

# The 'pay ratio' provision of the *Dodd-Frank Act 2010* and presentation of the Paulo–Le Roux Index

**Authors:**

Stanley Paulo<sup>1</sup>  
Pierre le Roux<sup>2</sup>

**Affiliations:**

<sup>1</sup>Department of Accounting,  
Economics and Finance,  
Lincoln University,  
New Zealand

<sup>2</sup>Department of Economics,  
Nelson Mandela  
Metropolitan University,  
South Africa

**Corresponding author:**

Pierre le Roux,  
pierre.leroux@nmmu.ac.za

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**Orientation:** This article addresses the issues of executive remuneration and whether it was excessive or not.

**Research purpose:** On 05 August 2015, the US Securities and Exchange Commission (SEC) adopted a rule to operationalise Section 953(b) of the *Dodd-Frank Wall Street Reform and Consumer Protection Act 2010* (Dodd-Frank or the *Dodd-Frank Act 2010*), the 'pay ratio provision', as part of a process to ensure sound corporate governance and shed light on assertions that corporate executive remuneration was excessive and detrimental to the economic wellbeing of the USA. This pay ratio rule will be operative starting from 2017 and requires public firms to publish the ratio of chief executive officer (CEO) remuneration to the median remuneration of all its employees. Hence, it is a measure of income distribution. It does not reveal the relationship between executive compensation and the value added to the firm by executives. In anticipation of this rule becoming mandatory and as part of a quest to quantify the value of executives to the firm, Paulo and Le Roux (2014) developed an approach to measure the value executives add to the firm, drawing from audited financial statements and thereby demonstrating that the value added by executive management could be measured according to the requirements of sound research methodology and rigorous epistemology.

**Motivation for the study:** Statutory enactment of the pay ratio provision provided the impetus to create an index, the Paulo–Le Roux Index, that shows how much executives are paid in relation to how much value they add to the firm.

**Research design, approach and method:** Paulo and Le Roux (2014) developed an approach to measure the value executives add to the firm, drawing from audited financial statements and thereby demonstrating that the value added by executive management could be measured according to the requirements of sound research methodology and rigorous epistemology. Statutory enactment of the pay ratio provision provided the impetus to create an index, the Paulo–Le Roux Index, that shows how much executives are paid in relation to how much value they add to the firm. The value added to the firm is a composite of the value drivers, sales, growth, capital requirements (CR), operating profitability (OP), and the discount rate in the form of a weighted average cost of capital (WACC).

**Main findings:** Discussions that hitherto have been normative regarding executive remuneration, and unrelated to the value created by executives, can now be based on rigorous valuations that draw from audited financial statements.

**Practical/managerial implications:** Numerous advantages accrue from the use of this index for all stakeholders, managers, organised labour, investors, as well as for asset allocation and corporate restructuring, the risk incurred in adding value, and the strategies applied. This index can be used for any enterprise, division, functional area, or project, and for any financial period for which audited financial statements are available.

**Contribution:** Using the index ensures sound corporate governance and shed light on assertions that corporate executive remuneration was excessive and detrimental to the economic wellbeing.

## Introduction

On 05 August 2015, the US Securities and Exchange Commission (SEC) adopted a rule that requires public companies to disclose the ratio of chief executive officer (CEO) compensation to the median compensation of its employees. Section 953(b) of the *Dodd-Frank Wall Street Reform and Consumer Protection Act 2010* (Dodd-Frank or the *Dodd-Frank Act 2010*), known as the 'pay ratio provision', required the SEC to prepare and implement this rule. For the fiscal year beginning on or after 01 January 2017, public companies will be required to disclose their pay ratios.

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In anticipation of the pay ratio provision becoming mandatory in the USA, Paulo and Le Roux (2014), drawing from Paulo (2011), presented an approach to the calculation of the value added by corporate executives. Whereas the core problem addressed in Paulo and Le Roux (2014) was the measurement of the intrinsic value added by corporate executives to the intrinsic value of the firm, or any sub-part of the firm for which audited financial statements were available, the core problem of this article is to provide an index of executive remuneration to corporate value, added as part of the development and evolution of the pay ratio provision.

The pay ratio provision focuses on reporting income distribution disparities between corporate executives and the median income of employees and hence can be associated with agency theory. In contrast, the approach under discussion herein establishes the relationship between executive remuneration and the value added by executives to the firm. The many benefits of this approach, for all stakeholders, are presented in this article.

This article briefly presents the background to the pay ratio provision, followed by the debate for and against it. This debate provides a motivation for the Paulo–Le Roux Index, which is then presented and discussed. Even though screening and ranking controls are inherent in the application of this index, it is not the intention of this article to prescribe or even suggest control limit values. That issue requires an extensive empirical survey of corporate executive behaviour followed by an appropriate period of consultation, discussion, and public comment with the nation's stakeholders and legislature regarding appropriate norms and guidelines. The fraction of value added by executives that can or should be distributed to corporate executives or the way in which such distributions can or should be made through time are not the purpose of this article. These are matters for future study.

## Background to the pay ratio provision of the *Dodd-Frank Act 2010*

The *Dodd-Frank Act 2010*, the Financial Stability Forum 2009 (FSF, 2009) (Paulo, 2011, pp. 448–461), and King Codes I, II, and III (Paulo & Le Roux, 2014) specifically seek to improve corporate governance, in part, by ensuring sound executive compensation practices against the backdrop of the *Sarbanes-Oxley Act 2002* (SOX), Rule 702 of the Federal Rules of Evidence 2000 of the USA (Rule 702), the *UK Companies Act 2006* (UKCA, 2006), and the *South African Companies Act 2008* (SACA, 2008). The critical comment from many sectors of society that has accompanied executive remuneration, especially bonuses since the global financial crisis, has raised discussion about the insufficiencies of corporate governance, and former British Prime Minister David Cameron has called for more active shareholder participation to curb executive remunerative excesses (The Guardian, 2012). More recently, Cameron's Business former Secretary Vince Cable told top UK firms to crack down on bonuses or face new laws (Treanor, The Guardian, 22 April 2014). Efforts to improve corporate

governance must be supported by robust and rigorous financial valuations that can be used to guide decision making in a manner consistent with the goals of the firm and mindful of agency issues. The value added by corporate executives should form the basis for the estimation and allocation of executive remuneration, in particular incentive-linked remuneration, such as bonuses. In essence, effective incentive-based compensation is contingent on being able to identify, define, and estimate value added by corporate executives.

Valuations drawn from audited financial statements, focusing on the intrinsic value rather than the market pricing of the firm, provide a credible motivation for an alternative approach if financial markets are experiencing high levels of turbulence and excess volatility in security prices. Recourse to intrinsic valuation during periods of financial turbulence can improve corporate governance, in part, by ensuring sound executive compensation practices, especially in light of the widespread public invective that has accompanied executive remuneration, particularly bonuses, during and in the aftermath of the global financial crisis.

## The pay ratio provision debate

Section 953(b) of the *Dodd-Frank Act 2010*, the pay ratio provision, required the SEC to draft rules for implementation of the provision. The debate concerning executive remuneration is long-standing and well established (Knowledge@Wharton, 2010; Moody's, 2006). It seeks to establish whether corporate executives are overpaid (Shorter, 2013, p. 1). In the absence of an appropriate measure of what corporate executives add to the value of the firm, it is not possible to meaningfully address the issue of whether corporate executive remuneration is reasonable or excessive. The executive pay debate of the 1980s initially sought to contain and, if possible, neutralise the excesses of agency theory ('agency on steroids') by aligning executive remuneration to corporate value added by means of a tighter focus on corporate governance. However, it did not attempt to estimate the value added by executives. This debate received prominence in the 1980s when Peter Drucker argued that companies should try to maintain a CEO-to-average worker pay ratio of 25:1, which he later changed to 20:1 (Drucker, 2011). In defence of this target ratio, Drucker contended that '... ratios with higher values could impede teamwork and trust...' (Drucker, 2011) (Shorter, 2013, p. 5). A defence based on the measurement of the value added by executives would have been a notable step forward for the debate.

The US Economic Policy Institute found that '... from 1978 to 2012 CEO compensation measured with [stock] options realized increased about 875%, a rise more than double stock market growth' (Shorter, 2013, p. 4). If the stock market was inefficient in ensuring that market prices fairly reflected intrinsic values, and executive compensation was based, fully or even partially on intrinsic value added, then to some extent this finding would need to be re-estimated. There are periods during which stock prices trade at levels higher than

intrinsic value and, similarly, there are periods during which stock prices trade at levels lower than intrinsic value. In the absence of an appropriate measure of what corporate executives add to the value of the firm, it is not possible to meaningfully evaluate these findings.

Kaplan (2012) concluded that the average and median inflation-adjusted remuneration of the CEOs of the firms that comprised the Standard and Poor's 500 Index (S & P 500 or S & P) did not rise continuously, but yet again these findings were not related to the value added by corporate executives. Bloomberg estimated that the ratio of CEO pay-to-average-worker pay for the average firm in the S&P was 204:1 in 2012, a 20% increase over their 2009 estimate of 170:1 (Smith & Kuntz, 2012). The historical estimates of this ratio for the firms comprising this index were approximately 20:1 in the 1950s, 42:1 in 1980, and 120:1 by 2000 (Smith & Kuntz, 2012). The relationship of executive value added to executive remuneration was not even contemplated in order to better understand and investigate the growth in executive remuneration vis-à-vis other employees. Morrissey (2012) described executive compensation as having reached scandalous levels, thereby making it the number one problem in corporate law, and a major threat to the economic wellbeing of the USA. Reports of the acceleration of increases in executive remuneration continue, and prompt concern about the possibility of asset stripping to fund executive remuneration, a concern that cannot be verified in the absence of appropriate measurement.

In 2013, within the US Congress, Huizenga (H.R. 1135) sought the repeal of the pay ratio provision, Section 953(b) of the *Dodd-Frank Act* 2010, similar to the repeal sought earlier by Hayworth (H.R. 1062) in 2011 (Huizenga 2013). In contrast, Senator Robert Mendez (Shorter 2013), the original sponsor of this provision, continued to vigorously defend it. Mendez was supported by Representative Barney Frank, sponsor of the *Dodd-Frank Act* 2010, even though Frank wanted to relax the definition of executive remuneration to include only cash compensation and not all compensation. Mendez received further support from Representative Maxine Waters (2013).

Outside of the US Congress, the pay ratio provision has been criticised by the business lobby, including the American Benefits Council, American Insurance Association, the Business Roundtable, the National Association of Manufacturers, the National Retail Federation, the Financial Services Roundtable, the Securities Industry, and the Financial Markets Association, IBM, McDonald's, AT&T, the New York Stock Exchange, the US Chamber of Commerce, and the Center on Executive Compensation (Shorter, 2013). Supporters of the pay ratio provision outside of the US Congress are unions, civil rights groups, consumer advocacy groups, social justice groups, and liberal think tanks, including the AARP (formerly the American Association of Retired Persons, one of the most powerful US lobbying organisations), the American Federation of Labor and Congress of Industrial Organizations AFL-CIO), the American Federation of State, County and Municipal Employees (AFSCME), the Alliance for Justice,

the Americans for Democratic Action, the Center for Economic and Policy Research, the Center for Economic Progress, Common Cause, the Communication Workers, the Consumer Federation of America, the Economic Policy Institute, the International Federation of Teamsters, the National Association for the Advancement of Colored People (NAACP), and the United Food and Commercial Workers (Americans for Financial Reform in Opposition to H.R. 1135, May 22, 2013).

Support for the Dodd-Frank pay ratio provision is based largely on whether the provision will provide material information to investors and other stakeholders, and whether the benefits will exceed the costs. The benefits refer to whether the information provided will be necessary to ascertain the reasonableness or acceptability of executive remuneration. Yet again, it must be emphasised that, in the absence of a financial measure of the value added by executives, it is not possible to evaluate with any semblance of objectivity the reasonableness or unreasonableness of executive remuneration. Although Section 951 of the *Dodd-Frank Act* 2010 requires listed companies to provide shareholders with an advisory vote on executive compensation, the 'say-on-pay' provision, this is a non-binding vote. Moreover, the basis for 'reasonableness', in terms of executive value added, is missing from the discussion. Reasonable, in terms of 'what', must be addressed, or 'reasonable' has little meaning. Critics of the pay ratio provision contend that it will not provide meaningful investor information because it lacks a meaningful comparative context (Shorter, 2013, p. 15).

The SEC summarised its view on the usefulness of the pay ratio provision as '... not quantifiable' (Shorter, 2013, p. 15). In other words, there is no objective quantifiable criterion upon which to base the merits or otherwise of the pay ratio provision. Without such a criterion, discussions of reasonableness and unreasonableness, as well as what is acceptable, cannot be satisfactorily sustained. Moreover, this costly and time-consuming debate is not well anchored because it lacks the kind of measurement that could shed light on the issues surrounding executive remuneration.

### **The *Dodd-Frank Act* 2010 – compliance: Accountability and executive compensation**

*Compliance*, in terms of accountability and executive compensation, is contained in Sections 951–956 of the *Dodd-Frank Act* 2010, which amend Sections 10B, 14, and 16 of the *Securities and Exchange Act* 1934 (SEA, 1934). These amendments are presented and discussed because they impact corporate governance and contribute to the basis upon which incentive-based remuneration is to be estimated.

Annual shareholder approval of executive compensation: Section 951 of *Dodd-Frank* amends SEA 1934 by inserting after Section 14A regarding annual shareholder approval of executive compensation by means of a separate non-binding shareholder vote. In so doing, shareholders can express and formally record, in a transparent way, their opinions on executive compensation. In essence, this is what then British

Prime Minister David Cameron called for in his statements reported on January 09, 2012 (The Guardian, 2012).

**Independence of compensation committees:** Section 952 of Dodd-Frank amends SEA 1934 by inserting after Section 10B, Section 10C regarding (1) the independence of compensation committees, by prohibiting the listing of any security of an issuer that does not comply with statutory requirements; (2) the independence of compensation consultants and other compensation committee advisors; (3) compensation committee authority relating to compensation consultants that includes *inter alia* direct responsibility for the appointment, compensation, and oversight of the work of a compensation consultant; (4) the authority to engage independent legal counsel and other advisors and (5) the compensation of compensation consultants, independent legal counsel, and other advisors. Thus, Section 952 of Dodd-Frank requires this committee be accountable for formal and transparent processes, procedures, and outcomes regarding executive compensation. How this can be done in the absence of a measure of the value added by executives is by no means clear.

**The disclosure of pay versus performance linked remuneration:** Section 953 of Dodd-Frank amends SEA 1934 by inserting in Section 14 paragraph (j) regarding disclosure of pay versus performance linked remuneration by:

... including information that shows the relationship between executive compensation actually paid and the financial performance of the issuer, taking into account any change in the value of the shares of stock and dividends of the issuer and any distributions ... and may include a graphic representation of the information required to be disclosed ...

This statutory requirement therefore necessitates a valuation of the change in the value of the company based on factors such as share price, dividends, and other distributions that, in an efficient market, would reflect the value added by executives to the market value of the company, in order to determine the financial basis for performance linked remuneration. In inefficient or manic-depressive markets, this would not hold. No mention is made of the fraction of the value added by executives that can or should be allocated to a bonus pool from which performance linked remuneration can be distributed. The issues regarding value added by executives, the fractional share of this quantum that can or should be distributed, the way in which such distributions are made, and valuations in which financial security prices do not reasonably correspond to their intrinsic values cannot but constitute an important part of the work of the compensation consultant.

**Recovery of erroneously awarded compensation:** Section 954 of Dodd-Frank relates to the recovery of erroneously awarded compensation, and amends Section 19 of SEA 1934 by adding paragraph (h), which requires the issuer to disclose the basis of incentive-based compensation that is to be based on the financial information required to be reported under the securities laws. In the event that an accounting restatement is required, due to material noncompliance with any financial

reporting requirements, the recovery of erroneously awarded compensation is to be made from any current or former executive officer during the 3-year period preceding the date on which the issuer is required to prepare an accounting restatement.

**The disclosure of hedging by employees and directors:** Section 955 of Dodd-Frank requires the disclosure of hedging by employees and directors, and amends Section 14 of SEA 1934 by requiring the disclosure by issuers of permission granted to employees, directors, or their designees, to purchase financial instruments designed to hedge or offset any decrease in the market value of equity securities.

In the UK, the FSF 2009 proposed nine principles as part of an effort to ensure the effective governance of executive compensation and accountability. These nine principles are presented, discussed, and compared with Sections 951–956 of Dodd-Frank.

### **Principles of the Financial Stability Forum 2009 and the Dodd-Frank Act 2010**

As noted by Paulo (2011, pp. 448–461), the FSF 2009 enunciated its principles for sound compensation practices as part of an effort to ensure the effective governance of compensation in April 2009 (FSF, 2009, p. 2) after the FSF found that more than 80% of market participants believed that compensation practices at large financial institutions were instrumental as one among many factors that combined to contribute to the financial crisis that began in 2007 (FSF, 2009, pp. 1, 4). The FSF grouped its nine principles for sound compensation practices (FSF, 2009, pp. 2–3) into three categories, designated A, B, and C (Paulo 2011, pp. 448–461).

#### **Category A: The effective governance of compensation**

**Principle 1:** The firm's board of directors must actively oversee the compensation system's design and operation.

**Principle 2:** The firm's board of directors must monitor and review the compensation system to ensure the system operates as intended.

**Principle 3:** Staff engaged in financial and risk control must be independent, have appropriate authority, and be compensated in a manner that is independent of the business areas they oversee and commensurate with their key role in the firm (Paulo 2011, pp. 448–461).

#### **Category B: The effective alignment of compensation with prudent risk taking**

**Principle 4:** Compensation should be adjusted for all types of risk.

**Principle 5:** Compensation outcomes must be symmetric with risk outcomes.

**Principle 6:** Compensation pay-out schedules must be sensitive to the time horizon of risks.

**Principle 7:** The mix of cash, equity, and other forms of compensation must be consistent with risk alignment (Paulo 2011, pp. 448–461).

### **Category C: Effective supervisory oversight and engagement by stakeholders**

**Principle 8:** Supervisory review of compensation practices must be rigorous and sustained, and deficiencies must be addressed promptly with supervisory action.

**Principle 9:** Firms must disclose clear, comprehensive, and timely information about their compensation practices to facilitate constructive engagement by all stakeholders (Paulo 2011, pp. 448–461).

In drawing a comparison, it is evident that Sections 951–956 of Dodd-Frank and the principles of Category A and C of FSF 2009 have notable similarities and are both substantially procedural in nature. The principles of Category B of FSF 2009, namely principles 4, 5, 6, and 7, that require valuations (unspecified in terms of variables and functional format), so that compensation can be aligned with prudent risk taking, and hence the valuation of the value added by corporate executives, is addressed under Section 953 Dodd-Frank by stating that the basis of incentive compensation, bonuses, are to be factors such as share price, dividends, and other distributions (without stating the functional format, formula, or methodology). In comparison, FSF 2009, Principle 4 states: ‘Compensation *should* be adjusted for all types of risks including difficult to measure risks such as liquidity risk, reputation risk and cost of capital’ (FSF, 2009, p. 2). Also consider FSF 2009, Principle 5:

Compensation systems *should* link the size of the bonus pool to the overall performance of the firm ... Employees incentive payments *should* be linked ... Bonuses *should* diminish or disappear in the event ... (FSF, 2009, p. 3)

Consider, too, Principle 6, ‘Variable compensation payments *should* be deferred ... Management *should* question pay-outs for income that cannot be realized ...’ (FSF, 2009, p. 3), and Principle 7, ‘The firm *should* be able to explain the rationale for its mix [of rewards by way of cash, equity and other forms of compensation]’ (FSF, 2009, p. 3). These ‘ought to’, ‘should’, and other normative directives are unsatisfactory because they do not provide a metric against which executive management can be assessed.

Principles 4, 5, and 6 focus on making compensation sensitive to risk, and in this regard the FSF reported that ‘... In years of losses by the firm as a whole, most employees’ bonuses at most firms have continued as a significant portion of boom-year levels. In other words, the size of the firms’ bonus pools showed much more inertia than did economic performance’ (FSF, 2009, p. 11). Taxpayers have had to bail out firms that have incurred large financial losses, have had their equity bases depleted of substantial quantities of capital, and have continued to pay large bonuses despite the subsidies and guarantees provided on their behalf by politicians. Therefore, taxpayers have functioned as lenders of last resort, and need

clarity as to the basis of bonuses and other forms of executive remuneration. Other stakeholders, such as shareholders, politicians who have distributed taxpayer resources to subsidise financially distressed firms, and employees at all firms, should know the basis upon which executive remuneration is calculated. Unless and until the value added by corporate executives can be identified, defined, and estimated in a rigorous and robust way, both FSF 2009 and Dodd-Frank will be substantially frustrated in making meaningful incentive-linked remuneration determinations that are above suspicion by organised labour, politicians, the electorate, and taxpayers, who have had to foot the bill (Paulo 2011, pp. 448–461).

In comparison with Dodd-Frank, FSF 2009 has some worthwhile and specific principles concerning the estimation of executive value added with regard to risk, return, and time horizons. These principles help provide clearer guidelines as to the criteria upon which to base executive incentive-linked remuneration. Moreover, FSF 2009 leaves the door open for other approaches to the estimation of executive value added when determining the potential bonus pool by not linking executive remuneration explicitly to market prices of financial securities – to the extent that the market prices of financial securities, dividends, and other types of distributions may not at all times correspond meaningfully to the intrinsic values of those securities. This has merit in financial markets in which security prices do not correspond reasonably to intrinsic values.

The valuations that are required by Dodd-Frank need to conform to the requirements of Rule 702 of the Federal Rules of Evidence of the USA (Rule 702), the SOX, especially as regards sound research methodology, because of their implications for performance measures such as those of Treynor (1965), Jensen (1968, 1969), Fama (1972), Treynor and Mazuy (1966), and Cahart’s alpha (1997). In contrast, valuations based on audited financial statements, whilst not perfect, are easier to reconcile with Rule 702 and SOX, if the main objective of SOX is upheld, namely ‘... To protect investors by improving the accuracy and reliability of corporate disclosures ...’. The use of market prices for valuations of executive performance when the markets are substantially distorted by behavioural phenomena such as excess volatility and momentum, especially during financial crises and market bubbles, cannot reasonably provide a satisfactory basis for valuation purposes. A methodologically rigorous and empirically supported process for adjusting for behavioural phenomena has yet to be documented in the literature.

### **Rule 702 of the federal rules of evidence 2000, the Sarbanes-Oxley Act 2002, and executive performance measurement**

In 2000, with the enactment of the ‘new’ Rule 702 that replaced the *Daubert Rule*, an important change was made to the rules of evidence concerning expert witness testimony. Scientific, technical, or other specialised evidence that does not satisfy

the criteria prescribed by Rule 702 has a substantial impact on the admissibility of expert witness testimony and the role of the trial court in the USA. The new Rule 702 states:

If scientific, technical, or other specialised knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training or education, may testify thereto in the form of an opinion or otherwise if:

- a) the testimony is based upon sufficient facts of data,
- b) the testimony is the product of reliable principles and methods, and,
- c) the witness has applied the principles and methods reliably to the facts of the case.

Thus, in terms of Rule 702, an expert witness needs to provide sufficient supportive empirical evidence and reliable methodology in order to provide a sufficient basis for application to the facts of the case under consideration. The application of unreliable principles and methods that lack empirical validity cannot be applied purposefully or meaningfully interpreted. Apart from Rule 702, the valuations of listed corporations based on unsound research methodology may infringe SOX. It is likely to contravene SOX Section 807, §1348 regarding securities fraud if a person possessed of expert skills and knowledge, by education, training, or practice, has made use of unreliable and invalid methodologies to perform valuations, and accordingly allocated capital, or made financial representations or decisions for listed corporations:

§1348 Whoever knowingly executes, or attempts to execute, a scheme or artifice ... to obtain, by means of false or fraudulent pretences, representations, or promises ... shall be fined under this title, or imprisoned not more than 25 years, or both.

In terms of §1348 of SOX, theories, models, criteria, and decision rules that are mis-specified, lack empirical validity, are not epistemologically rigorous, and defy sound research methodology, are an abstraction from reality and cannot be satisfactorily operationalised are subject to scrutiny. They may be construed as an attempt to commit a false or fraudulent pretence, particularly in the case of an expert professing specialised knowledge, skills, and competence (Paulo 2011, pp. 448–461).

It is difficult to defend the use of market prices as a suitable and sole basis for the estimation of value 4, given that such approaches fall within the ambit of value added by corporate executives. The market prices of financial securities correspond to their intrinsic values only under constructs such as perfect competition and the efficient market hypothesis, that, by definition, are not operationally valid. Consequently, it is not entirely clear how constructs such as perfect competition or the efficient market hypothesis could be reconciled with either Rule 702 or SOX.

Both Rule 702 and SOX are concerned with sound research methodology, which requires performance and valuation metrics to ethically and accurately report, describe, and explain the phenomena being researched (Cavana, Delahaye & Sekaran, 2000, pp. 27–44; Cooper & Emory, 1995, p. 9;

Sekaran, 2000, pp. 19–34). These metrics need to be *valid, reliable and unambiguously interpretable* (Cavana *et al.*, 2000, pp. 210–215; Cooper & Emory, 1995, pp. 148–156; Davis, 1996, pp. 172–180; Ghauri, Gronhaug & Kristianslund, 1995, pp. 46–51; Sekaran, 2000, pp. 204–210). An operational performance metric that is used by economists, statisticians, actuaries, managers, analysts, bankers, consultants, accountants, and other professionals, whether for appraisals, valuations, asset pricing, or asset allocation, needs to satisfy the minimum requirements of sound research methodology and sound ethics (Paulo 2011, pp. 448–461) and comply with the statute. Intrinsic values, however imperfect, are based on accounting conventions and doctrines, IFRS (International Financial Reporting Standards), GAAP (Generally Accepted Accounting Principles), and the determinations of the FASB (Financial Accounting Standards Board). Consequently, these intrinsic values offer an alternative that is influenced less by behavioural issues such as excess volatility, momentum, financial herding, contagion, and the great moderation.

## The Paulo–Le Roux Index

Paulo and Le Roux (2014) presented an approach (Appendix 1) that gives explicit recognition to the role of executive management in determining value by showing how they apply a firm's capital to generate revenue (sales) and thereby affect the value of the firm through capital requirements (CR), operating profitability (OP), growth (g), and the discount rate (cost of capital) constituted as a weighted average cost of capital (WACC). Typically, the revenue is generated by means of sales, which management seeks to increase or improve by utilising the currently existing or starting capital base of the firm. The expansion of sales from one period to the next period may require additional capital with the proviso that the profitability of these sales should exceed the weighted average cost of generating them. Brigham and Ehrhardt (2011, p. 526) expressed this approach, which is the corporate valuation model:

$$V_{\text{op}(\text{time } N)} = \text{Capital}_N + \left[ \frac{\text{Sales}_N(1+g)}{\text{WACC}-g} \right] \left[ \text{OP} - \text{WACC} \left( \frac{\text{CR}}{1+g} \right) \right] \quad [\text{Eqn 1}]$$

where:  $V_{\text{op}(\text{time } N)}$  = the intrinsic value of operations;  $\text{Capital}_N$  = quantity of capital in place at time N;  $\left[ \frac{\text{Sales}_N(1+g)}{\text{WACC}-g} \right]$  = the value of sales generated after time period N, estimated by increasing sales in time period N by the growth rate g, and discounting them at the difference between the WACC, and the growth rate g; and  $\left[ \text{OP} - \text{WACC} \left( \frac{\text{CR}}{1+g} \right) \right]$  = the difference between OP and WACC, the discount rate, multiplied by the capital required, CR, to generate and sustain the increase in sales from time period N onwards.

Equation 1 was used by Paulo and Le Roux (2014) to illustrate the estimation of value added by executive management to

the intrinsic value of the firm by drawing from audited financial statements in a manner that supports the purposes of SACA 2008, King Codes I, II and III, and is compliant with Dodd-Frank, the UK's FSF 2009, and the UKCA 2006.

At an intrinsic level, value added by corporate executives is reflected in the intrinsic values of the issuer's investments and their financing. Market prices of issuers' assets and securities may deviate from their intrinsic values for a variety of reasons such as market frictions, preferred habitats, or market segmentation theory (Fabozzi, 1993, pp. 208–209; Hull, 1993, p. 87; O'Hara, 1997, p. 190; Van Horne, 1998, pp. 90–91, 135–137), and behavioural issues such as are occasioned by excess volatility (Haugen, Talmor & Torous, 1991, pp. 985–1007; Ineichen, 2000, pp. 93–101; Reilly, Wright & Chan, 2000, pp. 82–92; Schwert, 1989, pp. 1115–1153), momentum trading (Connolly & Stivers, 2003, pp. 1521–1555; Cooper, Gutierrez & Hameed, 2004, pp. 1345–1365; Figelman, 2007, pp. 71–78; George & Hwang, 2004, pp. 2145–2176; Griffin, Ji & Martin, 2003, pp. 2515–2547; Sias, 2007, pp. 48–54), contagion (Pritsker, 2000, pp. 1–26; Van Rijckeghem & Weder, 1999, pp. 1–28), financial herding (Bikchandani & Sharma, 2000, pp. 1–32; Christie & Huang, 1995, pp. 31–37; Graham, 1999, pp. 237–268), and the great moderation (Ahmed, Levin & Wilson, 2004, pp. 824–832; Campbell & Cochrane, 1999, pp. 205–251; Clarida, Gali & Gertler, 2000, pp. 147–180), which, if improperly appreciated, can distort the valuations upon which managerial decisions are made.

The Paulo–Le Roux Index is defined:

$$\frac{ER}{V_{op(time N)}} \% \quad [Eqn 2]$$

where, using the notation of (1): ER = Executive remuneration; and:

$$V_{op(time N)} = Capital_N + \left[ \frac{Sales_N(1+g)}{WACC-g} \right] \left[ OP - WACC \left( \frac{CR}{1+g} \right) \right] \quad [Eqn 3]$$

This index, defined as the ratio of executive remuneration to value added by executives to the intrinsic value of the firm, shows how much executives were paid in relation to how much value they added to the firm. It is an expression of a cost/benefit ratio with the costs corresponding to ER and the benefits explicitly constituted in terms of the four main drivers of value based corporate management, namely, growth (g), CR, and the discount rate in the form of a WACC and OP.

The purpose of this Index is to provide a meaningfully measurable basis for analysis and discussions concerning what until now has been an imprecise hermeneutical discussion of the widely reported and publicised assertions and counter assertions of 'executive greed, reasonableness, acceptability, satisfactory and excessive remuneration' presented and discussed as part of the debate on the Dodd-Frank pay ratio provision.

The prime function of this Index is to provide a financial valuation to guide resource allocation in a manner consistent with the goals of the firm, the objectives of the company, other statutes, and the requirements of sound research methodology and rigorous epistemology. To accomplish this, in particular since the Dot.Com bubble and the advent of the financial crisis that started in 2007–2008, metrics need to satisfy Rule 702, and important legislation such as SOX, UKCA 2006, SACA 2008, as well as King Codes I, II, and III, and be consistent with FSF 2009.

The Paulo–Le Roux Index is useful because, in drawing inputs from audited financial statements, it complies with the legislative requirements of financial accounting. This applicability is from the perspective of financial accounting that focuses on reporting externally, and the performance of the firm in a manner consistent with numerous reporting and legislative requirements. The index provides a criterion that relates executive remuneration to the value executives have added to the firm. When re-arranged and disaggregated as  $[V_{(op\ time\ N)} - ER]$ , the value added after ER and retained earnings are revealed and available for workers and shareholders. Retained earnings are an important basis of capital formation. For example,  $[V_{(op\ time\ N)} - ER - Dividends - Retained Earnings = Value\ added\ for\ workers]$ . Thus, it provides an indication of the income distribution between executives and other employees, and also reveals the distribution to workers, shareholders, and retained earnings. Firms can be screened and ranked cross-sectionally and time-serially in terms of the allocation of value added, on a divisional, functional, or matrix basis, by product line, production unit, and project.

From the perspective of management and cost accounting, where the focus is on internal valuations for resource allocation and pricing, this index provides a guide for a wide range of managerial decisions, including promotion, restructuring, outsourcing, split-offs, spin-offs, and corporate restructuring.

Flexibility: Executive remuneration, ER, within the context of the Paulo–Le Roux Index, can be the total remuneration of a CEO; the aggregate remuneration of all executives; the remuneration of specific executives with regard to the division, function, production unit, or project they head. It thus has considerable flexibility. For illustrative purposes, the value of this index could range from a very low number, such as 5% of value added, to more than 100% of value added. Values in excess of 100% are consistent with asset stripping and corporate raiding. By presenting the values clearly, transparently, and unambiguously in a way that can be widely understood, a more informed and responsible debate on what is happening to income and wealth creation is possible.

The share of value added that should go to the various stakeholders is a matter that requires research, discussion, and informed debate in appropriate forums, including sovereign legislatures. Industry norms and guidelines cognisant of specific circumstances and national needs can be developed and modified through time.

As already noted, it is not the intention of this article to prescribe or even suggest control limit values even though screening and ranking controls are inherent in the application of this index. That requires an extensive empirical survey of corporate executive behaviour, followed by an appropriate period of consultation, discussion, and public comment with the nations' stakeholders and legislature regarding appropriate norms. It is not the purpose of this article to address the fraction of value added by executives that can or should be distributed to corporate executives, or the way in which such distributions can or should be made through time, though these topics are undoubtedly important.

## Conclusion

This article presents and discusses the Paulo–Le Roux Index that measures the relationship of executive remuneration to value added by executives. It is a response to the pay ratio provision in Section 953(b) of Dodd-Frank that the SEC announced on August 05, 2015, regarding the implementation, from 2017 onward, of the mandatory reporting by all public companies of the ratio of CEO remuneration to the median compensation of its employees. The background and extensive debate, in and outside of Congress with roots going back to the 1980s, that led to the 2015 implementation of this provision was an incentive for the Paulo–Le Roux Index. This debate and the preceding discussions of agency theory and corporate governance in the 1980s would have benefited substantially from being anchored in the type of measurement that quantifies in financial terms and can express the ratio of executive remuneration to value added by executives as a percentage. This index has widespread and flexible application because it provides a quantitative basis for managerial decision making consistent with the goal of the firm, sound research methodology, and rigorous epistemology, by drawing from audited financial statements. The next stage comprises extensive empirical surveys, to be followed by discussions and consultations with all stakeholders in the South African economy, including the legislature.

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### Authors' contributions

Both authors contributed equally to this article.

## References

- Ahmed, S., Levin, A., & Wilson, B. (2004). Recent US macroeconomic stability: Good policies, good practices, or good luck? *Review of Economics and Statistics*, 86(3), 824–832. <http://dx.doi.org/10.1162/0034653041811662>
- Bikchandani, S., & Sharma, S. (2000). *Herd behaviour in financial markets: A review*. International Monetary Fund Working Paper WP/00/48. Washington: International Monetary Fund.
- Brigham, E.F., & Ehrhardt, M.S. (2011). *Financial management: Theory and practice*. Mason, IA: South-Western.
- Cahart, M.M. (1997). On persistence in mutual fund performance. *Journal of Finance*, 52(1), 57–82. <http://dx.doi.org/10.1111/j.1540-6261.1997.tb03808.x>
- Campbell, J.Y., & Cochrane, J.H. (1999). By force of habit: A consumption-based explanation of aggregate stock market behaviour. *Journal of Political Economy*, 107(2), 205–251. <http://dx.doi.org/10.1086/250059>
- Cavana, R.Y., Delahaye, B.L., & Sekaran, U. (2000). *Applied business research*. Brisbane: Wiley.
- Coase, R.H. (1937). The nature of the firm. *Economica*, 4(16), 386–405. <http://dx.doi.org/10.1111/j.1468-0335.1937.tb00002.x>
- Connolly, R., & Stivers, C. (2003). Momentum and reversals in equity-index returns during periods of abnormal turnover and return dispersion. *Journal of Finance*, 58(4), 1521–1555. <http://dx.doi.org/10.1111/1540-6261.00576>
- Cooper, D.R., & Emory, C.W. (1995). *Business research methods* (5th edn.). Chicago, IL: Irwin.
- Cooper, M.J., Gutierrez, R.C., Jr., & Hameed, A. (2004). Market states and momentum. *Journal of Finance*, 59(3), 1345–1365. <http://dx.doi.org/10.1111/j.1540-6261.2004.00665.x>
- Christie, W.G., & Huang, R.D. (1995). Following the pied piper: Do individual returns herd around the market? *Financial Analysts Journal*, 51(4), 31–37. <http://dx.doi.org/10.2469/faj.v51.n4.1918>
- Clarida, R., Gali, J., & Gertler, M. (2000). Monetary policy rules and macroeconomic stability: Evidence and some theory. *Quarterly Journal of Economics*, 115(1), 147–180. <http://dx.doi.org/10.1162/003355300554692>
- Davis, W.D. (1996). *Business research for decision making*. (4th edn.). Belmont, CA: Duxbury.
- Drucker Institute of the Claremont Graduate University to the SEC Chair Mary Shapiro. (2011). Retrieved from [http://thedx.dreamhosters.com/wp\\_content/uploads/2011/02/SECcomment.pdf](http://thedx.dreamhosters.com/wp_content/uploads/2011/02/SECcomment.pdf)
- Fabozzi, F.J. (1993). *Bond Markets: Analysis and strategies*. (2nd edn.). Englewood Cliffs, NJ: Prentice-Hall.
- Fama, E.F. (1972). Components of investment performance. *Journal of Finance*, 27(2), 551–567. <http://dx.doi.org/10.1111/j.1540-6261.1972.tb00984.x>
- Figelman, I. (2007). Interaction of stock return momentum with earnings measures. *Financial Analysts Journal*, 63(3), 71–78. <http://dx.doi.org/10.2469/faj.v63.n3.4692>
- Financial Stability Forum. (2009). Report of the Financial Stability Forum on addressing procyclicality in the financial system, Basel, April.
- George, T., & Hwang, J.C. (2004). The 52-week high and momentum investing. *Journal of Finance*, 59(5), 2145–2176. <http://dx.doi.org/10.1111/j.1540-6261.2004.00695.x>
- Ghauri, P., Gronhaug, K., & Kristianslund, I. (1995). *Research methods in business studies*. New York: Prentice Hall.
- Graham, J.R. (1999). Herding among investment newsletters: Theory and evidence. *Journal of Finance*, 54(1), 237–268. <http://dx.doi.org/10.1111/0022-1082.00103>
- Griffin, J.M., Ji, X., & Martin, J.S. (2003). Momentum investing and business cycle risk: Evidence from pole to pole. *Journal of Finance*, 58(6), 2515–2547. <http://dx.doi.org/10.1046/j.1540-6261.2003.00614.x>
- Haugen, R.A., Talmor, E., & Torous, W.N. (1991). The effect of volatility changes on the level of stock prices and subsequent expected returns. *Journal of Finance*, 46(3), 985–1007. <http://dx.doi.org/10.1111/j.1540-6261.1991.tb03774.x>
- Huizenga, B. (2013). *Dodd-Frank pay ratio provision not worth the cost, needs to be repealed*. Press Release from the Office of Congressman Bill Huizenga. Retrieved from <http://huizenga.house.gov/news/documentsingle.aspx?DocumentID=325003>
- Hull, J.C. (1993). *Options, future, and other derivative securities*. (2nd edn.). Englewood Cliffs, NJ: Prentice-Hall.
- Ineichen, A.M. (2000). Twentieth century volatility. *Journal of Portfolio Management*, 27(1), 93–101. <http://dx.doi.org/10.3905/jpm.2000.319787>
- Jensen, M.C. (1968). The performance of mutual funds in the period 1945–1964. *Journal of Finance*, 23(2), 389–416. <http://dx.doi.org/10.1111/j.1540-6261.1968.tb00815.x>
- Jensen, M.C. (1969). The pricing of capital assets and the evaluation of investment portfolios. *Journal of Business*, 42(2), 167–247. <http://dx.doi.org/10.1086/295182>
- Kaplan, S.N. (2012). Executive compensation and corporate governance in the US: Perceptions, facts and challenges. *National bureau of economic research working paper 18395*. Cambridge, MA: NBER.
- King Codes I, II, and III, South Africa. Institute of Directors, Southern Africa. (2009). *King code of governance*, the Institute of Directors in Southern Africa
- Knowledge@Wharton. (2010). Executive compensation: More regulations, or just more transparency? Retrieved from <http://knowledge.wharton.upenn.edu/article.cfm?articleid+2431>
- Mishel, L., & Sabadish, N. (2013). *CEO pay in 2012 was extraordinarily high relative to typical workers and other high earners*. Economic Policy Institute. Retrieved from <http://epi.org/publications/ceo-pay-2012-extraordinarily-high/>
- Moody's. (2006). US executive pay structure and metrics. Retrieved from <http://www.moody's.com/sites/products/AboutMoody'sRatingsAttachments/2005700000426959.pdf>
- Morrissey, D. (2012). *Executive compensation and income equality*. Gonzaga University School of Law Legal Studies Research Paper No. 2012-2. Retrieved from <http://srn.com/abstract=2048698>
- O'Hara, M. (1997). *Market microstructure theory*. Oxford: Blackwell.
- Paulo, S. (2011). Executive remuneration and the principles of the Financial Stability Forum of 2009. *International Journal of Law and Management*, 53(6), 448–461. <http://dx.doi.org/10.1108/17542431111185204>



- Paulo, S., & Le Roux, P. (2014). Executive remuneration and corporate governance in South Africa: The challenge of measurement. *Journal for Development and Leadership*, 3(2), 35–44.
- Pritsker, M. (2000). *The channels for financial contagion*. Washington, DC: The Federal Reserve Board.
- Reilly, F.K., Wright, D.J., & Chan, K.C. (2000). Bond market volatility compared to stock market volatility. *Journal of Portfolio Management*, 27(1), 82–92. <http://dx.doi.org/10.3905/jpm.2000.319786>
- Republic of South Africa. (2008). South African Companies Act, of 2008. South Africa.
- Schwert, G.W. (1989). Why does stock market volatility change over time? *Journal of Finance*, 44(5), 1115–1153. <http://dx.doi.org/10.1111/j.1540-6261.1989.tb02647.x>
- Securities and Exchange Act 1934, USA. Retrieved n.d., from <https://www.sec.gov/about/laws/sea34.pdf>
- Sekaran, U. (2000). *Research methods for business*. (3rd edn.). New York: Wiley.
- Shorter, G., 2013. The 'pay ratio provision' in the *Dodd-Frank Act*: Legislation to repeal it in the 113th congress. Congressional Research Service, 7-5700. Retrieved n.d., from <http://www.crs.gov/R43262>
- Sias, R. (2007). Causes and seasonality of momentum profits. *Financial Analysts Journal*, 63(2), 48–54. <http://dx.doi.org/10.2469/faj.v63.n2.4521>
- Smith, E.B., & Kuntz, P. (2012). *CEO pay 1, 795-1 multiple of wages skirts US law*. Bloomberg. Retrieved from <http://www.bloomberg.com/news/2013-04-30/ceo-pay-1-795-1-multiple-of-workers-skirts-law-as-sec-delays.html>
- The Guardian*, David Cameron's plans for executive pay may not end spiralling bonuses. Retrieved January 09, 2012, from <http://www.guardian.co.uk/business/video/2012/jan/09/david-cameron-executive-pay>
- Treanor, J. (2014). Vince cable tells top UK firms: Crack down on bonuses or face new Laws. *The Guardian*. Retrieved n.d., from <http://www.theguardian.com/business/2014/apr/22/vince-cable-tells-uk-firms-crack->
- Treynor, J.L. (1965). How to rate management of investment funds. *Harvard Business Review*, 43(1), 63–75.
- Treynor, J.L., & Mazuy, K. (1966). Can mutual funds outguess the market? *Harvard Business Review*, 44(4), 131–136.
- United Kingdom. (2006). UK Companies Act, of 2006 (c. 46). United Kingdom.
- United States of America. (2002). Sarbanes-Oxley Act, of 2002, Public law 107–204, July 30. United States of America.
- United States of America. (2010). Dodd-Frank Act of 2010. United States.
- Van Horne, J.C. (1998). *Financial market rates and flows*. (5th edn.). NJ: Prentice Hall. New Jersey.
- Van Rijckeghem, C., & Weder, B. 1999. *Sources of contagion: Finance or trade*. International Monetary Fund Working Paper WP/99/146. Washington, DC: International Monetary Fund.
- Waters, J. (2013). Amendments to H.R. 1135 offered by Ms. Waters. Retrieved from <http://financialservices.house.gov/uploadedfiles/bills-113-hr1135-w000187-amdt-001.pdf>

Appendix starts on the next page →

## Appendix 1

Extract from Paulo and Le Roux (2014, pp. 37–38):

$$V_{\text{ops}} = \text{PV of expected future free cash flow} \quad [A1]$$

where:  $V_{\text{ops}}$  = the value of operations; and PV = present value of expected future cash flow.

In other words (Brigham & Ehrhardt, 2011, p. 515),

$$V_{\text{ops}} = \sum_{t=1}^{\infty} \frac{\text{FCF}_t}{(1 + \text{WACC})^t}$$

where: WACC = weighted average cost of capital of all the firm's financing components; and  $\text{FCF}_t$  = free cash flows for all periods  $t$  and which can have positive, zero, or negative values.

To accommodate growth, the value of the firm's operations can be rewritten adapted from Brigham and Ehrhardt (2011, p. 517):

$$V_{\text{ops}} = \frac{\text{FCF}_0(1+g)}{\text{WACC}-g} \quad [A2]$$

where:  $g$  = the growth rate.

Since FCF is determined by capital already invested, sales and the growth in sales, as well as the profitability of sales in relation to the capital required to generate those sales, equation (A2) can be rewritten (Brigham & Ehrhardt, 2011, p. 526):

$$V_{\text{op}(\text{time } N)} = \text{Capital}_N + \left[ \frac{\text{Sales}_N(1+g)}{\text{WACC}-g} \right] \left[ \text{OP} - \text{WACC} \left( \frac{\text{CR}}{1+g} \right) \right] \quad [A3]$$

Equation (A3) comprises two main components,  $\text{Capital}_N$ , the monetary amount of operating capital already invested in the firm, as well as the value management has added or subtracted:

$$\left[ \frac{\text{Sales}_N(1+g)}{\text{WACC}-g} \right] \left[ \text{OP} - \text{WACC} \left( \frac{\text{CR}}{1+g} \right) \right]$$

The term:

$$\left[ \frac{\text{Sales}_N(1+g)}{\text{WACC}-g} \right]$$

shows the present value of the growth in sales discounted at the firm's WACC. Since an increase in sales often necessitates an increase in CR over and above the cost of sales, the term:

$$\left[ \text{OP} - \text{WACC} \left( \frac{\text{CR}}{1+g} \right) \right]$$

is needed because it shows the difference in OP, and the firm's discount rate or cost of capital, WACC, multiplied by the firm's additional capital requirement to finance the growth in sales. Thus, this term shows the return over and above the cost of capital earned in relation to the additional capital investment needed to fund the growth in sales.