistent with the observed increase in departure rates is misplaced blame (e.g., attribution bias, self-attribution bias, or unreasonable performance standards).

While the results are consistent with a blame hypothesis, other competing mechanisms may remain. As such, one avenue for future related research is using experimental methodology to test the blame hypothesis and separate out self-attributed blame from external blame.

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