

# THE TRUTH ABOUT CEO AND WORKER COMPENSATION

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by Vincent Geloso

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# Executive Summary

In recent years, there has been a concern that CEO pay has been out of step with the pay of the average worker. This concern has been fueled by a belief that CEO pay is not linked with performance and that corporate executives are shielded in their jobs. This study is meant to dispel myths about CEO compensation in Canada and provide some much-needed nuance. The analysis uses improved approaches to data to provide a correct depiction of the differences between the compensation of CEOs and that of the average worker and the factors driving the compensation offered to CEOs.

First, CEO pay has increased because the demand for the skills of CEOs has increased. With rapid technological changes and globalization, firms have been exposed by more intense competition. In such settings, even small errors can be costly. The skills needed to lead a major corporation are thus increasingly valued, which means that there is great (and increasing) demand for such skills. The economics, economic history, and management literature confirms this by showing that the average CEO today tends to have more technical skills than in the past. This literature also shows that boards invest considerable resources in selecting the right candidates, tracking the performance of those selected, and firing those who fail to perform. Indeed, between 38% and 55% of CEO turnovers are “performance-induced” (that is, the CEO is fired for disappointing performance). This explains why we find *high* turnover at the top. Consider the top 100 CEOs in Canada in 2007. Of those who were in those top slots in 2007, only 15 remained in 2017. To put things in perspective, the turnover among the top 100 in Canada is nearly twice as fast as in the United States.

Second, an important caveat about CEO pay. Boards select the managers of corporations based on the ability to generate profits, not the manner in which those profits are generated. Thus, if political factors enter into consideration for maximizing profits, and especially if these factors overtake market-based considerations, CEO pay will be conditioned on political clout. This is a crucial nuance. The literature on economic inequality makes clear that people are unconcerned with unequal distributions as long as they are perceived as fair (that is, that people have reasonable chances at upward economic mobility). This being the case, when industries walled from competition by government regulations and/or subsidies offer high pay to politically connected managers, one can

easily understand the discontent. However, in such an instance, the discontent ought to be directed at the perversion of incentives that political meddling in market processes generate. This is a nuance that is too rarely heard.

Third, studies comparing CEO to worker pay are flawed. They compare apples to oranges, for example, the overall compensation of top 100 CEOs with the cash pay of all workers. An apples-to-apples comparison that consists in comparing the overall compensation of these top 100 CEOs with the total compensation of the workers in companies of equal size to those managed by these CEOs is better. Such a comparison reduces the ratio frequently published by 24%. An even better comparison consists in comparing the top 1,000 CEOs to the average worker. When this is done, instead of comparing workers to the arbitrarily defined top 100, the ratio of CEO to worker compensation falls by 81%. The best comparison consists in comparing all senior management workers with all workers. When this is done, the ratio between the pay of managers and that of workers falls from 197:1 to between 1.75:1 and 2.1:1—a considerably lower figure.

# Introduction

Steadily over the last three decades, the study of income inequality has gained prominence in both academia and public discussions. A subset of the discussions on income inequality has dealt with the role of the remuneration offered to corporative executives.

The focus on the pay offered to corporate executives is based on the premise that Chief Executive Officers (CEOs) of large corporations, who are at the top of the income ladder, receive compensation that is unrelated to their performance or is unearned to a some degree (Moriarty, 2005, 2009; Bivens and Mishel, 2013; Macdonald, 2019). To make this case, two types of justification are offered. The first relies on the assumption that CEOs earn incomes that are divorced from the performance of the firm (Moriarty 2005, 2009). In such a case, the perceived growth in CEO pay is deemed unjustified, especially while, it is argued, the wages offered to workers have not increased as fast (Bivens and Mishel, 2013). The second type argues that CEO pay levels are far from the levels that are judged ideal in surveys of workers' opinions (Kiatpongsan and Norton, 2014). Across countries, there is a "strikingly consistent belief that the gaps in incomes should be smaller than people believe the" (Kiatpongsan and Norton, 2014: 592). The fear raised by some is that this gap could fuel the rise of populism, which entails that the beliefs of the average workers are of policy relevance.

Both justifications offered rely on comparisons with the pay of the average worker. As a result, a host of research centers in OECD countries have produced variants of the same study of the pay offered to the CEOs of large corporations. All of these variants centre on comparing the pay package of CEOs with the income of the average worker. This comparison yields a figure of how much more a CEO earns in a year relative to the average worker. In Canada, the latest estimate of that ratio places the compensation of the 100 richest CEOs at 197 times the income of the average worker (Macdonald 2019: 5).

Yet, there is little to substantiate the belief that the pay of CEOs is unearned. First, the empirical evidence produced in a host of different studies suggest that CEOs are paid according to the value they add and that their pay is related to their skills, duties, and performance. Second, workers are concerned about CEO pay only in certain

circumstances that are consistent with economic theory. Third, the studies that try to calculate the ratio of CEO-to-worker pay often take methodologically dubious steps that systematically increase the ratio. Adopting more accurate methodological steps in order to arrive at “apples to apples” comparisons suggests that the ratio of CEO-to-worker pay for Canada is overestimated by as much as 81%. This points to the idea that concerns about CEO pay are based on a poor understanding of the academic literature and methodologically dubious steps taken to increase sensationalism.

# Is CEO Pay Unearned? What the Economics Literature Actually Says

There is a wide body of empirical and theoretical literature in economics on the topic of executive pay. That literature makes a crucial distinction that is rarely mentioned in discussions of the topic by the wider public: the role of the skills of CEOs and the performance of the firms they manage. The performance of firms is not the sole determinant of CEO pay. There are many others that speak to the skill sets of managers and these skills are increasingly in demand.

This is an important distinction because the firms that hire a particular CEO are in competition with others for a relatively small pool of executives. If the environment is particularly competitive among firms, the demand for these skills increases even if the supply is limited. This can be best seen in recent economic history. As the 1990s entered an era of increased globalization as well as rapid technological change, the cost of mistakes by firm managers increased. Firms like Hilton Hotels and Bell Media are no longer in competition with other firms offering the same service but with technological substitutes such as AirBnB or Facebook and Skype. With rapid technological change, new goods and services can be introduced that render obsolete large existing corporations. In situations like this, the demand for highly-skilled CEOs has increased (Kaplan, 2013; Kaplan and Rauh, 2013). In essence, there is a greater premium placed on skills because of the riskier environment (Murphy, 2012). Increased demand for this type of labour will increase its compensation, all else being equal.

Historical evidence assembled by Carola Frydman (2019) confirms this. Using data covering the period from 1936 to 2003, Frydman found that the human capital (that is, the skills) of corporate executives has grown increasingly valuable to boards of administrators. Whereas less than 10% of corporate executives had any graduate studies during the 1930s, more than 60% now do (Frydman 2019: 4957). Frydman also shows that the age of CEOs upon their first move to another company has increased from 29.24 years in the 1930s to 37.78 in the early 2000s (Frydman 2019: 4961). Frydman argue that this is symptom of the greater demand for the human capital of managers. The skills learned by a manager can be specific to a particular firm, which means that they cannot

be carried to a new firm easily. When these firm-specific skills are important, employees will tend to move earlier to a new firm because they will have to acquire these skills within the firm. They are also less likely to leave a firm as time goes on because they will have accumulated a large set of skills that will become worthless in a different firm. However, when the skills are specific to the individual manager, one has more flexibility in his decision to change firms since the firm-specific skills are less valuable. As a result, the rising age of CEOs at different turnover decisions of their careers suggests that the decline of firm-specific skills and the rising demand for the human capital of the CEOs themselves.<sup>1</sup>

Not only is there evidence that there is an increasing demand for highly skilled CEOs, there is also evidence that administrators are able to discern the highly skilled from the less skilled candidates. Constructing a database of candidates to CEO positions that were both hired and rejected, Kaplan, Klebanov, and Sorensen (2012) took care to code some thirty individual characteristics of the candidates that covered general ability as well as interpersonal and communication skills. They find that a firm's success is heavily related to the retained candidate's abilities. Hiring and compensation are thus commensurate to the skill set of the retained candidates. This echoes earlier results that find that the skills of particular CEOs explain the vast majority of the level and the trend of their compensation (Gabaix and Landier, 2008; Falato, Li, and Milbourn, 2015).

Another factor of relevance in explaining the pay of CEOs is the size of the firms themselves. Larger companies entail greater risks in terms of successfully coordinating management and its agents. Thus, CEOs managing larger firms face greater difficulties and also have to possess certain skills associated with a particular size of firm. The empirical literature is clear on this element. For example, a meta-analysis of different studies of CEO pay found that 40% of pay differences between CEOs is explained by differences in firm size (Tosi, Werner, Katz, and Gomez-Mejia, 2000). Evidence specific to Canadian executives confirms this result (Yang, Singh, and Wang, 2019). As a result of globalization, many firms have expanded their activities into foreign markets, thus making them larger. This expansion of the *size* of the largest firms has an impact on the pay of CEOs as it means an increased demand for a particular subset of skill related to the management of large multinational firms (Bertrand, 2009).

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1. In fact, some skills of the CEOs are very specific and depend on the context. For example, Schoar and Zuo (2016) found that “recession CEOs” have particular skills in that they are unique in terms of managing a firm during economic downturns. These “recession CEOs”, while in short supply, command a substantial premium over other CEOs.

This increased demand is not matched by a rising level of supply. The main reason for this is that a portion of the human capital of managers tends to be firm-specific (Harris and Helfat, 1997). This entails that executives who acquire experience—a form of human capital—at a given firm cannot use that experience for another firm. In other instances, the human capital acquired in one particular industry—for example, hotel management—is not easily transferred to another like, say, automobile manufacturing. In essence, this constrains the supply of managerial experts. As a result of demand growing faster than supply, the price for skilled managers (that is, inputs) increases (Gabaix and Landier, 2008).

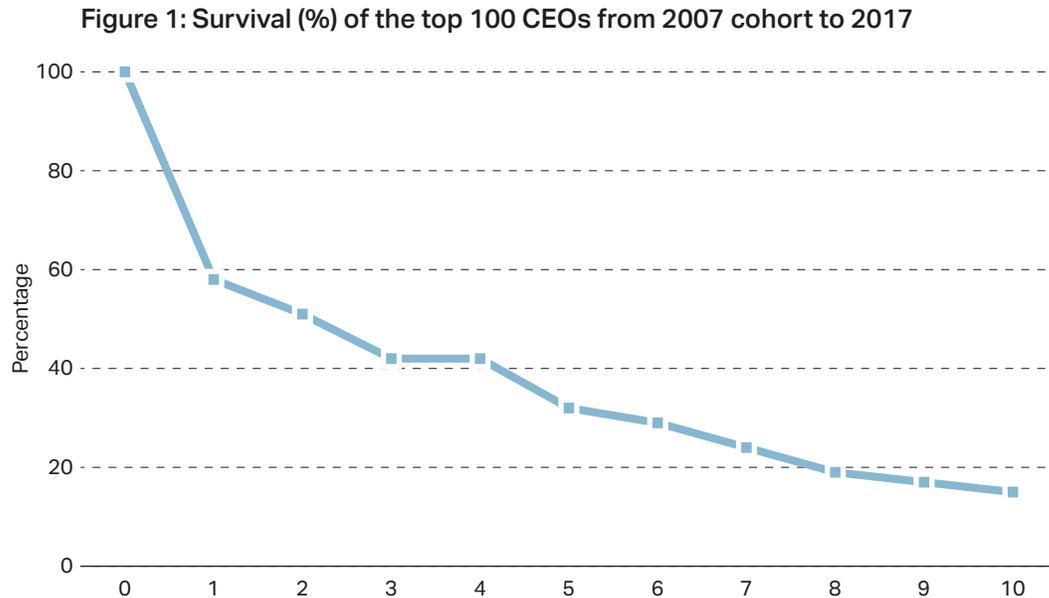
Another reason for the increased pay offered for the skills of managers is the risk they assume. When an executive accepts a top management position, he makes a serious commitment in reputational terms. If he is fired by a demanding board of administrators after a bad turn in the market for factors that were not entirely within his control, he bears a reputational cost that heavily curtails his future prospects for employment. Indeed, the market appears to offer lower compensation for uncertain management skills (Milbourn, 2003). As boards are known to have grown increasingly aggressive in firing managers (Jenter and Lewellen, 2017), there is greater reputational risk for potential managers.<sup>2</sup> If the risks of turnover are high, a CEO will demand a risk premium that will be reflected in greater pay (Peters and Wagner, 2014; Edmans and Gabaix, 2016).

In the case of Canada, we can easily see the importance of turnover using the data provided by Macdonald (2019). In **figure 1**, we used the 2007 cohort of top 100 CEOs and compared that with later surveys of the CCPA to see how many persisted in the top 100. The first thing to notice is that in the first year following the 2007 survey by the CCPA, 42 of the top 100 CEOs had exited the top ranks. After that first year, an additional five CEOs from 2007 exit the top ranks every year. Ten years after, only 15 of the original 100 top CEOs are in the top ranks. This is a pronounced rate of exit. To place this in perspective, the annual rate of turnover observed here is nearly twice as high as the rates observed for the United States (Kaplan and Minton, 2012: 62; Conference Board, 2017).

Firms compensate executives for their inputs (that is, their skills) and the risks they take. However, executives are also compensated for their outputs—the performance of the firm. It is untrue to claim that there is no relation between pay and performance. At first glance, it appears that a small share of the total differences in the pay of CEOs

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2. This is an important point because there is a well-admitted trend towards a rising turnover at the top (Kaplan and Minton, 2012).



Sources: Canadian Centre for Policy Alternatives, 2013; Macdonald, 2018, 2019; Mackenzie, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017.

between firms is explained by performance (Tosi, Werner, Katz, and Gomez-Mejia, 2000). However, this assessment is true only when variations in CEO pay among firms are evaluated. Studies that used longitudinal studies of CEO tenures and firm performance show that changes in pay are driven largely by changes in performance (Hall and Liebman, 1998). Moreover, there is indirect evidence of a strong relationship between managerial hire and performance. For example, Jenter and Lewellen (2017) point out that between 38% and 55% of all turnovers are “performance-induced”—that is, that turnover would not have occurred had performance been better.

# Do Workers Care about CEO Pay? What the Economics Literature Actually Says

The second argument advanced for arguing that pay of CEOs is unearned is linked to what workers perceive as fair. It is argued that these perceptions are of relevance to public policy as perceived inequality fuels populism (Gimpelson and Treisman, 2018). However, there is a nuance that is rarely mentioned by those who raise this concern: another well-known finding in social sciences that has emerged in the last decades is that there are conditions under which people prefer unequal societies (Welch, 1999; Shariff, Wiwad, and Aknin, 2016; Starmans, Sheskin, and Bloom, 2017). This literature, which draws on laboratory experiments and controlled settings to test opinions and action, emphasizes that workers are actually willing to tolerate high levels of income inequality as long as they are perceived as fair. More precisely, as long as workers view upwards economic mobility as possible, they are unfazed by high levels of economic inequality (Welch, 1999). In this circumstance, as they are unconcerned about inequality, they are unconcerned about the level of CEO pay.

Concerns about CEO pay emerge if certain contextual elements are present. Boards of administrators compensate the skills that maximize the firm's profits. However, not all of these skills are related to a firm's market performance and can be instead related to political considerations. When governments intervene in markets, they alter incentives, including those faced by boards of administrators. In doing so, they alter the demand for certain skills. Absent government intervention, the skills necessary for convincing politicians and bureaucrats to confer privileges on a given firm are less valued on the market. In the presence of government intervention in the market, these skills grow more valuable and their value increases relative to other skills.

The evidence on this front is limited as it is hard to observe the necessity of political connections. However, there are many historical examples of the importance of political connections for the performance of firms (Folsom, 1991; Ferguson and Voth, 2008; Braggion and Moore, 2013; Okazaki and Sawada, 2017). For instance, Braggion and Moore (2013) point to the late Victorian era in Britain, which was known to be

characterized by close links between politicians and firms. During that era, half of the members of Parliament served as company directors. In such a context, firms were trying to maximize profits by rewarding political clout and acumen rather than the ability to satisfy market demand.

This nuance is important because it provides a necessary distinction about the structure of CEO pay. Markets reward profits and penalize losses. Good managers gain and bad managers are sacked. Boards select a CEO on the basis of maximizing profits regardless of whether or not this is done at the expense of the taxpayer through government subsidies, privileges, or other forms of support. However, discontent in this case should not be directed at individuals acting in line with basic economic logic. Rather, the discontent ought to be directed at the institutional features of government action that encourage rent-seeking (that is, acquiring profits by manipulating the political environment rather than by creating wealth through market exchanges) (Krueger, 1974). Rent-seeking, by providing protection against market forces, is by definition regressive (Holcombe, 2018) and is empirically associated with rising inequality (Geloso and Horwitz, 2017; Bailey, Thomas, and Anderson, 2019; Mulholland, 2019). This being the case, industries walled from competition by government regulations (Geloso, 2019) have great interest in finding (and rewarding) CEOs who are politically able to preserve these barriers to competition. However, in such cases, discontent towards the pay received by these CEOs is easily explained (and understandable). As the literature also finds that the average individual is willing to tolerate high levels of income inequality if economic mobility is viewed as possible, our attention should be focused on how rent-seeking creates discontent by rewarding political acumen over managerial abilities.

# Incorrect Comparisons. Comparing with the Wrong Workers and the Wrong Pay

The empirical and academic literature discussed above suggests that there is little cause for concern about CEO pay except under key conditions. How can this wide, and relatively consensual, literature be reconciled with the recurrent claims that CEO pay is disproportionate to worker pay? The answer lies in understanding that the methodology used to compare the pay of workers with that of CEO is fraught with inaccurate comparisons.

In Canada, the main organization that produces this statistic is the Canadian Center for Policy Alternatives (CCPA) (Macdonald, 2019). It uses the top 100 firms in Canada and the pay packet offered to the CEOs of these firms. The pay of these CEOs is then compared with the average Canadian worker. In essence, the CCPA's approach compares 0.008% of firms in Canada with all Canadian workers (Industry Canada, 2019). At first glance, this is not an apples-to-apples comparison unless one makes the dubious assumption that workers in all other Canadian companies are the same as those in the top 0.008% Canadian firms. There is no evidence that would encourage one to make such a heroic assumption.

To improve comparability, we have to compare with the right workers. To do so, it is necessary to understand why choosing the average worker is not the correct basis for comparison. The main reason for this is that the studies of CEO pay concentrate on the top 100 CEOs. These executives are at the head of large companies that are known to offer higher wages than those earned by the average worker (Brown and Medoff, 1989; Evans and Leighton, 1989; Abowd, Kramarz, and Margolis, 1999; Bloom, Guvenen, Smith, Song, and von Wachter, 2018). Larger companies tend to be the first adopters of new capital goods (for instance, computer software) that can be matched with workers, which makes them more productive. Larger companies also get greater pools of applicants from which to sift for the best-suited employees. Combined with economies of scale in the production of goods and services by these firms, these elements lead to substantial wage differences between small and large firms where the latter offer the highest wages (Oi and Idson, 1999). By comparing the pay of CEOs in these top firms with the pay of all workers, a misleading portrait is produced.

This can be seen in the figures that Statistics Canada (2019a) produces for weekly earnings broken down by firm size. The category for the largest firms covers all firms with more than 500 employees. These companies offered total compensation to their workers, between 2008 and 2017, that was 12% superior to those of the average worker. Shifting to this measure of worker compensation to increase the comparability with CEO pay alters the portrait generally presented. In **figure 2**, we can see the effect of moving from the unadjusted and less comparable measure of worker pay used by the CCPA to the adjusted and more comparable measure produced by Statistics Canada (2019a). The overall ratio is reduced by 12%—a sizable overestimation.

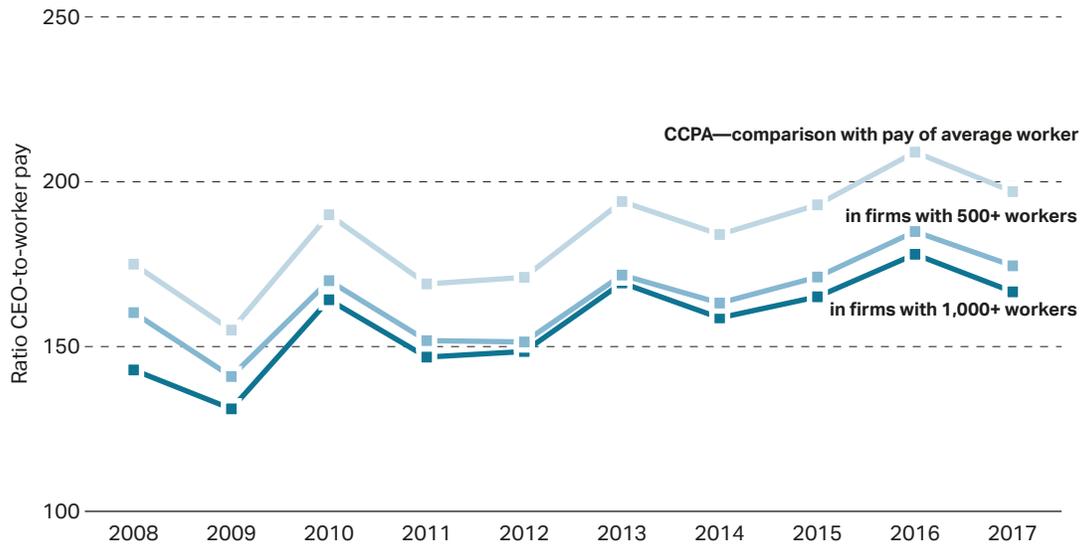
This figure probably understates the extent of the wage advantage for workers in larger firms as the effect of size increases when companies cross the 1,000 workers threshold (Evans and Leighton, 1989). Using a different dataset, Fredrik Haugen (2016) found that employees in Canadian firms with more than 1,000 employees earned 48% more than employees in firms with one to 9 employees. Using regression analysis, he found that, all else being equal, the effect of being in a firm with 1,000 or more employees is equal to a wage premium of 28.4% (2016: 39). We can use that proportion to adjust the closest categorical equivalent (zero to 4 employees) in the Statistics Canada (2019a) dataset to arrive at a more accurate comparison of CEO pay. In figure 1, this adjustment for better comparability further reduces the ratio of CEO pay to worker compensation.<sup>3</sup>

A second methodological issue of importance that suggests an attempt at sensationalism relates to the type of pay that is being used. A close inspection of the CCPA's data (Macdonald, 2019: 11) for the average worker suggests that they used "earnings". Earnings are only one component of total compensation received by employees. More precisely, the earnings data include gross taxable payroll before source deductions. Employees receive other forms of compensation such as employer-paid insurance. Thus, total compensation per employee is greater than they suggest. The problem is that, while they take this conservative definition of worker pay, they use a more complete definition of CEO pay that includes base salary, bonuses, shares, stock options, pension accrual, and other forms of compensation. This is an uneven comparison.

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3. It is also worth pointing out that the size premium that Haugen (2016: 39) finds blends private and public employers. This is important because the premium is greater in private firms than public firms. The estimates of the CCPA include public-sector workers, who are less comparable as those in the public sector tend to earn wage premiums over private-sector workers in the form of non-pecuniary advantages such as job security. While hard to correct for, this skews the comparison as only private-sector workers should be used.

**Figure 2: Ratio of CEO pay to worker earnings, unadjusted and adjusted to reflect pay of workers in firms employing 500+ and 1,000+**

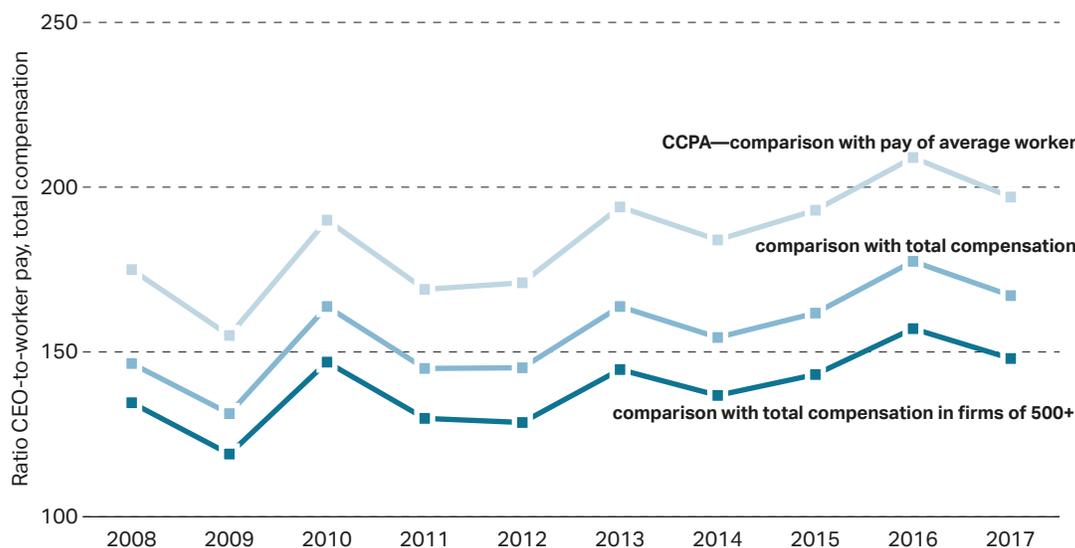


Sources: Canadian Centre for Policy Alternatives, 2013; Haugen, 2016; Macdonald, 2018, 2019; Mackenzie, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017; Statistics Canada, 2019a.

Fortunately, Statistics Canada (2019d) produces data on total compensation per job in Canada. The data for total compensation going to workers includes social contribution, pension plans, insurance schemes, retirement allowances, and other forms of compensation (Statistics Canada, 2008). These are relevant forms of payment that workers care about and ought to be included in statistics regarding their living standards. Once these are included, we find that total worker compensation was 18% higher than what the CCPA claim it was between 2008 and 2017 (Statistics Canada, 2019d; Macdonald, 2019). In figure 3, we can see the effect of shifting to total compensation instead of earnings.

We can also compound this correction with that made above by comparing compensation of workers in larger firms. Unfortunately, a breakdown of the total compensation data according to company size is unavailable. However, if we take the ratio of total compensation to total earnings and assume that this ratio applies equally to employees in firms with more than 500 employees, we can produce a figure for total compensation in the largest firms. This gives a statistic that is closer to an apples-to-apples comparison both in terms of the definition of what compensation entails and the types of workers discussed. This can be seen in the bottom line in figure 3. The difference is considerable. Over the period from 2008 to 2017, the ratio of CEO compensation to the total compensation of workers in large companies is 24% lower than what the CCPA claims it is—a difference that is entirely due to definitional consistency to insure comparability.

**Figure 3: Ratio of CEO pay to worker earnings, unadjusted and adjusted to reflect including total compensation, and total compensation in firms employing 500+**



Sources: Canadian Centre for Policy Alternatives, 2013; Macdonald, 2018, 2019; Mackenzie, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017; Statistics Canada, 2019a; 2019d.

It is also worth pointing out that this still overstates the true ratio. The main reason is the nature of the shares and stocks components of CEO compensation. These forms of compensation are considered “stocks” measures in the sense that they are assets owned by the CEOs. Obviously, these assets have value and can be priced in the market. However, the value of stocks as compensation is not income until they are sold on the market, when this value will enter the flow of income.

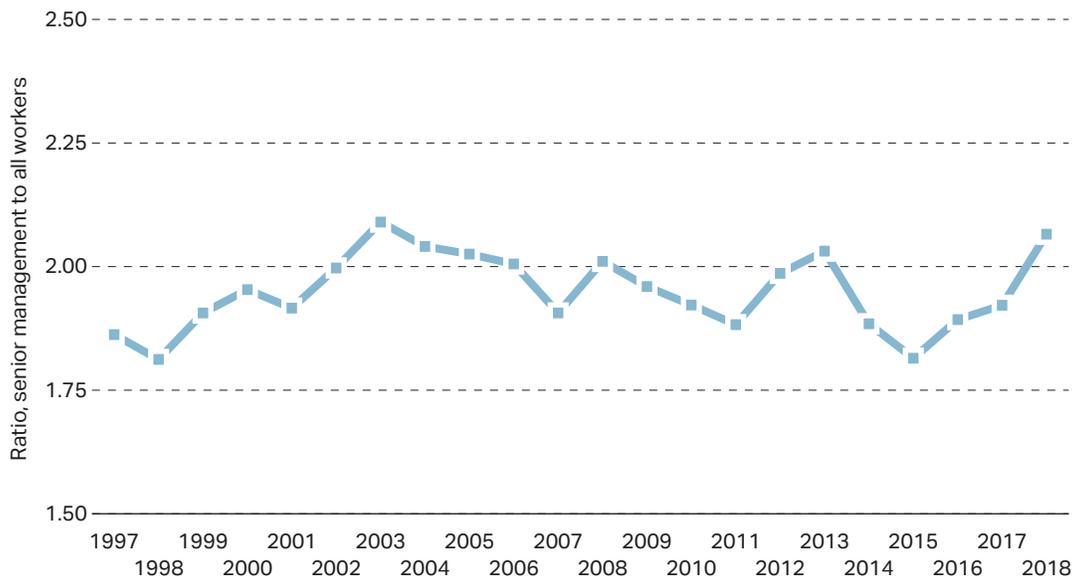
This is an important problem because of the timing of when stocks and shares tend to be sold. Generally, CEOs are fired by boards of administrators when a company’s fortunes sour. When a company’s earnings take a bad turn, so will the value of shares and stocks. Thus, CEOs tend to sell their stocks and shares when fortunes are flagging. This timing of the sale has important ramifications as it leads to the overestimation of CEO pay. The correct measure of CEO pay is thus what has come to be labelled as “realized pay” (Murphy, 2012; Kaplan, 2008, 2013; Kaplan and Rauh, 2013).<sup>4</sup> Properly accounting for this factor could reduce further the proportions mentioned above.

4. The CCPA is aware of the relevance of this distinction as their pre-2008 studies did use stock options valued at exercise, which they admit “provided a more accurate evaluation of how much CEOs made from them” (Macdonald 2019: 17).

# Improving the Comparisons. Comparing with All CEOs

A more accurate portrayal of the ratio of CEO pay to worker income would be to compare all CEOs with the average worker. Statistics Canada (2019b) offers a rough approximation of that ratio through its measurement of wages and salaries for all employees and senior managers. The inclusion of all managers in order to make an apple-to-apple comparison brings the ratio of pay down from the hundreds to single digits. This can be seen in figure 4, where the pay of senior managers in all Canadian firms hovers at around twice the level of pay for all Canadian workers. This is sizable reduction that stems merely from comparing apples to apples.

**Figure 4: Ratio of pay of senior management to all workers, 1997–2018**



Sources: Statistics Canada, 2019b.

Unfortunately, this remains an imperfect comparison. The data for senior managers cover a wide occupational group in which CEOs are included along with other managers (such as senior government workers). It also only includes wages and not other pay-package features such as reserved stocks and severance pay clauses. As such, this

figure underestimates the pay of CEOs. No Statistics Canada survey allow us to arrive at a measure of full compensation for firm managers in Canada. Thus, the ratio of roughly 2 to 1 depicted in figure 4 is probably understating the true ratio.

However, there is a middle route we can follow. This can be obtained by extending our gaze to the top CEOs that are not in the top 100 firms. Each year, the *Globe & Mail* produces a survey of the top 1,000 firms in Canada alongside information about executive pay in these firms. For 2016, as soon as one moved to the CEO pay earned by CEOs ranked 101<sup>st</sup> to 200<sup>th</sup>, the ratio relative to all workers falls by 65% (Clemens, Timmermans, and Emes, 2018). This is an important reduction that comes from a marginal improvement in comparability with the average worker.

For the lowest slice of top CEOs, the ratio of CEO pay to average worker pay falls by 98.7% relative to the top 100 CEO (Clemens, Timmermans, and Emes, 2018: 3). At that point in the distribution of top CEO, the ratio of CEO pay to worker pay is equal to 3 to 1. This ratio is very close to the one found in figure 4, which suggests that pay ratio rapidly converge toward levels far inferior to those proposed by the CCPA, even if we consider the top 1% of firms in Canada.

For the top 1,000 CEOs in Canada, the average pay in 2016 was \$2.1 million (as opposed to \$9.6 million in the top 100) (Clemens, Timmermans, and Emes, 2018: 3). This being the case, in 2016, the ratio of CEO compensation to worker pay goes from 194 to 1 when using the top 100 CEOs to 42 to 1 when using the data of the *Globe & Mail*. This is still an imperfect comparison. According to Statistics Canada (2019c), the number of companies with more than 500 employees for that same year was 2,936, which entails that the *Globe & Mail* survey covers a third of the largest employers in Canada (which still account for a mere 0.08% of all Canadian companies). As such, the best comparison available given the state of the publicly available data is to use the top 1000 CEOs as measured by the *Globe & Mail* with the wages in those top employers. When this is done (and it can only be done for 2016), we find that the ratio is actually 37 to 1 instead of 194 to 1: a reduction of 81%.

A perfectly accurate comparison is elusive. However, it is clear from these statistics that using methodological steps aimed at assuring definitional consistency only shows that statistical artifices are being used to create a feeling of outrage that is not supported by the data.

# Conclusion

Concern over the pay of CEOs is tied to beliefs that are not supported by the economics literature. The sole argument that is of relevance to public policy—the reaction of workers to the pay gap between them and CEOs—omits a key condition well-known in the literature where a CEO is rewarded for political clout rather than market acumen. To circumvent the empirical and theoretical literature, some of those who are concerned by the gap in pay between CEOs and workers use dubious methodologies to inflate the statistics they publish. Even minimal steps towards methodological consistency heavily deflate the proportions frequently advertised.

These flaws, both methodological and logical, must be highlighted because concern for the gap between CEO pay and worker pay is the basis on which policies are designed. Adequate policy responses to societal issues must rely, first, on accurate and precise empirical portraits; and, second, upon a clear understanding of the mechanics behind what is being observed. Absent such foundations, policy proposals should be discarded summarily.

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