

Bank Pay Caps, Bank Risk, and Macroprudential Regulation

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- Remuneration of Bankers is the focus of significant regulatory attention in the UK, EU, US and globally.
 - 1-to-1 EU bonus caps;
 - FSB “*Principles for Sound Compensation Practices.*”
 - Adoption in Basel III of the *Capital Conservation Buffer.*
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 - Adoption in Basel III of the *Capital Conservation Buffer.*
- Concern has focused on both the risk-taking incentives and the size of the aggregate pay bill.
- The pay bill is sometimes in excess of 80% of total shareholder equity, and often in excess of 30% of shareholder equity. (Thanassoulis 2012).

Cap On Total Remuneration In Proportion to Risk Weighted Assets

I propose and study effect of a cap on total pay in proportion to assets.

- Variable cap lowers salary costs directly; and
- Cap stops negative externality in labour market so lowering market pay.
- So cap lowers bank costs and hence improves bank resilience.

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 - Achieved whilst increasing bank values.
 - Achieved without reduced lending from a Tier 1 increase.
- Encourages diversification by reducing need to focus on limited asset classes.
- A tool for Macroprudential Regulation to encourage retail banking.

Relevance Of Remuneration To Financial Stability

- Remuneration costs typically double amount spent on dividends and share buybacks.
 - And in the financial crisis the latter were thought to be sufficient to inhibit lending.
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- Express as a proportion of Risk Weighted Assets — i.e. equivalent Tier 1 increase:

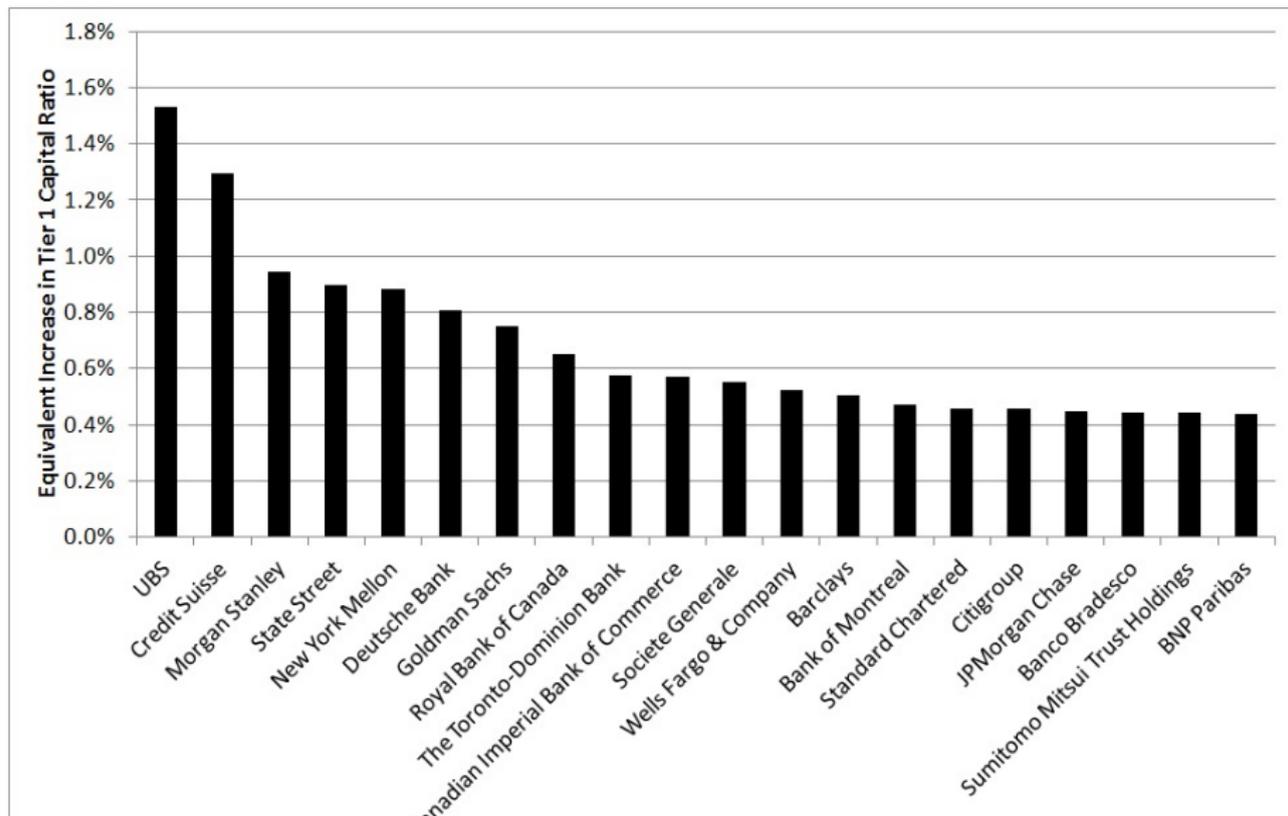
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Reduction in aggregate bank remuneration	5%	10%	15%	20%	25%	30%
Average equivalent increase in Tier 1 levels (basis points)	9	19	28	37	47	56

Remuneration: A Targeted Intervention

Gain in Tier 1 from 20% Reduction in Remuneration (20 Most Affected)



Related Literature

Objective of paper is to investigate the consequences of a regulatory pay cap on bank risk, bank value and bank asset allocation decisions.

- Uses Thanassoulis (2012) banking framework. Adds multiple asset class allocation, macroprudential regulation, and cap on total pay and not bonus alone.
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- Limited empirical literature on bankers' pay and bank risk: Cheng, Hong and Schienkman (2010), Fahlenbrach and Stulz (2011).
- Complementary to studies of bank competition and individual risk taking:
 - *Fraud*: Foster and Young (2010); *Myopia*: Thanassoulis (2013a); *Bonus*: Raith (2003); *Screening*: Benabou and Tirole (2013); *Churning*: Acharya, Pagano and Volpin (2013).

The Model

- N banks with assets in a given class $S_1 > S_2 > \dots > S_N$ who maximize expected value.
 - Bank incurs extra costs if assets shrink to less than $\eta \cdot S$ (where $\eta < 1$)
 - Forced asset sales to reimburse creditors; or
 - Increased costs of capital.
 - Extra costs from such '*default event*' proportional to assets: λS .
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 - Extra costs from such '*default event*' proportional to assets: λS .
 - Functional form convenient. Key is costs incurred if assets shrink sufficiently.
- N bankers who expect to grow assets by factor $\alpha_1 > \dots > \alpha_N > 1$.
 - e.g. banker i at bank j then expected bank j assets at end: $\alpha_i S_j$.
 - Distribution of realized growth factor $F_n(\cdot)$, supported on $[0, \infty]$. [Limited liability].
 - Outside option of 0. Risk neutral.
 - Bankers might actually be risk loving (cf. medical evidence & Thanassoulis (2012)).

- The density f_n is a proportional scaling of some standard (mean = 1) distribution f such that $f_n(x) = (1/\alpha_n) f(x/\alpha_n)$.
- Banks risk neutral, so distribution of realized assets only relevant if default event triggered.
 - In empirical calibration a low probability event.
 - Tail probabilities can be approximated using *Extreme Value Theory* [cf. Gabaix and Landier 2008, Thanassoulis 2012]

$$F_n(v) = G \cdot (v/\alpha_n)^\gamma$$

- Restrict to $\gamma \geq 1$ with G a positive constant so density bdd near zero.

Banks In Competition To Hire Bankers

- 1 Banks bid against each other to hire one banker in a competitive auction.
 - Banks only pay in bonuses. Bid rate q applying to realized asset levels.
 - Pay individual specific. Better banker offered better package.
 - Banks here would prefer bonuses to wages – risk sharing. Thanassoulis (2012).
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Table : Proportion of Remuneration Received As Bonus

	2008		2009	
Tot. compensation	% base salary	% bonus	% base salary	% bonus
£500K to £1mn	19%	81%	24%	76%
> £1mn	9%	91%	11%	89%

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- Expected bank value is

$$\alpha(1-q)S - \lambda SG \cdot \left[\frac{\eta}{\alpha(1-q)}\right]^\gamma$$

- A cap on remuneration in proportion to assets equivalent to a cap on bonus rate, q .

Discussion of Key Assumptions

- ① Risk profile of bank decided by Board and not the banker.
 - Board determine risk profile given target RoE. Use corporate governance levers to realize:
 - Value at Risk controls; asset allocation; hedging decisions.
 - This study assumes these levers are sufficient.

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 - If not then payment levels and bonus rates related to risk profile of institution.
 - Tail risk, F_n a function of either q or total dollar remuneration.
 - Ambiguous effect. Large bank can offer a lower bonus rate which, with poor risk control lowers institution risk.
 - But large banks will pay more in dollar terms, potentially raising risk of institution.
 - Externalities we describe will remain: marginal bidder increases fragility of employing bank.

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 - Externalities we describe will remain: marginal bidder increases fragility of employing bank.
 - The intervention of a cap in pay lowers bonus rates *and* pay levels.
 - If bank can't control tail risk then intervention mitigates adverse effects of poor risk control.
 - Lower incentive to excessive risk, fraud, myopia, and churn.

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2. Bank incurs remuneration payment even if assets shrink enough for default event.
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 - Would expect bankers to argue so.
 - Thanassoulis (2012) documents large pay even with negative RoE.
 - ③ Unless bank formally enters bankruptcy, remuneration contracts must be honoured.
 - Bank may also honour implicit rather than explicit commitments to pay as otherwise all employees alter expectations of pay.

No Intervention Benchmark

- Market rate of pay set by the marginal bidder for a banker.

Lemma

Bank of rank n will hire banker of same rank n . Positive assortative matching.

- Greater skill applied to a larger pot of assets; and delivers larger reduction in expected costs of default.
- Hence a larger bank would be willing (if forced) to outbid a smaller bank for a better banker.
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- By induction positive assortative matching.
- Robust to some banks being more attractive:
 - Suppose bank specific differences raise utility of bank i by a factor of $1 + \tau_i$.
 - So if bonus q banker's expected utility is $(1 + \tau_i) q \alpha S_i$.
 - As if banker runs utility weighted assets of $\Sigma_i = (1 + \tau_i) S_i$.
 - Reorder banks according to $\{\Sigma_i\}$: results of the paper remain.

Proposition

Banker rank i employed by bank i with expected payment of $q_i \cdot \alpha_i S_i$ with:

$$\text{bonus rate, } q_i = \sum_{j=i+1}^N \frac{S_j}{S_i} \frac{(\alpha_{j-1} - \alpha_j)}{\alpha_i}$$

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- Market works like a pyramid.
- Delivers equilibrium rate of pay.

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Mandatory pay cap on total remuneration equal to proportion χ of assets:

- ① *Lowers bank risk and raises bank values for all except the smallest banks.*
- ② *The lower the remuneration cap, the greater the positive impact: higher bank values and lower bank risk.*
- ③ *Equilibrium allocation of bankers to banks is not affected, preserving allocative efficiency.*

Pay Cap Corrects Labour Market Externality

- Banks compete to hire scarce talent. Marginal bidder sets market rate.
- By bidding to hire a banker unsuccessfully, poaching banks drive up market rate.
- Bidding is a pecuniary externality: banker gains, employing bank loses.

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- Bidding is a pecuniary externality: banker gains, employing bank loses.
- But also increase to employing bank's fragility to stress:
 - Larger costs and so greater probability of default event and associated costs.
- Lowers bank value – a negative externality.

Pay Cap Corrects Labour Market Externality

- Cap impacts marginal bidder more than employing bank.
 - Banker wants to run more money assets. So bank with smaller assets had to offer larger bonus rate to compensate for smaller size/less attractive place to work.
- Cap forces marginal bidder to bid less hard.
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- Macroprudential: no single bank can do this alone.
- Potential concern of departure of workers from finance – (Philippon and Reshef (2012)) pay premium of 50% to 250%; long way before a serious concern.

Assets Valued on a Risk Weighted Basis

- Consider how a banker would seek to distort value maximising bank risk profile to maximise money for remuneration.
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 - Returns jointly normally distributed, expected returns $\underline{\rho}$ and variance-covariance matrix \mathbf{V} .
 - Bank has utility $U(\mu, \sigma^2)$. Implies optimal allocation proportional to $\mathbf{V}^{-1}\underline{\rho}$.

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 - Bank has utility $U(\mu, \sigma^2)$. Implies optimal allocation proportional to $\mathbf{V}^{-1}\underline{\rho}$.
- Suppose pay cap applies to weighted sum of security values $\langle \underline{\beta}, \underline{x} \rangle$
- Banker's problem:

$$\max_{\{x_1, \dots, x_m\}} \chi \cdot \langle \underline{\beta}, \underline{x} \rangle \text{ subject to } R = U(\langle \underline{x}, \underline{\rho} \rangle, \langle \underline{x}, \mathbf{V}\underline{x} \rangle)$$

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The ratio of allocations to individual securities is unaffected by a pay cap if the cap weights securities proportionally to their expected returns ($\underline{\beta}$ parallel to the vector of expected returns $\underline{\rho}$).

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- Banker will be tempted to alter the investment profile he targets if doing so allows more to be paid under the cap whilst preserving returns net of risk.
- Not possible if weights proportional to expected returns of the assets.
 - Implies (CAPM) weights proportional to asset's systematic risk.
- Parallels optimal risk weights in capital adequacy regulation (Rochet (1992)).
 - Basel risk weights a convenient (but not perfect) approximation.

Marger Incentives and a Pay Cap

- The financial sector has undergone sustained consolidation and merger activity dating back to before the 1990s.
 - Accompanied by large increases in balance sheets.
 - BIS (2001), Morrison and Wilhelm (2008).
- This model captures one reason: desire to grow balance sheet to allow more talented managers to be hired.

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- Merger allows skills of a more talented banker to be deployed on a larger balance sheet.
- And pay commanded by banker hired by merged bank does not grow in proportion to bank size
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- And pay commanded by banker hired by merged bank does not grow in proportion to bank size
 - It depends on size of smaller bidding banks.
- Bonus caps have ambiguous effects – can lower incentive to merge.
 - Consider merger to monopoly: Ex post unaffected by cap, ex ante cap raises value of larger bank.

Asset Allocation Responses To Pay Cap

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 - Interesting case of neither bank so big it can get both α bankers.
- Banks gain value $c \cdot S (T - S)$ from diversification.
 - Captures: Volatility reduction good for employee stock holders/ investors not fully diversified;
 - Decreasing returns to scale.

Proposition

As the cap on remuneration becomes stricter (the maximum bonus rate χ declines), banks re-balance their asset allocation in the direction of making their exposure more diversified and less asymmetric.

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- To understand suppose cap is gradually removed:
 - Cap affected marginal bidder most – so now bank employing α -banker subject to more intense bidding.
 - Bank responds by re-allocating assets to keep α -banker allowing pay to increase without increase in default risk.

Pay Regulation For Macroprudential Objectives

- Cap on remuneration need not apply to all business lines: e.g. wholesale/retail banking.
- Cap might also apply to banks and not hedge funds.
- So pay regulation can be used to re-target banks' activities.

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- Bank's pay on wholesale (only) regulated.
- Hedge fund S_h in wholesale market – unregulated pay.
- β -banker for retail banking, and $\alpha > \beta$ bankers for wholesale.
- Absent regulation, bank would get best α -banker:

$$S_h < T_b/2$$

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- By adjusting cap through the cycle, the regulator can manipulate the assets used for retail banking.
- Microprudential intervention applied generally delivers macroprudential goal.

Conclusion

- Variable cap in proportion to Risk Weighted Assets lowers bank risk and raises bank values.
- Impacts marginal bidder most and so lowers market rates of pay.
- Targeted intervention: A 20% reduction in the remuneration bill would equate to extra Tier 1 of 150 basis points for most affected banks.
- Cap encourages institutions to diversify more and so adds further to robustness.
- Cap forms a Macroprudential tool.

Conclusion

- Cap applied at easier to implement bank level will likely be implemented by senior management as a top down rule.
 - Numbers of employees involved make micro-managing deviations from a general rule impractical

	20% of employees in 2009
UBS	13,047
Credit Suisse	9,520
Morgan Stanley	12,278
Deutsche Bank	15,411
Goldman Sachs	6,500
Citigroup	53,060

Table : Numbers of Employees Targeted By Intervention On Top 20% Of Earners