Catalogue no. 11-621-M
ISSN 1707-0503
ISBN 978-0-660-72943-5

Analysis in Brief

Gender pay gaps among board directors and officers in Canada

by Dante Frias Corona, Léa-Maude Longpré-Verret and Michelle Ouyang

Release date: October 15, 2024

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website, www.statcan.gc.ca.

You can also contact us by

Email at infostats@statcan.gc.ca

Telephone, from Monday to Friday, 8:30 a.m. to 4:30 p.m., at the following numbers:

- Statistical Information Service 1-800-263-1136
- National telecommunications device for the hearing impaired 1-800-363-7629
- Fax line 1-514-283-9350

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "Contact us" > "Standards of service to the public."

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Published by authority of the Minister responsible for Statistics Canada

An HTML version is also available.

Cette publication est aussi disponible en français.

Table of contents

Gender pay gaps among board directors and officers in Canada

by **Dante Frias Corona, Léa-Maude Longpré-Verret** and **Michelle Ouyang**
Centre for Innovation, Technology and Enterprise Statistics

This study was funded by Women and Gender Equality Canada (WAGE).

Abstract

This study explores the gender pay gap amongst Canadian board directors and officers by looking at various types of compensation. Research undertaken in the United States found that the gender pay gaps among top executives were mainly attributable to the variable pay component of compensation. Base pay is the component that does not depend on the individual's job performance and is mostly determined by an individual's position and level within a firm's hierarchy. By contrast, variable pay depends mainly on the individual's job performance over a given period. As part of variable pay, and to offer a financial incentive, employers can grant equity incentives to board directors and officers in lieu of a higher salary, resulting in lower base pay. Previous research showed that women executives earned lower variable pay than men executives, contributing to the widening of the gender pay gap. This research aims to determine how variable pay explains the gender pay gaps observed among executives in Canada.

1 Introduction

Women[1] have made significant gains in terms of their increased participation in the workforce and in higher educational attainment in Canada. According to the 2021 Census, women reached, on average, higher educational attainment than men.

Since 1985, there has been a marked and steady increase in women's engagement with the workforce, indicating their strong and growing attachment to the labour market. Despite these advancements, disparities in wages persist. In 2022, the differences in the hourly wages of men and women aged 20 to 54 reached 11.8% (Drolet and Amini 2023). Furthermore, women continue to be underrepresented in leadership positions, holding 20.5% of board seats and 31.4% of executive positions in 2020, while accounting for 47.9% of the labour force in Canada (Moyser 2019, Longpré-Verret and Richards 2021, Statistics Canada 2023a, Statistics Canada 2023b).

This study aims to measure gender pay gaps among board directors and executive officers in Canada by applying the Blinder–Oaxaca decomposition method to base pay and variable pay. To our knowledge, this study is the first of its kind in Canada. The Blinder–Oaxaca decomposition method is divided into two components: the explained portion and the unexplained portion. The explained portion attempts to measure the proportion of the gender pay gap that can be explained by observable factors (such as the individual's characteristics and the firm's characteristics), and the remaining portion of the gap—the unexplained portions—corresponds to the unobservable factors (all factors that are not available in the data sources and that cannot be collected).

Research undertaken in the United States found that the gender pay gaps among top executives were mainly attributable to the variable pay component of total compensation (Muñoz-Bullón 2010, Elkinawy and Stater 2011). Base pay is the component that does not reflect on an individual's job performance and is determined by an individual's position in the firm's hierarchy. Conversely, variable pay is a financial incentive given by employers to executives to bolster their productivity, reward them for superior performance and retain or attract talent. Typically,

1. Beginning in 2021, the census asked questions about both the sex at birth and the gender of individuals. While data on sex at birth are needed to measure certain indicators, as of the 2021 Census, gender (and not sex) is the standard variable used in concepts and classifications. For more details on the new gender concept, see Age, Sex at Birth and Gender Reference Guide, Census of Population, 2021.

   Given that the non-binary population is small, data aggregation to a two-category gender variable is sometimes necessary to protect the confidentiality of responses. In these cases, individuals in the category "non-binary persons" are distributed into the other two gender categories. Unless otherwise indicated in the text, the category "men" includes men (and boys), as well as some non-binary persons, while the category "women" includes women (and girls), as well as some non-binary persons.

   A fact sheet on gender concepts, Filling the gaps: Information on gender in the 2021 Census, is also available.

when equity incentives are offered to board directors and executive officers, they result in a higher variable salary and lower base pay.[2]

To foster the representation of women and diversity in leadership positions, several initiatives were put in place by the federal government, such as Bill C-25. Under that legislation, which came into effect in January 2020, federally incorporated firms must disclose information on the gender and diversity composition of their boards of directors and management teams. The Canadian government also committed to making progress toward gender equality within leadership positions through the Sustainable Development Goals and also by closing the gender pay gap through the *Pay Equity Act* (Government of Canada 2021).

To conduct this analysis, information from the *Corporations Returns Act* (CRA) and the T4 Statement of Remuneration Paid was combined from 2016 to 2020, and then linked to the 2021 Census short-form questionnaire. Given the linkage exercise, the estimates presented in this study are considered exploratory, meaning that they should be vetted in future work and interpreted with caution.

2 Previous literature

Extensive research has been conducted to determine factors that contribute to the gender pay gap, as pay discrepancies persist after controlling for socioeconomic characteristics, role, type of enterprise and workplace.[3] Essentially, women tend to be segregated into lower-paying roles and distributed differently by industry and firm size (Card, Cardoso and Kline 2016, Pelletier, Patterson and Moyser 2019, Drolet and Amini 2023)—a pattern that is also observed among executives and top earners (Carter, Franco and Gine 2017, Bonikowska, Drolet and Fortin 2019). Gender pay gaps among executives tend to narrow in firms where more women work in top decision-making roles.

The gender pay gaps among board directors and officers were also explained by women's aversion to risk. According to (Barber and Odeon 2001, Graham, Harvey and Puri 2009), the authors suggest that, typically, women are more averse to risk than men, influencing how women directors and officers negotiate their compensation packages. They are more likely to accept a package with a better guarantee of high compensation than men, translating to a higher base salary and a lower variable salary.

The gender pay gap among top executives was also measured with a Blinder–Oaxaca decomposition model. Data from publicly traded corporations operating in the United States were used in these studies (Muñoz-Bullón 2010, Carter, Franco and Gine 2017). They found that women earned, on average, lower compensation than men, where occupational segregation was found to be the main factor contributing to this discrepancy. They also showed that the gender pay gap was greater when variable pay was used as the dependent variable, compared with base salary.

In Canada, a limited number of studies have attempted to measure gender pay gaps among executives and none have applied the Blinder–Oaxaca decomposition model. Some research has used this model to explain the effect of certain attributes on the gender pay gap. Variables such as education, job position, industry and personal demographics are used in this model to explain which variable has a greater impact on the gender pay gap (Drolet and Amini 2023). In the following study, the Blinder–Oaxaca decomposition model was adopted to investigate the effect of some socioeconomic and firm characteristics on gender pay gaps among executives in Canada.

2. Equity incentives include stock options and stock grants. Stock options give employees the opportunity to buy their employer's shares at a specific price, while under a stock grant arrangement, employees receive shares from their employer. The payoff from equity incentives is subject to fluctuations in the stock market when a corporation is publicly traded, or in the book value of a corporation when it is privately owned.
3. The workplace encompasses different components of the work environment, such as workplace size, foreign ownership, training expenditure for employees and unionization. For more information, see Drolet (2002).

3 Data sources and methodology

Data sources

Exploratory estimates were created by combining multiple datasets to measure whether a gender pay gap occurs among corporate executives. The starting point of the research database is the CRA. Through the CRA, ownership information is collected on corporations conducting business in Canada, along with information on directors and officers.[4] Those data were integrated into the Derived Record Depository (DRD), a national dynamic relational database containing only the basic personal identifiers of Canadians, enabling connections between different data sources. From 2016 to 2020, 44% of board directors and officers were successfully linked to the DRD.[5] This subgroup was then linked to the T4 Statement of Remuneration Paid, which summarizes all the income and other payments (such as bonuses, exercised stock options and pension income) earned from employment.[6]

Executives can hold different positions within corporations: director exclusively, both director and officer, or officer exclusively.[7] Board directors, who are elected by shareholders, are responsible for supervising the activities of corporations and making decisions on those activities. Officers are in charge of the day-to-day operations of enterprises and are appointed by board directors. Together, board directors and officers form the management of the corporation. Those identified as board directors exclusively were removed from the sample because significant differences were observed in their earnings, compared with both directors and officers, and officers exclusively. Typically, attachment to the labour market is weaker for people younger than 25 within these positions, given that some of them are still in the early stages of their careers, and for people older than 64, many of whom leave for retirement. For these reasons, age restrictions were imposed on the sample to examine only executives aged 25 to 64.

Among the 71,580 executives identified under the CRA from 2016 to 2020, 27,080 executives were successfully linked to the DRD and then to the T4 Statement of Remuneration Paid. These individuals were then linked to information from the short-form census questionnaire to identify the socioeconomic characteristics that may contribute to gender pay gaps among board directors and officers.

Base salary and variable salary were derived from the T4 Statement of Remuneration Paid. Base salary corresponds to the total employment income minus all taxable allowance, benefits, employment commissions and all other employment income that is not part of the base salary, except bonuses.[8] Bonuses were not withdrawn from the base salary, as a single value that sums the base salary and bonuses is reported by employers. Meanwhile, variable salary was defined as all eligible shares or units of mutual fund trusts given by the employer to the employee.[9]

Nevertheless, this study sheds light on the different income elements that comprise the compensation of board directors and officers in Canada, and determines, to some extent, the main income source of the gender pay gap among executives. This intersectional analysis also raises important issues related to discrimination in the labour market, such as gender diversity in top decision-making roles, equal access to management positions and equal pay when holding similar roles with similar levels of competency.

4. Providing information under the CRA is mandatory for all public, private and government business corporations that meet one of the CRA thresholds for a fiscal period: gross revenue over $200 million, assets exceeding $600 million, or long-term debt or equity owing to non-residents surpassing $1 million. For more information on the CRA data, see the *Corporations Returns Act* (CRA).
5. The executives were linked to the DRD through the first and last names provided in the CRA questionnaire. Some enterprises provided incomplete information (such as giving only executives' initials), preventing a successful linkage between the CRA and the DRD. Moreover, directors and officers living abroad will never be integrated into the DRD because it contains personal identifiers for Canadian citizens exclusively.
6. Income values for the years 2016, 2017, 2018 and 2019 were adjusted for inflation, with 2020 dollars as the reference period. In addition, income values lower than $30,000 were removed from income estimates, being identified as outliers.
7. Executives who were just board directors were excluded from the estimates because some did not work extensively in the firm where they were board directors, translating into a small employment income, compared with those who were exclusively officers and with both directors and officers, and potentially leading to bias in the estimates.
8. Base salary includes the following type of employment income: salary, wages, bonuses, vacation pay, tips and gratuities, honorariums, and director's fees. Specifically, the base salary comes from box 14 of the T4 Statement of Remuneration Paid, from which several types of employment income were removed: board and lodging, security options benefits, employment commissions, etc. For more information on the employment income reported in the T4 Statement of Remuneration Paid, see Employers' Guide – Filing the T4 Slip and Summary (https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/rc4120/employers-guide-filing-t4-slip-summary.html).
9. Specifically, variable salary corresponds to all stock option benefits reported by employers under code 38 in the T4 Statement of Remuneration Paid. For more information, see Employers' Guide – Filing the T4 Slip and Summary (https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/rc4120/employers-guide-filing-t4-slip-summary.html).

4 Results

Women executives have a lower compensation package than men executives

Of the 27,080 executives, women accounted for the smaller group, at 6,340, while men represented the larger group, at 20,740. From 2016 to 2020, executives worked in 9,760 enterprises. In 3,730 enterprises (38.2%), at least one woman occupied an executive role, compared with 8,780 enterprises (61.7%) that had at least one man working as an executive.

In terms of total compensation, women executives earned, on average, 40.6% less than men executives (Table 1). A similar gender pay gap was observed for base pay: women executives earned, on average, 38.8% less than men executives. The gender pay gap widened to 55.5% for variable pay.

Table 1
Descriptive statistics on the compensations of executives, by gender, 2020

	All	Women executives	Men executives	Raw gap	Raw gap
Variables		2020 dollars			percent
Average total compensation	673,400	442,100	744,200	302,100	40.6***
Average base pay	504,300	339,700	554,700	215,000	38.8***
Variable pay					
Average of stock options	95,100	48,700	109,400	60,700	55.5***
			number		
Number of individuals	27,080	6,340	20,740	...	...
Number of enterprises	9,760	3,730	8,780	...	...

... not applicable
*** significantly different from reference category ($p < 0.001$)
Note: The total compensation, base pay and variable pay of executives come from the employment income sourced in the T4 remuneration files from the Canada Revenue Agency for the year 2016, 2017, 2018, 2019 and 2020. Income values for the year 2016 and 2019 were adjusted for inflation, with the 2020 dollars as the reference period. Estimates show an average of all income values declared, regardless the year due to the inflation-adjusted values, by gender.
Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

Women executives are younger, less likely to be married, to have at least one child and to occupy a top-level position, compared with men executives

Women executives were aged 50, on average, while men executives were aged 52, on average (Table 2). Women executives were also less likely to be married (71.2%) and to have at least one child (37.9%) than men executives (83.8% and 39.8%, respectively).

Previous studies demonstrated that the main factor contributing to the gender pay gap among officers was the position occupied within the company. Women officers tended to occupy lower-level positions (rather than the position of chairperson or president) than men officers attributed to the glass ceiling effect (Carter, Cardoso and Kline 2016). Similarly, women officers in Canada were less likely to occupy top officer roles. For example, women officers were 1.5 times less likely than men officers to work as chairperson (Table 2). This gender gap widened for the position of president of a company, as women officers were 2.9 times less likely than men officers to occupy that position. The position of vice-president was the most predominant role held by both women officers (24.8%) and men officers (29.6%). Conversely, women were more likely to occupy lower-level positions. For example, women officers were 2.3 times more likely to work as secretary than men officers and 3 times more likely to be assistant secretary.

Table 2
Descriptive statistics of executives and firms, by gender, 2020

	All directors and officers	Women	Men
Executive characteristics		in years	
Average age	51.1***	49.9***	51.5***
		percent	
Married	80.8***	71.2***	83.8***
Have Children	39.3**	37.9**	39.8**
Position titles			
Both board directors and officers	41.3	33.5	43.6
Chairperson	2.5	1.4	2.9
President	16.2	6.7	19.1
Vice-president	28.5	24.8	29.6
Executive vice-president	4.7	3.6	5.0
Secretary	6.4	11.4	4.9
Assistant secretary	3.0	6.1	2.0
Secretary treasurer	1.1	1.3	1.1
Treasurer	2.8	3.6	2.6
Controller	1.4	2.1	1.2
Auditor	0.1	0.1	0.1
Firm characteristics		2020 dollars	
Average Sales (x1,000,000)	900***	1,100***	900***
Average Assets (x1,000,000)	11,100***	15,100***	9,900***
Firm profitability		percent	
Average ROA	5.3	5.4	5.3
Average ROE	16.3	16.6	16.2

** significantly different from reference category ($p < 0.01$)
*** significantly different from reference category ($p < 0.001$)
Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

Women executives work in larger firms than men executives

Executive pay is primarily connected to firm size, which can be evaluated by several alternative measures, such as log of assets and log of sales (Dang, Li and Yang 2018). Previous research in the United States showed that, regardless of the firm size measure, firms that employed women executives were significantly smaller than those in which men were employed. Conversely, the current study showed an opposite trend in Canada. Women executives reported working in larger firms than men executives. Firms that employed women executives recorded average sales of $1.1 billion and average assets of $15.1 billion, while firms that employed men executives had average sales of $900 million and average assets of $9.9 billion (Table 2).

Gender pay gaps persist among executives after controlling for socioeconomic and firm characteristics

This section analyzes the gender pay gap with three different income variables: total compensation, base pay and variable pay. The first model estimates total compensation and base pay, including the gender dummy variable, using an ordinary least squares regression. The results show that women executives earned 39% less than men executives when controlling for the gender of individuals (Model 1 in Table 3). In the results for base compensation, the gender gap narrowed to 37% (Model 1 in Table 4). These trends are consistent with previous literature, which found that women executives were more likely to accept higher base pay than variable pay.[10]

When executive age and size of firm were controlled for, the gender pay gap rose to 43% with total compensation as the dependent variable (Model 2 in Table 3), while the gender pay gap reached 40% with base pay as the dependent variable (Model 2 in Table 4). Firm size had a positive impact on both total compensation and base salary. In fact, firms with 10% more assets increased their executives' total compensation and base pay by about 10%. Similarly, firms with 10% higher sales boosted their executives' total compensation and base pay by roughly 4%. These results are consistent with previous studies, where executives of larger firms were found to have higher compensation, given that large firms tend to employ better-qualified and better-paid managers (Muñoz-Bullón 2010).

In the previous regressions, the models did not consider the variables of executives' occupational titles and firms' profitability. Model 3 in tables 3 and 4 addressed this oversight by controlling for these two factors. When accounting for occupational titles and firm profitability, the gender pay gap measured with total compensation declined from 43% to 32%, and with base pay decreased from 40% to 29%. Thus, the occupation held by executives partially explained the gender pay gaps detected in total compensation and base pay. Presidents of companies earned, on average, total compensation that was 69% higher than that of any other executive, while this position was associated with base pay that was higher, on average, by 71%. This is consistent with the finding in the literature that the president of a company earned, on average, the highest total compensation and base pay within a company (Muñoz-Bullón 2010).

Although occupational title contributed to explaining total compensation and base pay of executives, the gender gap persisted, even after controlling for occupational titles (Model 3 in tables 3 and 4). This suggests that an individual's position in the firm hierarchy cannot be the only factor explaining the base compensation earned by executives. Conversely, research by Muños-Bullon (2010) demonstrated that occupational title explained a significant part of base compensation, to the extent that the gender variable was not significant when controlling for occupational title.

10. Total compensation includes both base pay and variable pay.

Table 3
Ordinary least square regressions on the total compensation of executives, 2020

	Model 1	Model 2	Model 3
		coefficient	
Intercept	12.90	9.65	9.41
Executives' characteristics			
Gender	-0.39***	-0.43***	-0.32***
Age	...	0.01***	0.01***
Married spouse or common law partner	...	...	0.06***
Children	...	...	0.09***
Number of positions occupied	...	...	0.00
Both board directors and officers	...	...	-0.23***
Chairperson	...	...	-0.05
President	...	...	0.69***
Vice-president	...	...	0.11***
Executive vice-president	...	...	0.55***
Secretary	...	...	-0.01
Assistant secretary	...	...	-0.36***
Secretary treasurer	...	...	0.00
Treasurer	...	...	-0.07*
Controller	...	...	-0.23***
Auditor	...	...	-0.53***
Other	...	...	0.05**
Firms' characteristics			
ROE	...	...	0.10***
Log of sales	...	0.04***	0.04***
Log of assets	...	0.11***	0.11***
Utilities	...	...	-0.41***
Finance	...	...	-0.02
Energy	...	...	-0.04
Construction	...	...	-0.10***
Distribute Trade	...	...	-0.06***
Manufacturing	...	...	-0.12***
Management	...	...	0.00
Private	...	...	0.03
R-squared	**0.03**	**0.16**	**0.24**

... not applicable
* significantly different from reference category ($p<0.05$)
** significantly different from reference category ($p<0.01$)
*** significantly different from reference category ($p<0.001$)
Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

Table 4
Ordinary least square regressions on the base salary of executives, 2020

	Model 1	Model 2	Model 3
		coefficient	
Intercept	12.66	9.69	9.42
Executives' characteristics			
Gender	-0.37***	-0.40***	-0.29***
Age	...	0.01***	0.00***
Married spouse or common law partner	...	...	0.06***
Children	...	...	0.01
Number of positions occupied	...	...	0.00*
Both board directors and officers	...	...	-0.26***
Chairperson	...	...	0.04
President	...	...	0.71***
Vice-president	...	...	0.12***
Executive vice-president	...	...	0.61***
Secretary	...	...	0.02
Assistant secretary	...	...	-0.33***
Secretary treasurer	...	...	0.08
Treasurer	...	...	-0.03
Controller	...	...	-0.16***
Auditor	...	...	-0.37*
Other	...	...	0.02
Firms' characteristics			
ROE	...	...	0.14***
Log of sales	...	0.04***	0.03***
Log of assets	...	0.10***	0.1***
Utilities	...	...	-0.34***
Finance	...	...	-0.09****
Energy	...	...	-0.07**
Construction	...	...	-0.07*
Distribute Trade	...	...	-0.08***
Manufacturing	...	...	-0.09***
Management	...	...	-0.03
Private	...	...	0.23***
R-squared	**0.02**	**0.12**	**0.21**

... not applicable
* significantly different from reference category (p<0.05)
** significantly different from reference category (p<0.01)
*** significantly different from reference category (p<0.001)
Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

The variable pay gap is the largest among all types of compensation

In principle compensation received by executives is based on firm characteristics (e.g., size, industry, or type of corporation) and executive characteristics (e.g., age, level of educational attainment, or occupational title). To investigate the proportion in which such characteristics explain the gender pay gap, the Blinder–Oaxaca decomposition method was applied. This is a standard method to determine the contribution of each characteristic in explaining the gender wage gap.

For each characteristic, a positive percentage contributed to narrowing the gender pay gap, while a negative percentage contributed to widening the gender pay gap. The larger the value of each characteristic, the greater the effect on the gender pay gap, with the combined effect summing to the total explained portion. The results of the Blinder–Oaxaca decomposition showed that the firm characteristics and executive characteristics included in the model were able to explain 22.3% of the gender pay gap found for total compensation, 24.3% for base pay and 38.4% for variable pay (Table 5).

Table 5
Gender Blinder-Oaxaca decomposition, by type of compensation, 2020

	All executives		Executives reporting stock options
	Total compensation	Base pay	Variable Pay
		log	
Total difference	**0.380**	**0.358**	**0.600**
		percent	
Total explained portion (sum of effects of variable below)	**22.32**	**24.29**	**38.41**
Explained by			
Sales	-2.00	-1.72	2.82
Assets	-11.24	-11.57	-11.82
ROE	-0.05	0.00	0.01
Executives' characteristics	7.64	6.26	17.54
Occupational titles	27.76	28.64	26.95
Firms' characteristics	0.21	2.67	2.92
Total unexplained portion	77.68	75.71	61.59

Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

Occupational title is the key contributor to the gender pay gap among executives

According to the results presented in Table 5, the occupational titles of women executives and men executives explained the largest portion of the reduction in the gender pay gap. In fact, across all compensation types, the proportion of the gap explained by occupational titles was similar, varying from 26.9% to 28.6%. This suggests that the disparity in compensation between genders was partly attributable to occupational segregation. With compensation differences pronounced across various occupational titles, the higher proportion of women executives in lower-paying roles impacted their base pay downward. Indeed, the data indicated that 2.5% of executives in Canada held president roles, with only 1.4% of women executives serving as presidents compared to 2.9% of men. Conversely, 11.4% of women executives held secretary positions, while a smaller portion of men executives (4.9%) occupied that role.

Executive characteristics were the second-most important factor that contributed to narrowing the gender pay gap among executives in Canada. Age, marital status and number of children narrowed the gender pay gap by 7.6% in total pay, 6.3% in base pay and 17.5% in variable pay.

Firm characteristics have a widening effect on the gender total compensation gap

Firm size influenced the compensation of executives, as some previous studies suggested (Rosen 1982, Kostiuk 1990). This supported the findings in tables 3 and 4, where firm size had a positive impact on total compensation and base pay. Elkinawy and Stater (2011) found that women executives tended to sit on the boards of larger companies, where most of them held lower-level positions, rather than higher-level roles. Sales had a mixed effect on all three types of compensation. For variable pay, sales narrowed the gender pay gap by 2.8%, while they widened the gender pay gap for both base pay (-1.7%) and total compensation (-2.0%). Assets, the other factor for measuring firm size, had an even larger negative effect, widening the gender pay gap in total compensation (-11.2%).

While the size of firms tended to widen the gender pay gap, other firm characteristics contributed to narrowing total compensation by 0.2%. This result was driven by the industry in which firms operated (tables 3 and 4), as industry profile was negatively correlated with the composition of total compensation and base pay.

Firms' profitability plays a limited role in narrowing the gender pay gap

Changes in firms' profitability measured by return on equity (ROE) also contributed to decreasing the gender pay gap in the top decision-making roles. Nevertheless, previous research suggested that ROE was the primary determinant of executives' compensation (Murphy 1999). If executives were paid according to performance, compensation should increase as profitability increases (Hall and Liebman 1998). Unlike previous studies, ROE played a negative and limited role in explaining the gender pay gap in this paper (0.1% of the gender total compensation gap and 0.01% of the gender variable pay gap). ROE slightly narrowed the gender pay gap in base pay, by less than 0.01%.

A larger proportion of the gender pay gap of variable pay is explained

In the literature, research found that the control variables explained a larger proportion of the gender pay gap when using base pay as a dependent variable (Muñoz-Bullón 2010). Conversely, in this study, the model was able to better explain the gender pay gap of variable pay. The characteristics of executives (age, marital status and number of children) appeared to have a greater explanatory power for variable pay (17.5%) than for base pay (6.3%). The larger impact of these characteristics on variable pay suggests that factors related to the life stage significantly influence the earnings potential beyond base salary for women. This may be because variable pay, often comprising commissions or stock options, is influenced by the amount of time and flexibility an employee can dedicate to work, which, in turn, are affected by family responsibilities.

Conclusion

This paper examines gender wage gaps among boards of directors and officers and explores how various factors impact the gaps detected among top executives in Canada. The analysis was based on annualized data from the CRA linked to the 2021 Census and tax data.

Less than one-quarter of executive positions are occupied by women, and occupation titles are closely tied to the base pay of an executive. The president or chief executive officer of a firm is awarded the greatest compensation, aligning with Muñoz–Bullón's finding for top executives (2010). However, 6.7% of women executives occupy such positions, as opposed to 19.1% for men.

Executives' socioeconomic characteristics narrow the gender pay gap. Women executives were younger than men executives, on average. However, women executives were less likely to be married (71.2% versus 83.8%) and less likely to have children (37.9% versus 39.8%) than men executives. On average, women executives tended to work in larger firms than men executives.

Evidence in this study suggests that about one-quarter of the narrowing of the gender pay gap is attributable to factors such as human capital, the characteristics of firms, profitability and industry. These findings provide interesting insight on gender pay gaps in top decision-making roles in Canada. The difference between total

compensation and base pay is not as significant as previous literature suggests. The main reason for this may be that tax data do not provide a complete picture of board directors' and officers' earnings. More detailed information would permit better categorization of each source of employment income in either base salary or variable salary. Moreover, executives have an incentive to accept packages that avoid an excessive tax burden, while employers also seek to optimize their own tax contributions (Stikeman Elliott L.L.P. 2015). Firms are subject to different tax laws, depending on their characteristics—mainly whether the firm is publicly traded or privately owned, or Canadian controlled or foreign controlled—as is executives' compensation.[11] Estimates presented in this study attempted to control for the main firm characteristics, rather than the tax implications. Future work on the topic of gender pay gaps among executives in Canada would benefit from having a detailed breakdown of earnings to better capture the types of compensation packages accepted by women executives.

11. Firms are subject to different tax laws if they are publicly traded or privately owned, and also if they are controlled by a Canadian entity or by a foreign controlled entity. See Employers' Guide – Taxable Benefits and Allowances.

Annex

Methodology

In this study, a Blinder–Oaxaca model is used to measure the pay gap between women executives and men executives. Prior to this step, the gender pay gap was measured with an ordinary least squares (OLS) regression on two employment income values—total compensation and base salary. Total compensation is all the income and other payments earned from employment, which include base salary and variable salary. The equation is as follows:

$$Ln(y_i) = \alpha + \beta X + \varepsilon_i$$

where y is the natural logarithm of total (or base) salary, α is the intercept, β is the set of coefficients indicating the return on the salary according to the independent variables represented by X, and ε is the error term.

The independent variables used in this study were defined as follows:

Variable Definitions

Variable	Definition
Number of positions	Executives can hold different positions within the same enterprise structure. Typically, one T4 slips is issued by the employer notwithstanding if the individual occupies different executive positions in several companies of the parent enterprise.
Officer Positions Titles	Officer can occupy different officer positions. A dummy variable was created for each position hold within the parent enterprise: Chairman, president, vice-president, executive vice-president, secretary, assistant secretary, secretary treasurer, treasurer, auditor and controller. The reference position title is “other position”. Each dummy variable equal 1 if an individual occupies the officer position, and 0 if not.
Both Directors and Officers	Dummy variable equal to 1 if an individual occupies a board director and an officer position and zero if not.
Chairman	Dummy variable equal to 1 if an individual occupies a chairman position and 0 if not.
President	Dummy variable equal to 1 if an individual occupies a president position and 0 if not.
Vice-President	Dummy variable equal to 1 if an individual occupies a vice-president position and 0 if not.
Executive Vice-President	Dummy variable equal to 1 if an individual occupies an executive vice-presidentposition and 0 if not.
Secretary	Dummy variable equal to 1 if an individual occupies a secretary position and 0 if not.
Assistant Secretary	Dummy variable equal to 1 if an individual occupies an assistant secretary position and 0 if not.
Secretary Treasurer	Dummy variable equal to 1 if an individual occupies a secretary treasurer position and 0 if not.
Treasurer	Dummy variable equal to 1 if an individual occupies a treasurer position and 0 if not.
Auditor	Dummy variable equal to 1 if an individual occupies an auditor position and 0 if not.
Controller	Dummy variable equal to 1 if an individual occupies a controller position and 0 if not.
Age	Continuous variable within an interval of 25 to 64 years old
Marital Status	Dummy variable equal to 1 if an individual is married or in a common-law relationship, and 0 if not
Children	Dummy variable equal to 1 if an individual has more than one child, and 0 if not.
Assets	Correspond to the total value of assets reported by the firm for a given year, which is a common measure of firm size within the literature
Sales	Correspond to the total value of sales recorded by a firm for a given year, which is another common measure of firm size within the literature
Return on Equity (ROE)	Measures the profitability of firms by taking the net income and divided by the shareholders equity.
Return on Asset (ROA)	Measures the efficiency of firms by taking the net income and divided by the total average assets.
Industry	Sector under the North American Industry Classification System (NAICS) divided into 6 industries
Type of corporation (private)	Dummy variable equals 1 if the executive occupies a privately owned firm, and 0 if not

Sources: Statistics Canada, Tax files, 2016 to 2020; and *Corporations Returns Act*, 2016 to 2020.

Blinder–Oaxaca decomposition

The next step in examining the gender wage gap is to use the Blinder–Oaxaca decomposition procedure on the OLS regression results. This procedure separates the wage gap into an explained portion (the result of differences between the individual characteristics of women executives and men executives, and also the differences between the types of firms in which women executives and men executives work) and an unexplained portion (attributable to any characteristics that were not included in the model, as well as all unobservable factors).

For the Blinder–Oaxaca decomposition, the results of the OLS regressions for women executives and men executives are presented as follows:

$$Ln\overline{(Y_i)} = \alpha_m + \widehat{\beta}_m \overline{X}_m + \varepsilon_m$$

and

$$Ln\overline{(Y_i)} = \alpha_w + \widehat{\beta}_w \overline{X}_w + \varepsilon_w$$

The *m* and *w* represent the figures for men and women, respectively. $Ln\overline{(y_i)}$ is the natural logarithm of the average salary selected. In this study, the Blinder–Oaxaca decomposition was applied to three income values: total compensation, base salary and variable salary. Similarly, α $\widehat{\beta}$ represents the estimated regression coefficients, and $\overline{X}$ represents the averages for the wage-determining variables. Once these results are gathered for men, a counterfactual equation for women is calculated, showing what they would earn if they received the same pay for their wage-determining characteristics as men.

Bibliography

Barber, B., and T. Odeon. 2001. "Boys will be boys: Gender, overconfidence, and common stock investment." *Quarterly Journal of Economics 116(1)* 261-292.

Bonikowska, A., M. Drolet, and N. M. Fortin. 2019. "Earnings Inequality and the Gender Pay Gap in Canada: The Role of Women's Under-representation Among Top Earners." *Economic Insights* (Statistics Canada) No. 088 (Catalogue 11-626-X). https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2019002-eng.htm.

Card, D., A. R. Cardoso, and P. Kline. 2016. "Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women." *The Quarterly Journal of Economics* 131 (2): 633-686. Accessed September 2023. doi:https://doi.org/10.1093/qje/qjv038.

Carter, M. E., F. Franco, and M. Gine. 2017. "Executive Gender Pay Gaps: The Roles of Female Risk Aversion and Board Representation." *Contemporary Accounting Research* 34 (2): 1232-1264. doi:https://doi.org/10.1111/1911-3846.12286.

Dang, C, Z.F. Li, and C Yang. 2018. "Measuring Firm Size in Empirical Corporate Finance." *Journal of banking and finance* 86, 159-176.

Drolet, M. 2002. "The Male-Female Wage Gap." *Perspectives on Labor and Income*, 29.

Drolet, M., and M. M. Amini. 2023. "Intersectional Perspective on the Candian Gender Wage Gap." *Statistics Canada.*

Elkinawy, S., and M. Stater. 2011. "Gender Differences in Executive Compensation: Variation with Board Gender Composition and Time." *Journal of Economics and Business 63* 23-45.

Government of Canada. 2021. "Diversity of Boards of Directors and Senior Management of Federal Distributing Corporations – 2020 annual report." https://ised-isde.canada.ca/site/corporations-canada/en/data-services/diversity-boards-directors-and-senior-management-federal-distributing-corporations-2020-annual.

Graham, J. R., C.R. Harvey, and M., Puri. 2009. "Managerial attitudes and corporate actions." *Working Paper, Duke University and NBER*. Accessed 06 08, 09. http://ssrn.com/abstract=1432641.

Hall, B. J., and J. B. Liebman. 1998. "Are CEOs Really Paid Like Bureaucrats?" *Quarterly Journal of Economics 113* 652-691.

Kostiuk, P. F. 1990. "Firm Size and Executive Compensation." *The Journal of Human Resources*.

Longpré-Verret, L., and E. Richards. 2021. "Diversity Among Board Directors and Officiers: Exploratory Estimates on Family, Work and Income." *Statistics Canada*.

Macdonald, D. 2019. *The Double-Pane Glass Ceiling: The Gender Pay Gap at the Top of Corporate Canada.* Canadian Centre for Policy Alternatives. Accessed September 2023. https://www.policyalternatives.ca/publications/reports/double-pane-glass-ceiling.

Moyser, M. 2019. "Measuring and Analyzing the Gender Pay Gap: A Conceptual and Methodological Overview." *Studies on Gender and Intersecting Identities. Statistics Canada Catalogue No.45-20-0002.*

Muñoz-Bullón, F. 2010. "Gender-Compensation Differences Among High-Level Executives in the United States." *Industrial Relations: A Journal of Economy and Society 49.3* 346-370.

Murphy, K. J. 1999. "Executive Compensation." *Handbook of Labor Economics Vol. 3* 2485-2563.

Pelletier, R., M. Patterson, and M. Moyser. 2019. "The Gender Wage Gap in Canada: 1998 to 2018."

Rosen, S. 1982. “Authority, Control, and the Distribution of Earnings.” *Bell Journal of Economics*, 311-323.

Statistics Canada. 2023a. “Labour force status by age and gender: Canada, provinces and territories, census divisions and census subdivisions.” *Table: 98-10-0485-01*. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=9810048501.

Statistics Canada. 2023b. “Representation of women on boards of directors and in officer positions, 2020.” https://www150.statcan.gc.ca/n1/daily-quotidien/230529/dq230529b-eng.htm.

Stikeman Elliott L.L.P. 2015. “Executive Compensation Guide for Canadian Officiers and Directors.”