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**The Gender Equality Landscape: Are Women Progressing to Leadership Roles in the
Wine Industry?**

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Abstract

We argue that institutional power and influence are creating an environment in which the appointment of women to CEO, winemaking, viticulturist, and marketing roles has significantly increased in the Australian wine industry. Using logistic regression analysis, we find that the likelihood of women in all roles has significantly increased when comparing the period of 2007–2013 with 2021–2023. Our study confirms that the largest increase was for women in the CEO role. Our prediction that South Australia, as the regional center of wine policy, education, and research, would see the largest increase of women in all roles was not supported. We offer conclusions and future research directions.

Keywords: diversity, equality, gender, leadership, wine, women

I. Introduction

Are women progressing to leadership roles in the wine industry? This becomes an important question for academics, businesses, and policy makers alike as much of the developed world advocates for greater participation of women in the workplace—and particularly in top or leadership roles (Galbreath, 2015; Hunt et al, 2023; The Economist, 2024). In fact, so much so is the interest in the issue that, recently, Wine Australia—the federal statutory body overseeing the wine industry—conducted a study of the gender equality landscape within that country (Wine Australia 2023).

Though only a limited number of studies on the gender equality landscape in the wine industry exist, there are some studies upon which we can build. A Californian study found that around 14 percent of those in the vital winemaking role are women (Gilbert & Gilbert 2015). Examining leadership roles in Australia, Galbreath (2015) found that women comprised 13 percent of CEO roles in the wine industry. Although such results suggest far less equality, Wine Australia's (2023) recent call to study the gender landscape suggests that attention and focus on the issue is growing. To explain such a focus, we believe that a better understanding can be gained through examining institutional forces that are driving a possible greater representation of women in the wine industry.

In this study, we draw on institutional theory. Institutional theory posits that business practices are largely adopted based on the power of institutions to influence firms rather than on an optimal efficiency basis or self-determined strategic choice (DiMaggio & Powell 1983). Social legitimacy is key, and firms respond and adapt to institutional influences to maintain their license to operate (Scott 2001). To our knowledge, only one study on women in the wine industry has relied on institutional theory, yet this research specifically explored export firms and environmentally sustainable innovation (Galbreath 2019). Expanding on such efforts, the aim of our study is to examine how institutional power might potentially be influencing an

increase in the appointment of women in leadership roles in the wine industry in Australia—one of the world’s largest wine producing nations.

Our study contributes to the literature in two important ways. First, previous studies are outdated (Galbreath 2015; Gilbert & Gilbert 2015). We argue that many factors have changed since the publication of earlier studies in terms of gender focus across the workforce, including within the wine industry. Without more evidence both to investigate known factors and explore new ones, important insight into the issue of gender equality—and the advancement of women in the wine industry—is missing. To address this gap, we use data from 2021–2023 while considering women in CEO, winemaking, viticulturist, and marketing roles.

Second, to understand better *why* the number of women in leadership roles in the wine industry might be increasing, we build arguments based on institutional theory (DiMaggio & Powell 1983; Scott 2001). As an institutional focus on gender equality has arisen around the world, the adoption of firm practices that place women in leadership roles appears to have become more widespread. By building on relevant research in this area (e.g., Galbreath 2019), our study contributes to knowledge on gender in leadership roles in the wine industry by theorizing the impact of institutional power and influence—an area that has seen little advancement.

II. Background and theory

a. Women in the wine industry

The wine industry has been described as patriarchal and masculine (Alonso, Kok & Galbreath 2021; Bryant & Garnham 2014; Galbreath 2015; Gallais & Livat 2024). According to Bryant and Garnham (2014), when accounting for a discursive inscription of the “ideal body,” women’s representation as weak bodies, reproducing bodies, and home bodies reveals ways in which they have not been afforded the same opportunities as men given masculine norms for “working bodies” in the wine industry. Similarly, Alonso, Kok, and Galbreath (2021) found

that women face many barriers in the wine industry, including lack of equal pay, lack of recognition for their work, and male-dominated roles. However, they also find that some women appear to be making more inroads into leadership roles, demonstrating that resilience, determination, specialized education and skills, and hard work are keys to advancement. Generally, though, the evidence for gender equality in leadership roles in the wine industry appears to be weak.

Although their article is somewhat dated, Gilbert and Gilbert (2015), using data from *Wine Spectator's California Wine*, compared the years 1999 and 2014 for the same 480 firms. They found that women in the winemaking role increased from 10 percent to 14 percent. However, the percentage of women in the winemaking role varied depending on the region (e.g., Sonoma/Marin and Napa had the highest percentages). In another now dated study, covering 2,394 wineries (averaged) in Australia over the period of 2007–2013, Galbreath (2015) found that women in CEO, winemaking, viticulturist, and marketing roles comprised 13 percent, 9 percent, 10 percent, and 54 percent, respectively. Like Gilbert and Gilbert (2015), the study also found that women's representation in the winemaking role varied depending on the region or state (e.g., Tasmania had the highest representation rate). Apart from the marketing role, both studies showed significant inequality for women among the remaining roles. Unfortunately, these findings are now more than 10 years old and therefore limited in their current insight and knowledge. We believe much has changed regarding institutional focus on women in the workplace and in leadership roles, something that we build on in this study.

b. Institutional theory

Institutional theory focuses on the influence of the social or cultural environment on firms (DiMaggio & Powell 1983). As suggested by Scott and Meyer (1994), assumptions, beliefs, and expectations exist in society that determine or influence the adoption of various practices within firms. They argue that firm practices are not adopted because of an optimal input–output

balance or self-determined strategic choice but because they are strongly shaped by institutionalized expectations. In particular, where the mechanisms of coercion, imitation, and normative pressure are greatest, the adoption of institutionalized practices leads to an isomorphism across organizational environments (DiMaggio & Powell 1983). Hence, the focus is on the reputation and legitimacy conferred on firms by the institutional environment (Scott & Meyer 1994).

According to Scott (2001), the institutional environment comprises three types of influences: (1) cognitive, (2) normative, and (3) regulatory. Cognitive influences refer to the abstract rules associated with the structure of cognitive distinctions and taken-for-granted understandings. Normative influences are the informal rules associated with values and explicit moral commitments. Regulative influences are the formal rules and incentives constructed by the state and other agents of the collective good. Scott (2001) also argues that the three institutional pillars are interrelated and internally consistent, such that the various factors influence the ways in which ideas, concepts, or practices that impart legitimacy spread within and across organizational fields. Importantly, following Matten and Moon (2008), firms within an organizational field—which, in our case, are firms in the wine industry—are likely to face institutional influences with respect to an issue such as fairness regarding women in the workplace and gender equality. They argue that such issues are “located in wider responsibility systems in which business, governmental, legal, and social actors operate according to some measure of mutual responsiveness, interdependency, choice, and capacity” (Matten & Moon 2008, p. 408).

III. Research propositions

a. The case for an increase of women in leadership roles in the wine industry overall

The cognitive element of institutional theory concerns those aspects that determine the ways in which reality is conceived in society and through which reality is given meaning (Scott 2001).

In the case of women in leadership roles, there are several institutions that appear to have focused widespread attention on gender equality in the workplace in recent years, shaping a renewed reality concerning firm behavior, particularly with respect to the appointment of women to leadership roles.

We argue that, in Australia, the media has played a particularly influential role in shaping reality and giving meaning to reality regarding women, equality, and the workplace. To explore this possibility, we conducted a search on the term “gender diversity” in Factiva (a service that aggregates media stories from both licensed and free sources) for the period 2003–2013. The results indicated 288 news stories. With the same search term for the period 2014–2023, the results indicated 1,386 news stories.¹ We also conducted a search of “women in leadership” for the same periods. For the first period, there were 395 new stories. For the second period, there were 745. Lastly, we searched for “women in wine” and found 10 news stories for the first period and 113 for the second. In all cases, media coverage of this issue has clearly increased.

Following institutional theory, the media can create an environment in which reality is conceived in society in relation to expected behavior, while creating pressure on firms to conform to the “way things should be done” (Aerts & Cormier 2009; Bansal & Clelland 2004). Given the increase in media attention and prescriptions toward the role of women in business and expectations regarding accepted practices, we posit that wine firms in Australia would be likely to demonstrate an increase in the number of women in leadership roles to conform to social expectations and in order to gain legitimacy.

Moreover, the normative element of institutional theory concerns the prescriptive, evaluative, and obligatory dimensions of institutions. According to Matten and Moon (2008), professional or business associations are particularly important in setting standards for

¹ The periods represent the two comparative periods in this study and the “gap” in between.

“legitimate” organizational practices and are increasingly exerting normative pressures on firms to improve gender equality in leadership roles. In the Australian wine context, two professional associations are posited as having influence. First is Australian Women in Wine (<https://womeninwine.com.au>), which was established in 2015 to champion the work of women in the Australian wine industry. The association, which welcomes women in wine from across Australia, serves to support and mentor women in the industry. The association has also held a national symposium, in which top priorities included addressing gender injustices in the industry and greater accountability for gender equality (Women in Wine, 2023). Second is The Fabulous Ladies’ Wine Society (<https://fabulousladieswinesociety.com>), established in 2012. The association holds a wine award ceremony annually that focuses exclusively on women, sells wine made by women online, and promotes events and tours for women in the industry. Together, these two associations are creating expected norms and values for the treatment of women in the wine industry and their advancement to leadership positions in the industry. We argue that this is creating institutionalized expectations for wine firms to improve gender equality.

Lastly, the regulative element of institutional theory focuses on the constraining and regulatory aspects of institutions (DiMaggio & Powell 1983; Scott 2001; Scott & Meyer 1994). Central to this are rule-setting, observation, control, and sanctioning of behavior. In line with this regulatory element, in 2012, the Australian federal government established the *Workplace Gender Equality Act* and Workplace Gender Equality Agency (WGEA; <https://www.wgea.gov.au/>). This regulatory change began at the end of data collection in Galbreath’s (2015) study.

The WGEA aims to promote and improve gender equality. Given its statutory authority, the WGEA requires all firms with 100 or more employees to report annually against six gender equality indicators (<https://www.wgea.gov.au/reporting-guide/ge>). This information is

published and publicly available, and the WGEA monitors the compliance of reporting firms. In our case, there is recognition that most wine firms employ less than 100 people and therefore do not need to comply with WGEA requirements. However, according to institutional theory, as firms within an organizational field increasingly conform to institutional pressure, powerful mimetic forces drive the adoption of similar organizational practices, such as those that may result in an increase in the number of women in leadership roles (DiMaggio & Powell 1983; Scott 2001; Scott & Meyer 1994). We argue that this is the case for business firms in Australia, including the wine industry. Combining the influence of cognitive, normative, and regulatory influences for greater gender equality in Australian workplaces in more recent times, we posit:

Research proposition 1 (RPI): The likelihood of women being in leadership roles in the Australian wine industry has increased significantly since 2013.

b. Improvements by role

Placing considerable emphasis on the CEO role, scholars have long established that the so-called “upper echelon” of business leaders is highly influential (Hambrick & Mason 1984). The argument is that top leaders, such as the CEO, influence firm values, strategic choices, and, ultimately, outcomes. Early treatment explored observable demographic characteristics of top leaders, such as CEOs, including age, functional backgrounds, education, and socioeconomic roots (Hambrick & Mason 1984). Further research investigated the influence afforded to the demographic characteristics of leaders, including differences in age, tenure, ethnicity, and gender (e.g., Carpenter, Geletkanycz & Sanders 2004; Nielsen 2010).

In the Australian context, we argue that women and the CEO role has been of particular interest—even though all roles have been subject to pressures for gender equality. For one, according to Factiva results, media coverage and attention relating to women and CEOs in Australia increased from 804 stories for the period of 1993–2012 to 1,756 stories for the period of 2013–2023. The development of a topic or issue by the media serves as a powerful cognitive

influence in defining and constructing reality (Aerts & Cormier 2009; Bansal & Clelland 2004; Scott 2001)—a reality suggesting that good or expected firm practices include appointing a woman to the role of CEO.

In addition to the media, the WGEA has regularly highlighted and emphasized women in CEO roles and improvements relating to gender equality in such roles since 2012. In fact, the latest evidence from the WGEA suggests that women CEOs in Australia now stand at 22 percent for all reporting firms (<https://www.wgea.gov.au/>), up from an estimated 10–12 percent in the 2012–2013 period (the first year of WGEA establishment). Although such pressures are not as strong as those from legally mandated gender quotas, we argue that the authority of the WGEA, as a powerful government institution, is influencing the likelihood that firms appoint women to the CEO role more so than others. Therefore:

Research proposition 2 (RP2): The likelihood of women in CEO roles after 2013 is significantly greater than the likelihood of women in winemaking, viticulturists, or marketing roles.

c. Improvements by state

Scholars studying gender diversity have noted the importance of contextual factors. For example, in work on the impact of women on boards of directors on financial and social performance, location has been found a contextual factor (Byron & Post 2016; Post & Byron 2015). In line with these findings, governments in some countries around the world have mandated, by law, gender quotas for boards of directors (Edacherian, Karna, Uhlenbruck & Sharma 2024), influencing the extent to which gender equality is achieved. In our case, we only concentrate on a single country; however, we argue that differences in the states studied could drive different results with respect to the focal topic.

Although the first vines were planted in the 18th century in the state of New South Wales, today the wine industry in Australia is largely dominated by the state of South Australia. South Australia tops other regions by vineyard area planted, volume produced, and wine

exported (Wine Australia 2024). However, there are other factors demonstrating South Australia's leadership and influence within the country's wine industry. Not least, South Australia is home to one of the world's leading viticulture and enology courses, which is housed at the University of Adelaide (University of Adelaide 2024). Further, South Australia boasts 70 percent of Australia's wine-related research and has the largest agriculture teaching and research precinct in the southern hemisphere. Importantly, Wine Australia is also located in South Australia.

Established in 1981, Wine Australia is the federal statutory body that promotes and regulates the wine industry. Wine Australia develops policy, administers fees and levies, ensures compliance (e.g., a wine regulatory system that protects consumers and ensures fair trade), provides market development (e.g., the maximization of the growth of domestic and export markets), and creates knowledge (e.g., by providing information to wineries, market intelligence, and trend analysis). Notably, Wine Australia has turned its attention to gender equality in the industry, culminating in a study of the issue (Wine Australia 2023).

Following Hira and Aylward (2013), the wine industry in Australia is a hub-and-spoke model in which much of the policy, research and development, and market development activities are concentrated within Wine Australia. We argue that given this concentration of power and influence, those firms located in South Australia are likely to feel greater pressure to conform to institutional expectations. Our assumption is based on network theory (Giuliani 2007, 2011), where those closest (i.e. wine producers in South Australia) to a central node (i.e. Wine Australia based in South Australia) are likely to be more influenced, or at least be more "normalized" to the power of the central node, than those that are further away. Thus:

Research proposition 3 (RP3): The likelihood of women being in leadership roles in South Australia after 2013 is greater than the likelihood of women being in leadership roles in any other wine-producing state in Australia.

IV. Methods

Data were sourced from Winetitles, an Australian media company delivering wine industry publications, that focus on news, views, and research and development. Winetitles has published *The Australian and New Zealand Wine Industry Directory*, which has been available for 40 years and is updated annually. The *Directory* covers all Australia wineries and is one of the most trusted sources of information on wine producers and ancillary services, such as suppliers, distributors, and retailers. For this study, Winetitles provided special-order Excel file databases that included information from the *Directory*, along with several other fields and details not listed elsewhere, such as personnel titles (roles) and accompanying names of individuals in those roles. The years covered are 2021–2023. These data were merged with the data that covered the 2007–2013 period in the Galbreath study (Galbreath 2015). Number of firms and observations vary depending on the role and whether or not data were reported to Winetitles in a given year. These are displayed in the tables in the Findings section.

To maintain consistency, the method from Galbreath's (2015) study was strictly followed. The leadership roles of interest include CEO (or equivalent), winemaker, viticulturist, and marketing.² To capture diversity, if the names in each of the roles were women's names, they were coded 1, 0 otherwise. If names could be considered applicable to both a man and a woman (e.g., Chris, Jamie, Kim, Sam, Sandy), winery websites were consulted or research via a search engine was conducted until clarification was achieved. Each role for each winery in each year was sighted manually and coded for analysis. To test the differences between the periods, an indicator variable was created that takes the value of 0 if

² Because most wineries in Australia are small or micro-sized, equivalent titles to the CEO include director, general manager, managing director, managing partner, and proprietor.

the data comes from the period 2007–2013 and 1 if the variable comes from the period 2021–2023.

In addition to gender, each state (New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia) was coded to allow for comparisons. These states constitute nearly 100 percent of Australia’s wine production. Other variables captured include winery age, winery size, and export orientation. For winery age, the year that the winery was established was subtracted from the current year of the data³. For size, the tonnage range of wine grape production was used, where 1 = less than 10 to 99 tons, 2 = 100 to 999 tons, 3 = 1,000 to 4,999 tons, 4 = 5,000 to 19,999 tons, and 5 = over 20,000 tons.⁴ For export orientation, wineries were coded based on what percentage of sales were for export markets, where 1 = do not export, 2 = 1 to 25 percent, 3 = 26 to 50 percent, 4 = 51 to 75 percent, and 5 = 76 to 100 percent. Data for all these variables were collected from the Winetitles databases (and company web sites where applicable).

[Insert Table 1 about here]

V. Findings

Descriptive statistics are provided in Table 1. Of particular note, relative to 2007–2013 findings, is that women representation rates are up in CEO (33.7 percent vs. 12.7 percent), winemaking (16.7 percent vs. 8.8 percent), viticulturist (21.5 percent vs. 10 percent), and marketing roles (58.4 percent vs. 53.5 percent) roles. We also note that wine exports were down

³ Galbreath (2015) created categorical variables for firm age. Here, we account for the actual year the winery was established to develop our age variable.

⁴ Galbreath (2015) used case production range as a proxy for firm size. However, because of a lack of reporting on case production range in the Winetitles 2007 dataset (reducing observations), we instead rely on tonnage range as a proxy for firm size in this study.

over the 2021–2023 time period. We speculate that this is largely a reflection of Chinese tariffs imposed on Australian wine, which negatively impacted the industry during this time period.

To explore our first research proposition (i.e., that the likelihood of women in leadership roles increased since 2013), more formally, we used logistic regression analysis. In these analyses, we regressed the gender role variables on the indicator variable for the periods of 2007–2013 and 2021–2023 and the control variables. We also included winery random effects to account for the repeated observation of wineries. To allow for a more direct comparison of the log odds ratios in the models, we excluded the intercept and included both levels of the indicator variable for the periods of 2007–2013 and 2021–2023.

As can be seen in Table 2, in Model 1, the log odds of a woman in a CEO role were -4.876 ($p < 0.001$) in the 2007–2013 period and -0.641 ($p < .10$) in the 2021–2023 period. In Model 2, the log odds of a woman in a winemaker role were -6.288 ($p < 0.001$) in the 2007–2013 period and -4.703 ($p < 0.001$) in the 2021–2023 period. In Model 3, the log odds of a woman in a viticulturalist role were -5.210 ($p < 0.001$) in the 2007–2013 period and -2.703 ($p < 0.001$) in the 2021–2023 period. In Model 4, we regressed the same variables on women in the marketing role variable, and the log odds were -3.768 ($p < 0.001$) in the 2007–2013 period and -2.317 ($p < 0.05$) in the 2021–2023 period.

[Insert Table 2 about here]

For a test of RP1, we conducted Wald tests of the difference in effects between the 2007–2013 and the 2021–2023 periods. The results of these tests are also presented in the respective models in Table 2. Specifically, for all roles the difference is positive and significant, where CEO: Wald χ^2 for the difference = 265.99 ($p < 0.001$); winemaker: Wald χ^2 for the difference = 60.50 ($p < 0.001$); viticulturalist: Wald χ^2 for the difference = 79.31 ($p < 0.001$); and marketing: Wald χ^2 for the difference = 14.48 ($p < 0.01$).

[Insert Table 3 about here]

To ease the interpretation of the results, we also computed predicted probabilities (along with standard errors and p -values for the predicted probabilities) for these models and the differences in predicted probabilities between the periods of 2007–2013 and 2021–2023. The predicted probabilities and differences are presented in Table 3. As can be seen in Model 1, the predicted probability of a woman in a CEO role was 12.7 percent ($p > 0.001$) in the period of 2007–2013 and 33.7 percent ($p > 0.001$) in the 2021–2023 period; a difference of 21 percent ($p > 0.001$) was indicated. The predicted probability of a woman in a winemaker role was 8.8 percent ($p > 0.001$) in the period 2007–2013 and 16.7 percent ($p > 0.001$) in the 2021–2023 period; a difference of 7.9 percent ($p > 0.001$) was indicated. The predicted probability of a woman in a viticulturist role was 10 percent ($p > 0.001$) in the period 2007–2013 and 21.5 percent ($p > 0.001$) in the 2021–2023 period; a difference of 11.5 percent ($p > 0.001$) was indicated. The predicted probability of a woman in the marketing role was 53.5 percent ($p > 0.001$) in the period 2007–2013 and 58.4 percent ($p > 0.001$) in the 2021–2023 period; a difference of 4.9 percent ($p > 0.001$) was indicated. In combination, these results suggest that the likelihood of women in the leadership roles included in this study has increased significantly since 2013, offering support for RP1.

To test RP2 (i.e., that the likelihood of women being in the CEO role after 2013 is significantly greater than the likelihood of women being in winemaking, viticulturist, or marketing roles), we needed to test the difference in coefficients across equations statistically. To do so, we implemented an analogue to seemingly unrelated estimation equations that is flexible enough to accommodate company random effects. Specifically, we created stacked samples for each of the three roles that we wanted to compare with the CEO role (winemaker, viticulturist, and marketing). For each of these samples, we created an indicator variable that takes the value of 1 if the sample represents the CEO observations and 0 if the sample represents the observations of the other roles. We also created a variable in which we interacted

the CEO indicator variable with an indicator for the period of 2021–2023. The dependent variable in this is the stacked gender variable. A Wald test of the joint significance of the coefficients of the indicator and interaction variable is a test for the difference in the effect between equations. We estimated these models using random effects logistic regression.

[Insert Table 4 about here]

We present the results of these tests in Table 4. Model 1 presents the comparison of the effect on the CEO and the winemaker roles. The Wald χ^2 for the difference in effect is 216.23 ($p < 0.001$). This suggests that the CEO role did experience a significantly larger increase in women than the winemaker role when comparing the 2007–2013 and the 2021–2023 periods. Model 2 shows the comparison of the effect on the CEO and the viticulturalist roles. The Wald χ^2 for the difference in effect is 71.18 ($p < 0.001$). This finding suggests that the CEO role experienced a significantly larger increase in women than the viticulturalist role when comparing the 2007–2013 and the 2021–2023 periods. Finally, Model 3 shows the comparison of the effect on CEO and the marketing roles. The Wald χ^2 for the difference in effect is 278.89 ($p < 0.001$). This indicates that the CEO role experienced a significantly larger increase in women than the marketing role when comparing the 2007–2013 and the 2021–2023 periods. When taken together, these findings offer support for RP2.

In RP3, we postulated that the likelihood of women being in leadership roles in South Australia after 2013 is greater than the likelihood of women being in leadership roles in any other wine-producing state in Australia. To test this conjecture, we interacted the indicator variable for the period with the state variable while keeping South Australia as the excluded category. In these models, the coefficient for the interaction terms represents the difference in effect between South Australia and the other states for the 2021–2023 period. The results of these estimations are presented in Table 5.

[Insert Table 5 about here]

To test the difference between coefficients formally, we conducted a Wald χ^2 for the difference in effect between South Australia and other states. These tests are also reported in Table 5. Specifically, for all roles the difference is not significant: CEO, Wald χ^2 for the difference = 0.17 ($p = 0.680$); winemaker, Wald χ^2 for the difference = 0.20 ($p = 0.654$); viticulturalist, Wald χ^2 for the difference = 2.31 ($p = 0.128$); and marketing, the model displays poor fit to the data with a Wald $\chi^2 (15) = 12.88$ ($p = 0.612$), so this model should not be interpreted further. In summary, the findings suggest that contrary to RP3, there is not significant difference between South Australia and the other states in terms of the increased likelihood of women being in the leadership roles after 2013.

VI. Concluding remarks

At a time when institutional power is increasingly influencing firm practices that account for women in the workplace and gender equality, research on women in the wine industry is scarce (cf. Gallais & Livat 2024). Our study takes a step forward by comparing women in leadership roles in the Australian wine industry across two time periods, including recent data. We found that the number women in CEO, winemaking, viticulturist, and marketing roles have significantly increased in Australia since the 2007–2013 period. Further, in Australia, there has been robust institutional focus on appointing women to top executive positions, such as the CEO. We find that the increase of women in the CEO role in the Australian wine industry is significantly greater than the other roles studied. However, our prediction that increases in women's representation rates in the roles studied would be greatest in the state of South Australia failed to find support. This may mean that the effects of institutional power and influence do not appear to be concentrated in a particular wine producing region or state.

Our work is based on the tenets of institutional theory, with a specific focus on the role institutions are playing in influencing firm practices around gender diversity over time. Of course, how much improvement is enough? While the amount of improvement is debatable,

the results here are statistically significant. However, future research could focus on family succession, and the extent to which women are advancing by succeeding fathers or brothers in the specific roles, or the extent to which women are being promoted to the roles based on “time in the system” or by proving their credentials and expertise over time (cf. Alonso et al. 2021). Lastly, the original study covered seven years (Galbreath 2015). Although matching the seven years of data would have been ideal, we were unable to secure that time-series, covering only three years in the current study. While three years is sufficient to avoid a single-year anomaly, future research could consider either matching the years or creating a longer panel time-series.

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Tables

Table 1. Descriptive statistics

Period	2007–2013		2021–2023	
	Mean	Std. Dev.	Mean	Std. Dev.
Variable				
Roles				
Gender CEO	0.127	0.325	0.337	0.492
Gender Winemaker	0.088	0.284	0.167	0.378
Gender Viticulturalist	0.100	0.297	0.215	0.431
Gender Marketing	0.535	0.490	0.584	0.494
Firm age	21.615	24.016	30.894	24.760
Tonnage range				
99 or less	0.635	0.481	0.667	0.471
100-999	0.282	0.450	0.246	0.431
1,000-4,999	0.058	0.234	0.055	0.228
5,000-19,999	0.019	0.136	0.020	0.139
Over 20,000	0.006	0.074	0.012	0.109
Export percentage				
No export	0.178	0.383	0.665	0.472
1%-25%	0.518	0.500	0.233	0.423
26%-50%	0.170	0.376	0.058	0.234
51%-75%	0.086	0.280	0.023	0.148
76%-100%	0.047	0.212	0.021	0.145
Year				
2007	0.095	0.293		
2008	0.114	0.318		
2009	0.121	0.326		
2010	0.146	0.353		
2011	0.164	0.370		
2012	0.175	0.380		
2013	0.185	0.388		
2021			0.425	0.494
2022			0.268	0.443
2023			0.308	0.462
Winery state				
NSW	0.175	0.380	0.183	0.387
QLD	0.023	0.151	0.031	0.172
SA	0.338	0.473	0.313	0.464
TAS	0.032	0.177	0.047	0.212
VIC	0.275	0.447	0.285	0.451
WA	0.156	0.363	0.142	0.349

Notes: NSW = New South Wales; QLD = Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; and WA = Western Australia.

Table 2. Test of Research Proposition 1 (RP1)

	(1) Gender CEO	(2) Gender Winemaker	(3) Gender Viticulturalist	(4) Gender Marketing
2007–2013	-4.876*** [0.000] (0.388)	-6.288*** [0.000] (0.367)	-5.210*** [0.000] (0.490)	-3.768** [0.001] (1.180)
2021–2023	-0.641 [†] [0.056] (0.335)	-4.703*** [0.000] (0.349)	-2.703*** [0.000] (0.475)	-2.317* [0.024] (1.024)
Winery age	-0.011* [0.014] (0.004)	0.007 [†] [0.051] (0.003)	-0.009* [0.049] (0.005)	0.027* [0.035] (0.013)
Tonnage range	-0.351*** [0.001] (0.103)	0.108 [0.318] (0.108)	-0.362* [0.012] (0.144)	0.202 [0.314] (0.200)
Export percentage	-0.166* [0.042] (0.082)	-0.114 [0.210] (0.091)	-0.112 [0.324] (0.114)	0.043 [0.750] (0.134)
NSW	0.529 [†] [0.054] (0.275)	0.223 [0.348] (0.237)	0.005 [0.986] (0.286)	11.608** [0.002] (3.820)
QLD	0.646 [0.294] (0.615)	-0.979 [†] [0.096] (0.589)	-0.499 [0.382] (0.571)	5.390*** [0.001] (1.607)
TAS	0.785 [0.122] (0.508)	-0.295 [0.500] (0.437)	-0.815 [†] [0.093] (0.485)	0.838 [0.316] (0.835)
VIC	0.272 [0.272] (0.247)	-0.261 [0.234] (0.219)	0.311 [0.222] (0.255)	-0.102 [0.820] (0.449)
WA	0.250 [0.375] (0.282)	-0.251 [0.337] (0.261)	-1.477*** [0.000] (0.336)	-0.024 [0.963] (0.503)
Wald χ^2 2007–2013 vs 2021–2023	265.99***	60.50***	79.31***	14.48**
Log-Likelihood	-3824.70	-2477.20	-1853.78	-1461.20
Wald χ^2 (df)	457.29 (10)***	759.97 (10)***	476.39 (10)***	29.37 (10)**
# Observations	13,350	11,479	8,678	4,139
# Firms	2,934	2,566	2,049	1,066

Notes: Robust standard errors clustered on firm in parentheses, p -values in square brackets.

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. Test of Research Proposition 1 (RP1) continued (predicted probabilities)

	(1) CEO Gender	(2) Gender Winemaker	(3) Gender Viticulturalist	(4) Gender Marketing
2007–2013	0.127 [0.000] (0.006)	0.088 [0.000] (0.006)	0.100 [0.000] (0.008)	0.535 [0.000] (0.008)
2021–2023	0.337 [0.000] (0.012)	0.167 [0.000] (0.006)	0.215 [0.000] (0.011)	0.584 [0.000] (0.006)
2007–2013 vs 2021– 2023	0.210 [0.000] (0.015)	0.079 [0.000] (0.009)	0.115 [0.000] (0.017)	0.049 [0.000] (0.009)

Notes: Robust standard errors clustered on firm in parentheses, *p*-values in square brackets. Control variables held at means.

Table 4. Test of Research Proposition 2 (RP2)

	(1) CEO vs Winemaker	(2) CEO vs Viticulturalist	(3) CEO vs Marketing
CEO indicator=1	0.427** [0.006] (0.155)	0.420* [0.019] (0.179)	-4.133*** [0.000] (0.250)
CEO indicator x 2021– 2023=1	1.551*** [0.000] (0.187)	0.786*** [0.000] (0.212)	2.611*** [0.000] (0.271)
Winery age	-0.000 [0.886] (0.002)	-0.006* [0.035] (0.003)	-0.006 [†] [0.075] (0.003)
2007–2013	-3.768*** [0.000] (0.217)	-3.493*** [0.000] (0.259)	0.267 [0.323] (0.270)
2021–2023	-2.549*** [0.000] (0.204)	-1.465*** [0.000] (0.225)	0.902** [0.001] (0.277)
Tonnage range	-0.094 [†] [0.097] (0.057)	-0.278*** [0.000] (0.064)	-0.214*** [0.001] (0.064)
Export percentage	-0.103* [0.026] (0.046)	-0.122* [0.014] (0.050)	-0.054 [0.327] (0.055)
NSW	0.265 [0.127] (0.173)	0.252 [0.168] (0.182)	0.524* [0.012] (0.209)
QLD	-0.026 [0.944] (0.364)	0.178 [0.649] (0.391)	0.342 [0.473] (0.476)
TAS	0.217 [0.473] (0.302)	0.297 [0.334] (0.307)	0.643 [†] [0.094] (0.385)
VIC	0.024 [0.880] (0.159)	0.252 [0.130] (0.167)	0.236 [0.214] (0.190)
WA	0.099 [0.584] (0.180)	-0.142 [0.462] (0.193)	0.374 [†] [0.087] (0.218)
Wald χ^2 CEO vs other roles	216.32***	71.18***	278.89***
Log-Likelihood	-7538.30	-6730.79	-6341.12
Wald χ^2 (df)	1407.42 (12)***	1262.80 (12)***	597.24 (12)***
# Observations	24,829	22,028	17,489
# Firms	3,021	2,989	2,967

Notes: Robust standard errors clustered on firm in parentheses, p -values in square brackets.

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Test of Research Proposition 3 (RP3)

	(1) Gender CEO	(2) Gender Winemaker	(3) Gender Viticulturalist	(4) Gender Marketing
2007–2013	-4.788*** [0.000] (0.424)	-6.194*** [0.000] (0.396)	-5.497*** [0.000] (0.586)	2.690 [0.115] (1.707)
2021–2023	-0.677 [†] [0.067] (0.369)	-4.710*** [0.000] (0.368)	-2.520*** [0.000] (0.495)	4.015* [0.030] (1.854)
Winery age	-0.011* [0.014] (0.004)	0.007* [0.043] (0.003)	-0.010* [0.042] (0.005)	0.038 [0.325] (0.039)
Tonnage range	-0.363*** [0.000] (0.103)	0.095 [0.384] (0.109)	-0.351* [0.013] (0.142)	0.466 [0.238] (0.394)
Export percentage	-0.175* [0.033] (0.082)	-0.129 [0.165] (0.093)	-0.083 [0.484] (0.119)	0.418 [0.163] (0.299)
NSW	0.737 [†] [0.071] (0.408)	0.095 [0.793] (0.361)	0.315 [0.492] (0.458)	2.796 [0.194] (2.152)
QLD	0.587 [0.438] (0.757)	-0.819 [0.331] (0.843)	0.602 [0.370] (0.671)	-1.974 [0.297] (1.894)
TAS	0.527 [0.447] (0.693)	-1.078 [0.201] (0.842)	-0.208 [0.829] (0.967)	1.932 [0.498] (2.851)
VIC	0.035 [0.927] (0.382)	-0.439 [0.198] (0.341)	0.446 [0.273] (0.407)	1.965 [0.292] (1.867)
WA	-0.014 [0.973] (0.422)	0.012 [0.973] (0.357)	-1.274* [0.033] (0.598)	2.417 [0.201] (1.890)
2021–2023 x NSW	-0.433 [0.517] (0.668)	0.269 [0.629] (0.556)	-0.681 [0.403] (0.814)	0.033 [0.977] (1.145)
2021–2023 x QLD	0.097 [0.922] (0.995)	-0.292 [0.758] (0.950)	-2.601* [0.019] (1.108)	-0.116 [0.931] (1.333)
2021–2023 x TAS	0.450 [0.655] (1.009)	1.375 [0.168] (0.996)	-1.147 [0.467] (1.578)	5.478 [0.436] (7.039)
2021–2023 x VIC	0.422 [0.466] (0.580)	0.358 [0.468] (0.493)	-0.260 [0.709] (0.698)	0.649 [0.483] (0.925)
2021–2023 x WA	0.500 [0.444] (0.653)	-0.715 [0.240] (0.609)	-0.433 [0.652] (0.959)	-1.282 [0.234] (1.077)
Wald χ^2 SA vs other states	0.17	0.20	2.31	0.40
Log-Likelihood	-3820.93	-2472.02	-1847.45	-1750.89
Wald χ^2 (df)	464.66 (15)***	772.07 (15)***	476.30 (15)***	12.88 (15)
# Observations	13,350	11,479	8,678	4,139
# Firms	2,934	2,566	2,049	1,066

Notes: Robust standard errors clustered on firm in parentheses, p -values in square brackets.

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$