

Ysgol Busnes Bangor
Bangor Business School



PRIFYSGOL
BANGOR
UNIVERSITY

OPERATING RISK AND CEO PAY

PROFESSOR JONATHAN WILLIAMS
BANGOR BUSINESS SCHOOL

Second International Conference Risk Management

University of Turin, 25 October 2018

www.bangor.ac.uk/business



BangorBusinessSchool



@BangorBizSchool



Introduction

- The **Financial Stability Board** and the **Basel Committee on Banking Supervision** have introduced standards on **operating risk**, which covers firms' corporate governance including executive compensation practices.
- A firm's **corporate governance** practices and its **compensation** arrangements are indicative of its **culture**.
- New literature suggests **culture influences the behaviour of firm executives** and, in turn, **firm performance**.
- Today, I discuss why CEOs are highly paid, how the structure of executive compensation contains implicit incentives, why contracting may produce unintended results. I present new evidence on compensation matters.



Pay and the Demand for Talent

- Critics challenge **astronomical compensation** packages.
- But why do firms pay CEOs (and others) such large amounts?
- **Managerial talent** literature notes the rise to prominence of **superstar CEOs**:
 - The demand for talented CEOs reflects perceptions about CEOs and expectations that their **skills drive firms to better performance**.
 - Quigley and Hambrick (2015, *Strategic Management Journal*).
- **Market-based** theory ascribes the cause of high and rising pay to market forces, and the demand for scarce and valuable **managerial talent**.
- High pay is the outcome of an efficient bidding for talent.



A New Type of Corporation?

- **CEOs as bureaucrats** hypothesis relevant no longer because **financial deregulation** has removed demarcation lines and unleashed **competitive forces** including new **technology**.
- Firms are larger, operate across greater distances including internationally, and have become **more complex**.
- In response to competition, firms changed their **business models**, and indeed, shifted into **riskier** lines of business.
- **Reinforces the demand** for talented or **superstar CEOs**.



The Structure of Compensation

- Compensation structure contains **implicit incentives**.
 1. **Salary** – fixed component. In banking, 10-20% of total pay.
 2. **Bonus** –Targets set at start of the year. Around 20% of total pay
 3. **Stock and options** – equity-linked pay. Around 60% of total pay.
 - Bonus and stock/options are **variable** or **incentive pay**.
- Talented CEOs pay is **heavily weighted** in incentive pay.
 - Why? If CEOs deliver superior firm performance, receive higher pay.
 - In other words, CEOs are compensated or paid a **premium** for bearing the **risk** of incentive pay.



The Agency Conundrum

- The **principal-agent** problem arises when there is **separation of ownership** (shareholder) and **control** (CEO).
 - If CEO actions are difficult to **monitor**, CEO has incentive to **self-serve** and **extract rents**; which **expropriates** shareholders.
- Economists refer to this as the **hidden action** model.
 - Shareholders know what actions they require the CEO to take but cannot observe if the CEO took them i.e. **informativeness principle**.
 - Shareholders examine stock price movements to **infer** if CEO took correct actions.
 - **Opportunistic** CEOs expend least possible effort i.e. a **hidden action**.
 - CEO behaviour may include: “**Shirking**”; “**satisficing**”; **empire building**, **entrenchment** i.e. difficult to remove underperforming managers.



Compensation Contracts

- It matters how you pay rather than how much:
 - Design a **compensation contract** with efficient incentives for executives to maximise shareholder value (wealth) i.e., the **contract aligns interests of principal and agent**.
- Compensation is a mechanism to encourage effective leadership to improve performance.
- Contracts should be **weighted heavily** in performance-sensitive pay if a CEO is **difficult to monitor** and the impact of CEO actions on firm profit is strong:
 - Stock and options link (CEO) pay to (firm) performance (stock price).
- Underpins notion of **pay-for-performance**.



Optimal Contracting Approach

- Contracting is based on **strong assumptions**:
 - Do CEOs **automatically** seek to maximise shareholder value?
 - Does the board **automatically** seek to maximise shareholder value?
- **Agency conflicts arise between directors and shareholders**:
 - Directors seek **re-appointment** (pay, prestige, networks). Therefore, they may favour and support the CEO.
 - CEOs influence **nomination** process \Rightarrow incentive for directors to agree with CEO demand for higher pay.
 - Reputation for **haggling** harms directors' chance of (re)nomination.
- Compensation contracts could reflect **CEO power**.
- **Market forces cannot guarantee optimal contracting.**



Managerial Power Approach

- MPA questions whether either a CEO or the board seek to maximise shareholder value:
 - Agency conflicts let powerful CEOs **dominate** the board and **extract rents** thereby **expropriating shareholders**.
- CEOs “**camouflage**” i.e. obscure/legitimise rents:
 - Camouflage can lead to the adoption of **inefficient compensation structures** that hurt managerial incentives and firm performance.
- Suggests pay-for-performance is **broken**.



A Culmination of the Problem?

- Excessive **risk-taking** was a source of the volatility that erupted in 2007:
 - **Question:** was the crisis simply the realisation of **bad luck** – based on relative **underperformance** of banks with **shareholder-friendly boards**?
 - **Question:** was the crisis a result of **managerial power** and **inappropriate incentives**?
 - Did performance pay incentivise **short-term** goals, which ultimately, came at the expense of long-term firm sustainability?



New Evidence

- Is pay-for-performance a busted flush?
 - Cardias Williams and Williams (2018a)
 - H1: PfP (does not) varies across firms.
 - H2: PfP is (not) time varying.
 - H3: PfP is stronger if CEOs are powerful.
 - H4: PfP (does not) varies across executives.



Econometric Framework

$$\begin{aligned} \Delta \ln(\text{Pay}_{ijt}) &= \beta_0 + \beta_1 \Delta \ln(\text{Performance}_{jt}) \\ &+ \beta_k \sum_{k=3}^n D_k + \beta_l D_k * \Delta \ln(\text{Performance}_{jt}) \\ &+ \beta_m X1_{jt-1} + \beta_n X2_{it-1} + \varepsilon_{ijt} \end{aligned}$$

Model [1]: k equals three time intervals: 1999 to 2006, 2007 to 2009, 2010 to 2016.

Model [2]: k equals eight types of professional status, i.e., executive roles – CEO, other CEO, chair, operating officer, finance officer, administrative and legal officer, risk officer, others.

Model [3]: k equals three levels of CEO power: low, medium, high.

Jensen and Murphy (1990a, *J. Political Economy*).



Variables

- Dependent variable: **Change in total pay.**
- Independent variables: **Change in performance:**
 - Annual continuously compounded returns.
 - Change in market capitalisation (robustness check).
 - Change in operating profit (robustness check).
- **Covariates** known to affect total pay (lagged one period);
 - **Size; Growth opportunities; Diversification; Leverage; M&A activity; Board size; Age; Tenure on board; Total pay; Variable to fixed pay.**
- We construct a measure of CEO Power.

A New Measure of CEO Power

- $CEO\ Power = \sum_{i=8} x_i$. CEO Power equals 1 if:
 - **Duality** – executive performs CEO & Chair roles.
 - **Sole** – CEO is only executive on the board.
- CEO Power equals 1 if value is above the median:
 - **Portfolio incentives** – CEO wealth-to-market value.
 - **Wealth slice** – CEO wealth-to-total executive wealth.
 - **Experience** – time in role (years).
 - **Independence** – supervisory directors-to-board size.
 - **BusynessQ** – numbers of quoted boards a CEO sits on.
 - **BusynessP** – numbers of private boards a CEO sits on.

	All banks	G-SIBs	All EU	All US	US
Returns	0.403***	0.859***	0.283**	0.460**	0.502***
Observations	2979	1263	1178	1801	1219
R ²	0.416	0.460	0.455	0.426	0.453
Adjusted R ²	0.397	0.436	0.425	0.405	0.428

* p<0.10, ** p<0.05, *** p<0.01

H1: PfP (does not) varies across firms.

PfP is positive and significant; higher pay growth due to performance gains.

But, PfP varies by bank cohort. Effect is greatest at G-SIBS (mega-banks); stronger at US banks than EU.

	All banks	G-SIBs	All European	All US	US
1999-2006	0.750***	1.738***	0.534***	1.119**	0.917
2007-2009	0.338**	0.748**	0.037	0.385*	0.499***
2010-2016	0.334**	0.549**	0.495***	1.860	0.179

H2: PfP (does not) varies across time.

PfP is time varying but it weakens over time (due to the GFC) and has not returned to pre-crisis levels, with possible exception of EU banks.

	All banks	G-SIBs	All European	All US	US (non-G-SIB)
Low power	0.353**	0.950***	0.297	0.408	0.321
Mid power	0.389***	0.830***	0.269*	0.448	0.526*
High power	0.491***	1.678***	0.778**	0.472***	0.512***
Adjusted R ²	0.398	0.442	0.423	0.407	0.431

H3: PfP is stronger if CEOs are more powerful.

PfP is larger when CEO power is high especially for G-SIBs and Europeans. These elasticities are higher when compared to baseline models.

	All banks	G-SIBs	All Euro	All US	US (non-G-SIB)
CEO	0.398***	0.880***	0.204*	0.500**	0.513***
Other CEO	0.449***	0.909***	0.260	0.570***	0.538***
Chair	0.259	0.638**	0.287*	0.247	0.216
COO	0.366**	0.746***	0.442**	0.329	0.491***
CFO	0.366***	0.834***	0.329*	0.362*	0.441**
CAO/CLO	0.513***	1.251***	0.597***	0.597***	0.396***
CRO	0.518***	0.985***	0.521***	0.349	0.357
OER	0.446***	1.027***	0.306**	0.564*	0.561*

H4: PfP (does not) vary across executive roles.

Total PfP varies across professional status. For G-SIBs, PfP for all executive roles are relatively larger. PfP is more variable across roles at EU banks.

Findings and Implications

- Pay-for-performance elasticity is **time varying**:
 - Results suggest pay-performance elasticity weakens in-crisis in comparison to pre-crisis.
 - Post-crisis elasticity has not returned to pre-crisis level, except for all US banks but results are not significant.
- Pay-for-performance varies and differs significantly within roles than across roles.
- CEO power moderates PFP elasticity, i.e., pay growth is bigger when CEOs exercise greater power over the board.

- Compensation policy and firm performance.
 - Cardias Williams and Williams (2018b)
 - H1: Firms should use large pay gaps between CEO and other executives to motivate effort, hence, firm value.
 - H2: Firms should use smaller pay gaps to fosters a stronger sense of collaboration amongst executives towards attaining organisational goals.
 - H3: Firm performance is unaffected by compensation policy.



Tournament Theory

- **Tournament theory:** large differences in pay between organisational roles motivate increased effort to achieve promotion:
 - i.e. reward structure follows a rank-order tournament.
- **Implication:** larger pay gaps give incentive to compete for top prize:
 - i.e. promotion to a higher level or ascension to CEO.
 - Thus, larger pay gaps realise firm performance gains?



Behavioural Theory Perspective

- Behaviourists promote use of **smaller pay gaps** i.e. pay compression. Why?
 1. Arguably, more equal pay **promotes collaboration**, which leads to **performance gains**.
 2. Large pay gaps could create **feelings of deprivation** if individuals compare their pay to the pay of higher ranks.
 3. The deprived reduce commitment to bank goals, engage in **absenteeism**, which adversely **affects performance**.
 4. Rank-order tournaments and large pay gaps between senior and junior management, could **weaken cooperation** and **impair coordination**, which could adversely **impact bank performance**.



A Political Economy Perspective & Sabotage Theory

- A **political economy** context reaches similar conclusions to behavioural theory.
- Large pay gaps might motivate effort but could create an **unintended consequence** and split an **executive's effort between cooperative and self-serving behaviour**.
- Self-serving includes **politicking** to make one look good and peers look bad.



Econometric Model

$\ln Z \text{ score}_{jt}$

$$= \beta_0 + \beta_1 \ln(\text{Paygap}_{ijt}) + \beta_m X1_{it} + \beta_n X2_{jt} + u_{0j} + \varepsilon_{ij}$$

- Various: hierarchical linear model; fixed effects; GMM.
- The dependent variable is the bank stability indicator that we measure using the Z-score of bank j at time t .
- β_0 is the overall mean across banks; u_j is the effect of bank j on the Z-score; e_{ij} is an executive-level residual; $u_j \sim N(0, \sigma^2)$, $e_{ij} \sim N(0, \sigma^2)$ are the variance components.
- β_1 is the coefficient on pay gap, which shows its relation with bank stability.



Covariates

- $\beta_m X_{1_{it}}$ contains **executive-level** variables (age, time on board, age*time on board, appointment of a new CEO, CEO power).
- $\beta_n X_{2_{jt}}$ contains **bank-level** variables (board size, size (total assets), growth opportunities (market-to-book equity), diversification (noninterest income-to-gross income), funding (customer deposits-to-assets), risk (estimated from market model).
- **CEO Power** is a multi-dimensional index ranging from 0 to 10.
- **Duality**: combines roles of CEO and chair; CEO as **sole insider**; **time in role** > median; **busy 1** number of quoted boards > median; **busy 2** number of private boards > median; **independence** ratio of non-executive-to-executive directors > median; **CEO payslice 1** of total pay for all executives > median; **CEO slice 2** of total accumulated wealth for all executives > median; **equity incentive** share of CEO pay-to-bank market value > median; **portfolio incentive** share of CEO accumulated wealth-to-bank market value > med.
- Finkelstein (1992) *Academy of Management Journal (upper echelons theory)*; Larcker and Tanyan (2012) *Mimeo Stanford University*

Ysgol Busnes Bangor Bangor Business School



PRIFYSGOL
BANGOR
UNIVERSITY

- Positive relation between stability and CEO pay gap.
- Holds when maximum gap is used for all cohorts.
- Rank pay gap holds for G-SIBs.
- Supports use of **tournament incentives** in compensation policy.

	1999-2016	1999-2006	2010-2016
CEO pay gap	0.0625***	0.0477***	0.0865***
Observations	2278	1085	773

	All banks	G-SIBs	EU	US
Max pay gap	0.0571***	0.0297**	0.116***	0.0666***

	All banks	G-SIBs	EU	US
Rank pay gap	0.0103**	0.0122**	0.0149	-0.00254



Findings and Implications

- Strong empirical evidence that compensation policy, i.e., pay gaps affect firm performance.
- Larger pay gaps benefit performance through a motivation effect brought about by **pay dispersion**.
- Decomposing the Z score, we show use of **tournament incentives** would appear to effect firm **stability** by improving **ROA** and reducing the **volatility** of profitability.



Does a CEO's Education Matter?

- Effects of CEO **education** and **experience** on firm performance.
 - *What's in an education? Implications of CEO education for bank performance.*
 - King, Srivastav and Williams (2016)
 - *Dynamics between Bank CEOs' Pay and Experience: Evidence from Market Shocks*
 - King, Srivastav and Williams (2018)



Does a CEO's Education Matter?

- Firms desire CEOs with superior ability:
 - CEO (fixed) effects matter for firm performance and for strategic policy choices and compensation.
- Human capital theory:
 - **Education** is often a proxy for human capital.
 - Better educated and intelligent individuals exhibit **greater patience** and are less prone to act on **impulse**.
 - Educational attainment has positive impact on career outcomes, both in terms of pay and career trajectory.



Empirical Strategy

- Fixed effects regression specifications (including IV) to investigate the relationship between CEO educational attainment and firm performance:

$$\text{Bank Performance}_{i,t+1} = \beta_0 + \beta_1(\text{CEO Education Index}_t) + \beta_2(\text{Control Variables}_t) + \text{Bank}_i + \text{Year}_t + \varepsilon_{i,t}$$



- **Educational Index.**

- *First study to construct an educational index. We employ a commonly used ranking periodical: US News and World Report (USNWR) to rank top-20 universities.*
- *Construct a multidimensional CEO educational index using factor analysis:*
 - **Basic Education** (*capturing CEO's foundational or basic knowledge and expertise acquired through an undergraduate degree*).
 - **Management Education** (*capturing CEO's management-specific knowledge acquired through an MBA*)
 - **Advanced Education** (*showing CEO's technical expertise acquired through a doctorate degree*).



Findings and Implications

Education matters for firm performance:

- *Banks run by CEOs with higher Management Education are more profitable and generate higher returns.*

Channels of improvement in performance:

- *Bank run by CEOs with higher Management Education improve firm performance by **shifting the business model** towards non-traditional sources of income and a **riskier** asset portfolio.*



- **Dynamics between Bank CEOs' Pay and Experience: Evidence from Market Shocks**
- King, Srivastav and Williams (2018)

- **Does a CEO's professional and salient life experiences moderate her response to pay incentives?**
- Nascent literature on CEO prior experiences on future decision making:
 - Add to literature showing that specific **facets of experience matter - early life experiences; military experience; CEOs with a background in finance.**

- Motivate and test several hypotheses:
 - **Experienced CEOs** should be **more responsive** to risk-taking incentives embedded in compensation contracts.
 - **Experienced CEOs** are **more responsive** to incentives when there is a **positive market shock**.
 - **Experienced CEOs** are **less responsive** to incentives during **negative** market shocks.
- **Experience should matter most during ‘disequilibrium’ industry conditions, such as, shocks to industry conditions when CEO job demands are greatest (Hambrick et al., 2005 AMR).**



Fixed Effects Regression

- $Risk_{i,t+1} = \beta_0 + \beta_1(CEO\ Experience * Compensation_{i,t}) + \beta_2(Compensation_{i,t}) + \beta_3(CEO\ Experience_{i,t}) + \beta_4(Control\ Variables_{i,t}) + Bank\ FE + County * Year\ FE + \varepsilon_{i,t}$
- *CEO Experience* captures CEO's managerial and general experience; *Control Variables* is a vector of bank-specific and CEO-specific controls.
- Control for time-invariant unobservable bank characteristics by including bank fixed-effects and time-varying geography-specific variation in local competition by controlling for county-year FE.
- The **interaction** term **CEO Experience * Compensation** is our **primary variable of interest**, which indicates how experience influences CEOs' responses to implicit pay based risk-taking incentives.



Findings and Implications

- **CEOs with greater professional and life experiences vary their responses to risk-taking incentives implicit in their compensation contracts:**
 - Under **normal** (crisis) conditions, CEOs with greater experience are more (less) responsive to risk-taking compensation incentives.
 - This effect is more (less) pronounced during a positive (negative) industry shock.
- Advances our understanding as to how heterogeneous experiences shape managerial risk-taking preferences.
- Important for appropriate **design** of pay incentives and for effective (banking) regulation and supervision.



Some Conclusions

- Evidence is clear that CEO characteristics, the structure of incentives in compensation contracts, and compensation policy all matter for firm performance outcomes.
- Further research using executive-level data is required to tease out as yet unidentified effects including the measurement of impact of firm culture.