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This paper critically examines the arguments put forward by Australian regulators in favour of Basel III and the Basel accords, more generally. We argue that Basel II contributed significantly to the global financial crisis (GFC) and the European crisis. We also suggest that Basel III is not a ‘great leap forward’ when compared with Basel II, its provisions will not make banks more resilient, its architects have not learned much from the GFC and that the international unification of banking regulation is a flawed idea.
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The world’s most important number: How a web of skewed incentives, broken hierarchies and compliance cultures conspired to undermine LIBOR
ERIC TALLEY and SAMANTHA STRIMLING
To many observers, the recent scandal involving the widespread and recurrent manipulation of the London Interbank Offered Rate (LIBOR) may go down as one of the most significant and far-reaching events associated with the global financial crisis. And for good reason: by most estimates, an estimated 350 trillion dollars’ worth of global financial contracts — ranging from mortgages to credit cards to corporate debt securities to countless financial derivatives — hinge critically upon LIBOR to govern the cash flow positions and other obligations of contractual counterparties. This paper examines the incentives, hierarchies and organisational cultures among the various players involved and floats some hypotheses about how LIBOR may be most effectively reformed in light of these factors.

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Neofeudalism, paraethnography and the custodial regulation of financial institutions
DAVID A WESTBROOK
Regulators have turned to ‘culture’ in frustration. Through the global financial crisis (GFC) and now again with the LIBOR scandal, we observe market participants who simply do not abide by the spirit of the rules. They are, in a word, bad sports. So how do regulators, charged with refereeing the markets, get financiers to be good sports? Or how do we regulate culture?
In this issue of JASSA we include papers examining various drivers of bank and corporate performance and shareholder returns, as well as stakeholder perceptions of different financial ratios used to assess the longer term value of an organisation. A number of important questions are also raised for regulators in terms of their approach to Basel III and bank risk management, more broadly.

First, Justin Wood addresses the important issue of whether Australian superannuation fund members face too high a level of investment risk because their superannuation funds have a high exposure to equities and growth assets by international standards. Woods argues that this asset mix reflects members’ risk appetite on average and trustees’ design choices. He also suggests that industry allocations to equities and growth assets may not be too high considering the defined contribution nature of schemes, the preference for allocated pensions rather than annuities and the design of Australia’s taxpayer-funded age pension. He notes that most members of default funds are likely to have a claim on the age pension that will swamp the value of their superannuation savings and they will also tend to have other assets with low equity exposure. This suggests that despite a relatively high proportion of equity exposure in default funds, the overall equity exposure measured across the total resources available to support retirees, excluding their own home, is much more modest.

David Beggs’ paper provides evidence which will be of interest to investors on how decisions by Australian companies about capital management affect shareholder returns. The results indicate that, on average, companies underperform the market following increases in equity capital, and outperform the market following reductions in capital. Both the rank of capital changes relative to other stocks in the benchmark and the absolute size of the capital changes are shown to be strong signals for determining future share price movements. These results are consistent with those found in overseas markets, and a common explanation is that managers ‘time’ the market — such as issuing shares when, on the basis of their private information, they are overvalued. Beggs also examines whether the results differ between value and growth stocks, categorised using price-to-book ratios, and finds that increases and decreases in capital provide similar signals for both groups. His approach does not distinguish between the type of capital change made (such as decreases in capital due to share buybacks versus special dividends) suggesting scope for further research to identify whether such differences have different information content for investors.

Next, Tsung-Hsun Lu and Jinji Chen investigate whether a well-known form of technical analysis, candlestick charting, provides information about future stock price movements. They provide an overview of candlestick charting and apply it to European stock markets. Returns from trading strategies based on two-day candlestick patterns following prior periods of up and down trends in stock prices are examined systematically for the component stocks of the FTSE 100, DAX 30 and CAC 40. The authors find that certain strategies generated value for investors in these three main European stock markets over the period studied, but the strategies differed across the markets. They also find that the global financial crisis has reduced the efficacy of candlestick patterns in these markets.

The following three papers focus on banking. The paper by Imad Moosa and Kelly Burns critically examines the arguments put forward by Australian regulators in favour of Basel III and the Basel accords, more generally. Moosa and Burns believe that the enthusiasm of Australian regulators in favour of Basel III and the Basel accords, more generally, Moosa and Burns believe that the enthusiasm of Australian regulators for Basel III is unwarranted and that the proposed provisions of Basel III are problematic while failing to address the fundamental shortcomings of Basel II. Among other topics, they take issue with arguments that Basel III is a great leap forward, that it will improve bank resilience and that international harmonisation of regulation (such as through Basel III) is required. They suggest that Basel III is less about risk management than it is a pure compliance exercise. The issues addressed by Moosa and Burns are important ones worthy of further research and debate.
The study by Necmi Kemal Avkiran and Mitsuru Mizuno examines different stakeholder perceptions of bank performance based on a common set of financial ratios using a cross-country survey of Australia, China and Japan. They maintain that understanding bank performance from a multiple stakeholder perspective could help bank managers as well as investors better evaluate the underlying longer term value of an organisation. They also suggest that a more holistic or global approach to assessing bank performance could help to better understand the often-complex relationships between banks and their various stakeholders, which cannot be gained by simply considering current indicators such as share prices or price-to-earnings ratios. They find some apparent differences in importance attached to various financial indicators by stakeholders such as customers, management and regulators, which accord with intuition — although the small sample size of their study limits the scope for assessing statistical significance of the differences. Avkiran and Mizuno hope that their preliminary study may prompt further interest in larger-scale investigation of such stakeholder differences in perceptions of performance.

Gwanghoon Lee, Jeehoon Park, Doojin Ryu and Jin-Yong Yang analyse the key drivers of the stock price movements of 228 global banks, which they classify as either GEM (global emerging market) or DM (developed market) banks. Their study is prompted by the fact that over the past decade, higher bank stock returns for GEM banks over DM banks do not look to be associated with differences in accounting returns on equity, but appear to be associated with the rate of growth of profit. The authors find that despite their similar ROE levels, GEM banks have, on average, outperformed DM banks almost every year. Their findings indicate that growth in pre-provision operating profit is more important than current profitability as a driver of bank stock market returns. They observe that although regulators stress risk management and strong capital as determinants of bank stability and profitability, it is also critical for them to consider policies that help to cultivate healthy growth in bank balance sheets.

The final section of this issue of JASSA is devoted to papers from the UNSW Roundtable Conference on Regulating Culture: Compliance, Risk Management and Accountability in the Aftermath of LIBOR, which was held in October 2012 by the UNSW Centre for Law, Markets and Regulation. While not subject to the usual double-blind process, each of these excellent papers has been reviewed by our guest editor Prof Justin O’Brien and by me, prior to inclusion. See p. 44 for Prof O’Brien’s introduction to these papers.

We are very keen to encourage discussion about topical issues relating to applied finance that are relevant for both practitioners and those in academia, and we look forward to your contributions on some of these issues throughout the year.

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EXAMINING THE EQUITY HOLDINGS of Australian superannuation funds

JUSTIN WOOD, Vinva Investment Management

Australian superannuation funds have a high exposure to equities and growth assets by international standards, raising some concern that members face too high a level of investment risk. The asset mix reflects members’ risk appetite on average and trustees’ design choices. This paper argues that industry allocations to equities and growth assets may not be too high considering the defined contribution nature of schemes, the preference for allocated pensions rather than annuities and the design of Australia’s taxpayer-funded age pension.1

Most superannuation assets in Australia are held in defined contribution (DC) schemes in which members rather than a sponsor directly bear the consequences of investment risk.2 In addition, most members retain investment risk through to the pension phase, with the majority of retirees choosing an allocated drawdown approach or lump sum rather than the purchase of an annuity. With members as the primary risk bearer, their other assets are important to their risk appetite and the optimal asset mix of the superannuation component of their wealth. In particular, the taxpayer-funded age pension allows superannuation funds to carry more risk than would be the case without this support.

Risk is an emotive issue for investors, particularly for retirees who can be very averse to losses in even one component of their portfolio, irrespective of the impact on their total wealth. While Australians have the ability to select their superannuation provider and to select the investment strategy which they employ, the majority fail to exercise this choice and are invested in ‘default funds’ where the asset mix is determined by trustees and not the member.3,4

New trustee obligations apply from 1 July 2013 for providers of default funds under new MySuper legislation. The legislation provides that, ‘in determining the risk appetite for the investment of its MySuper assets, a trustee may consider the age of members as well as other relevant factors’ (emphasis added).5 This paper argues that a member’s pension withdrawal plan, their assets outside super and the characteristics of the age pension are all other relevant factors that trustees might consider in meeting their obligations.

The remainder of the paper provides a framework in which asset allocation can be determined by risk management or hedging objectives in addition to wealth maximisation. The hedging objective is influenced by the nature of the pension contract and we consider the asset allocation implications of alternative retirement preferences. The other assets of the risk bearer are important for overall risk management. In DC schemes where members choose an allocated pension in retirement, the members’ other assets and their claim on the age pension can have an impact on their risk appetite and overall asset mix. We provide estimates of the value of the age pension and the other assets of Australian retirees and compare the asset allocation approaches within several countries to show how the framework above could explain the higher level of equity exposure in Australia.

A proposed framework

The principles of asset-liability management indicate that the asset mix of any fund will depend upon how the funds will be used. For example, a defined benefit (DB) superannuation fund may plan to provide an inflation-protected lifetime pension. A DC fund may plan for the purchase of a life annuity at retirement or the member may plan to draw down the savings via an allocated pension over their retirement period.

Portfolio theory indicates that the risk and return of the total portfolio is more important than outcomes of specific assets or sub-components of the total portfolio. For this reason, the superannuation asset mix should take into account the other assets of the risk bearer. Hence, retiree outcomes will depend on their total wealth and not just their superannuation. DB and
annuity outcomes will depend on the sponsor’s total resources and not just their pension or annuity fund assets. Consistent with this, many DB systems prevent funds from investing in the company’s own equity. Some other assets are non-tradable but nevertheless represent important resources that can be used to support the member in retirement. Schefer (2012) outlines an asset allocation framework with shadow assets, which he defines as ‘(mostly) nonfinancial and nontradable assets that are exogenous to the investor’s asset allocation decision’. This perspective poses several problems for trustees. First, it is often not possible to get reliable data on other assets for members such as the value of their human capital. Second, even for financial assets, individual member data is seldom available, so in fund design we consider the extent to which broad industry averages might be used. Third, some non-superannuation assets are tradable and hence members can change their wealth risk profile outside the superannuation fund as their personal circumstances change. Fourth, even in DC schemes, members are not the sole ‘risk bearer’ to the extent that fund providers and taxpayers carry some risk. Nevertheless, we believe that ignoring these other assets entirely leads to an inferior outcome for members and a misunderstanding of the dynamics of the industry.

Given this framework members, or trustees acting in their best interests, will set the asset allocation in the superannuation fund with two objectives in mind: wealth maximisation; and hedging or risk management. Risk management will favour assets that hedge uncertainties in the liabilities or that complement the risk of non-traded assets and even traded assets of the risk bearer that are held outside the superannuation fund.

**Asset allocation implications of alternative retirement preferences**

The framework above indicates that two objectives, wealth creation and/or hedging, will determine the mix of superannuation assets. The wealth creation objective will cause some demand for assets that can be expected to offer risk premiums for broad economic risks. This is a key reason why the industry holds equities and other growth assets.

The risk management or hedging objective depends on the identity of the risk bearer, the nature of the spending plans and the other assets of the risk bearer. We consider the asset mix implications of three alternative superannuation schemes and retirement plans.

1. **A DB scheme paying a lifetime pension**

Here the primary risk bearer is the sponsor of the DB plan even though the member is the prime beneficiary. In the case of a corporate DB scheme, a non-fund asset of the sponsor is the market value of the company’s equity that can be used to support increased contributions if the fund should experience a deficit. For risk management reasons, the asset mix of the DB fund might be expected to recognise company equity as a shadow asset and hence the pension fund may reduce exposure to equity and increase exposure to defensive assets. However, many other factors can have an impact on asset allocation, some of which may tend to increase equity exposure in DB funds. For example, if the corporate sponsor has a greater risk tolerance than individual members in a DC fund, the corporate DB fund may have higher exposure to equities and other growth assets. If the pension commitment is to pay a lifetime inflation-protected pension, the present value of the promise is interest rate sensitive and hence asset-liability factors will favour exposure to defensive assets to immunise against interest rate risk.

2. **A DC scheme where members draw down their savings throughout retirement via an allocated pension plan**

Here the primary risk bearer is the member. The member’s other assets include their income-earning potential, their non-superannuation assets and their claim on the age pension. If these other assets have significant equity risk, the superannuation fund may favour defensive assets but if these other assets have the characteristics of defensive assets, the superannuation fund may favour growth assets and equities. An allocated pension makes withdrawals from the accumulated savings over the full retirement period. To hedge economic uncertainties over this full period, the fund might be expected to hold a diversified balance of assets with exposure to broad economic risks.

3. **A DC scheme where members purchase a lifetime annuity at retirement**

Here the primary risk bearer in the accumulation phase is the member, with the risk being transferred to an insurance company when the lifetime annuity is purchased. Hence, initially, the asset mix of the accumulation fund will be similar to (2) above. However, as the date of retirement approaches, the member will seek to reduce the risk of adverse interest rates movements and the asset mix will reduce equity and growth asset exposure and increase exposure to interest rate sensitive instruments. After the annuity is purchased, the insurance company is the risk bearer and the asset mix might be similar to a company paying a lifetime pension under a DB scheme. The asset mix is expected to have limited equity exposure and greater exposure to assets that immunise the fund against real interest rate risk.

This analysis suggests that the asset allocation to hedge the purchase of an inflation-protected life
annuity will have more interest rate sensitive assets and less equity exposure than the asset allocation to support an allocated pension throughout retirement. It also indicates that since the shadow assets of a company DB scheme are equity-like, the superannuation fund might invest in more debt assets while the shadow asset of Australian workers who receive the age pension are debt-like and their superannuation fund might invest more in equities. Both for liability hedging and shadow asset reasons, countries with predominantly DB pension plans or where the majority of retirees purchase annuities will tend to hold more fixed income securities and less equity than countries with DC funds, an allocated pension plan in retirement and a basic taxpayer-funded age pension support scheme. Most Australians belong to a defined contribution scheme and choose an allocated pension or a lump sum withdrawal rather than the purchase of an annuity. This makes scenario (2) above the most applicable to Australia while (1) or (3) is most applicable in many other countries.

The characteristics of other assets of Australian retirees

The other assets of Australian members of DC superannuation funds include their human capital (income earning ability), the equity in their own home, household assets and durables, non-superannuation financial assets, the net asset value of any investment property and the present value of their future claim on the age pension. For the purposes of this analysis we exclude members’ human capital, their own home and household assets, and we consider only non-super financial assets, investment property and the value of the age pension. Home ownership is high for retirees, with 84 per cent of households owning their own home, where the reference person is aged 65–74 years and 85 per cent where the reference person is aged 75+ years. This secure base provides extra capacity to bear risk in the superannuation fund and hence omitting the member’s own home from the other assets is unlikely to bias the analysis towards equities and, in fact, makes the total wealth exposure to equities appear even higher than it is.

Valuing the age pension

The age pension is currently paid to eligible retirees aged 65 years and older. The full pension plus basic supplement is $20,088 p.a. for a single retiree and $30,285 p.a. for a retired couple. Eligibility is means-tested through both an income and an asset test, and retirees with incomes or assets above set thresholds receive only a part pension. At some maximum threshold, retirees are no longer eligible for any age pension. For example, a retired couple owning their own home can have $273,000 in assets in addition to their home before losing access to the full pension and $1,050,000 in assets in addition to their home before losing access to the part pension.

Rice Warner estimates that in 2011 approximately 46 per cent of retirees received the full pension, 31 per cent received a part pension and 23 per cent of retirees were self-funded. As retirees age, their reliance on the age pension increases with 51 per cent of retirees aged 75 years receiving the full pension compared with only 26 per cent of retirees at age 65. A government pension is the main source of income for 58 per cent (75 per cent) of households in the age 65–74 (75+) bracket and a government pension represents >90 per cent of gross income for 35 per cent (51 per cent) of these households, respectively.

To place an estimate on the present value of the full age pension for a single female, single male or a couple requires inputs on the probability of surviving another year from the current age, the current level of age pension, the assumed real growth in age pension payments and the real discount rate appropriate for the risk of the pension promise by the Federal Government. Table 1 provides estimates of the values for retirees aged 65, 69, 75, 81 and 85 years.

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<th>AGE</th>
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Other financial assets

ABS statistics indicate that the average other financial assets of households, where the reference person was aged 65–74 years at 2009–10, was $116,000. This can be compared with the average amount of $176,000 in superannuation for the same households. Wealth is not evenly distributed across the whole population, with the top 20 per cent of households holding 70 per cent of the total household net worth excluding their own home. Hence the bottom 50 per cent of households in the 65–74 year age bracket are likely to hold less than the $116,000 average in financial assets. For households with the reference person aged 75+ years, the average holdings of other financial assets were $150,000 compared with only $64,000 in superannuation.
The average age of the representative person and the average number of adults in each household is: 69 years and 1.9 for households aged 65–74 years; and 81 years and 1.4 for households aged 75+ years. Using the estimates for the values per person for a couple with ages 69 and 81 from Table 1, we can estimate the value of the full age pension to households aged 65–74 years as $515,000 and for households aged 75+ years it is $204,000.

**Investment property**
The average holding of investment property net of investment loans at 2009–10 was $125,000 for households where the reference person is 65–74 years and $62,000 where the reference person is 75+ years.

This summary shows that, for retirees with below-average wealth who are likely to represent the majority of members in default funds, the following summary facts will apply:

> they will tend to claim the full age pension
> the value of this claim on the age pension will dominate their private assets in superannuation and outside superannuation excluding their own home
> the value of non-superannuation financial assets and net investment property will, as a first approximation, roughly equal the value of their superannuation savings.

ABS statistics indicate that retirees, for whom government pensions represent > 90 per cent of gross income, have only 12 per cent of their non-superannuation financial assets in equities and their own incorporated business. In contrast, more wealthy retirees for whom government pensions represent less than 1 per cent of gross income have 60 per cent of their non-superannuation financial assets in equities and their own incorporated business. This indicates that the other assets of less wealthy retirees are mostly invested in defensive assets.

**Asset allocation across selected countries**
Asset allocation data, prepared on a consistent basis across countries, is hard to obtain. In Table 2 below, the percentages in equities and in bills, bonds and cash (i.e. defensive assets) for five selected countries are shown using data from a Towers Watson global pension asset study published in 2013.

We have argued above that shadow assets of the primary risk bearer and the nature of the liability or pension drawdown will influence the asset allocation. For countries with high levels of DB, the primary risk bearer is not the member and hence fund asset mix will not be influenced by the nature of any taxpayer-funded basic pension. For example, Canada has an Old Age Security pension and Guaranteed Income Supplement that is similar in size to Australia’s age pension but these are assets of members and not the DB sponsor and hence are not relevant to the asset mix of the pension funds in that country.

In the US, the DC component of the pension industry is a relevant comparison for Australia. The US Social Security support acts in a similar fashion to Australia’s age pension and the other assets and home ownership of US residents are likely to be similar to those of Australian residents. The USD 3 trillion US 401(k) market at the end of 2010 has a relatively high equity exposure with 20-year-olds having a 74 per cent equity exposure and even 60-year-olds having a 49 per cent equity exposure.

**Conclusion**
Australia has relatively high levels of equity in super when compared with most other countries. Australia also has a relatively high commitment to DC schemes. Differences across countries as to who bears the risk and the nature of the other assets of the primary risk bearer make asset allocation comparisons between countries complex. Even countries that have a similar commitment to DC schemes can have a very different level of annuitisation at retirement to Australia. Overall, Australia’s relatively high level of equity holdings appears justified when the large preference for DC schemes, the low level of annuitisation at retirement and the nature of the taxpayer-funded inflation protected life annuity, termed the age pension, are taken into account.

Most members of default funds, where trustees set the asset allocation, are likely to have a claim on

---

**TABLE 2: Asset allocation across selected countries 2012**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>AUSTRALIA</th>
<th>USA</th>
<th>CANADA</th>
<th>JAPAN</th>
<th>NETHERLANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Equity</td>
<td>54</td>
<td>52</td>
<td>43</td>
<td>35</td>
<td>27</td>
</tr>
<tr>
<td>% Bills, bonds and cash</td>
<td>23</td>
<td>27</td>
<td>35</td>
<td>58</td>
<td>57</td>
</tr>
</tbody>
</table>

**TABLE 3: DB/DC split across selected countries 2012**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>AUSTRALIA</th>
<th>USA</th>
<th>CANADA</th>
<th>JAPAN</th>
<th>NETHERLANDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>% DC</td>
<td>81</td>
<td>58</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>% DB</td>
<td>19</td>
<td>42</td>
<td>96</td>
<td>98</td>
<td>94</td>
</tr>
</tbody>
</table>

Source: Global Pension Assets Study 2013, Towers Watson.
the age pension that will swamp the value of their superannuation savings. They will also tend to have other assets with low equity exposure. This implies that despite a relatively high proportion of equity exposure in default funds, the overall equity exposure measured across the total resources available to support retirees, excluding their own home, is much more modest.

Notes
1. I would like to thank Andrew Jackson, Adrian Looi, Danny Lo, Ciaran McBride, Rob Reeves, Allan Wood and Graham Wood for useful comments and suggestions on earlier drafts. A version of these ideas was distributed to clients of Vinva Investment Management in November 2012 and was also presented at the Conference of Major Super Funds (CMSF) in Brisbane in March 2013.

2. The Towers Watson Global Pension Assets Study 2013 puts the proportion of DC assets in 2012 at 81 per cent. This study is available at http://www.towerswatson.com/en-ZA/Insights/IC-Types/Survey-Research-Results/2013/01/Global-Pensions-Asset-Study-2013


5. Superannuation Legislation Amendment (Trustee Obligations and Prudential Standards) Act 2012, Explanatory Memorandum paragraph 1.29 (Schedule 1, item 9, paragraph 29VN(d)).


7. While current numbers may be slightly higher, only 3 per cent of retirees were estimated to purchase life annuities. See, Doyle, S, Mitchell, OS and Piggott, J 2004, ‘Annuity values in defined contribution retirement systems: Australia and Singapore compared’, The Australian Economic Review, vol. 37, no. 4, pp. 402–16


9. Eligibility for women is currently 64.5 years of age. From 1 January 2014, eligibility will rise for both men and women to age 67 by 2022.

10. RiceWarner Actuaries 2012, ‘Reforming the age pension’, Touchstone, August, pp. 1–16. This ignores Department of Veterans’ Affairs pensioners and pensioners over 65 who are still working.

11. Calculations use ABS Life Tables Australia 2009–11, age pension payments at March 2013, a real interest rate of 1.5 per cent p.a. and an assumed real growth in the age pension of 1.6 per cent p.a.

12. This suggests that many retirees take their superannuation as a lump sum, depleting their superannuation and increasing their other financial assets.

13. The OECD 2012, Pension Markets in Focus, no. 9, September, indicates that for 29 selected OECD countries in 2011, Australia had the highest allocation to equities across all countries.


THE IMPACT OF CAPITAL CHANGES on share price performance

DAVID BEGGS, Portfolio Manager, Metisq Capital

This paper examines the impact of capital management decisions on the future share price performance of ASX-listed companies. The results indicate that changes in capital have a significant impact on future share price returns. On average, companies underperform the market following increases in capital, and outperform the market following reductions in capital. These results are consistent across the range of capital changes and robust after controlling for company value metrics.

The impact of capital management initiatives on company share price movements is a frequently discussed issue in the financial literature and it is a potentially useful signal in the world of professional investing. Companies periodically engage in a wide range of capital management activities, and investor reactions to these events have the potential to dictate share price movements and sentiment over subsequent months.

In the United States, it has been found that when a listed company issues additional equity, its share price will tend to underperform the market over the following 12 months. Conversely, when a company repurchases or reduces equity, it has been found that its share price will tend to outperform the market over the following 12 months (Brav et al. 2000; Ikenberry et al. 1995; Loughran and Ritter 1997; Nelson 1999). Similar studies point to evidence of sustained share price underperformance following company mergers and acquisitions (Agarwal et al. 1992; Asquith 1983), and underperformance following exchange listings and initial public offerings (Dharan and Ikenberry 1995; Loughran and Ritter 1995).

The most widely accepted explanation for these results is centred on the belief that companies implement efficient and timely capital structuring decisions (Ikenberry et al. 1995). It is argued that management will issue new capital when it is beneficial to do so, that is when they believe the company shares are expensive or overvalued, and also repurchase capital when it is beneficial to do so, that is when they believe the company shares are cheap or undervalued (Bali et al. 2006). In this context, evaluating share price movements in the period after capital management initiatives aligns closely with idea of ‘value’ investing. Management will buy shares in the undervalued company because they believe it is more likely to outperform the market, and sell more shares in the overvalued company because they believe it is more likely to underperform the market.

This paper examines the impact of capital management decisions on the future share price performance of ASX-listed companies. Specifically, it considers a wide range of historical capital management decisions and examines whether these events can be tied to a company’s future share price movements. In addition to considering the direction of the capital change, the paper examines whether the size of the capital changes can be used to help predict future share performance.

Methodology

Typically, financial research analyses the impact of changes in capital using instances of equity issuances (increasing outstanding equity), buybacks (decreasing outstanding equity), IPOs (initial public offerings) and other explicitly announced events. In these cases, company documentation is sourced to confirm announcement and completion dates for changes in equity. This approach has the benefit of identifying the exact date information becomes available to the market, allowing timely evaluation of share price movements. However, the most obvious drawbacks to this approach are that it restricts the analysis to explicitly announced capital management initiatives, and the availability and accuracy of these records gradually diminish with longer historical time periods.

A broader and more general measure to account for changes in a company’s equity capital over a given time period is proposed here. Net capital change, denoted as NCC, is simply the percentage...
change in the company’s market capitalisation that is not due to changes in the split adjusted share price.

For each stock define the variables as:

\[ m = \text{months in historical formation period over which the net capital change is to be measured} \]

\[ MC_t = \text{Market Capitalisation at time } t \]

\[ MC_{t-m} = \text{Market Capitalisation at time } t - m \]

\[ Pt = \text{split adjusted share price at time } t \]

\[ Pt-m = \text{split adjusted share price at time } t - m \]

Then define net capital change (NCC) as:

\[
NCC = \frac{1}{MC_{t-m}} \left( MC_t - MC_{t-m} \left( \frac{Pt}{Pt-m} \right) \right)
\]

As an example, consider company XYZ with a market capitalisation of $115 and a split adjusted share price of $11. Six months ago, the company had a market capitalisation of $100 and a split adjusted share price of $10. Therefore, over that period the net capital change can be calculated as:

\[
NCC = \frac{1}{100} \left( 115 - 100 \left( \frac{11}{10} \right) \right) = 5\%
\]

Over the historical six-month period, company XYZ increased its market capitalisation by 15 per cent, where 10 per cent was due to price appreciation and 5 per cent was due to capital raising.

It is clear from this example that the formulation of NCC is very broad and is able to capture a wide range of capital management activities without having to examine historical company announcements in detail. The most common capital management activities include (but are not limited to) share buy-backs, share issuances, special dividends, ordinary dividends, mergers, takeovers, maturation of convertible bonds/debentures, conversion of preference shares to ordinary shares, stapled securities, hybrid capital raising and issuance through dividend reinvestment plans.

**Data**

The data set used here is the universe of stocks in the S&P/ASX 200, with daily data over the time period July 1992 to December 2012. The custom formulation of NCC is calculated monthly for all stocks in the data set, subject to the choice of historical formation period, \( m \). In this paper, the value of \( m \) is restricted to six months. This value is chosen because it is long enough to capture most capital management activities from start to finish, but short enough to avoid bringing in excessive stock-specific and market-wide noise.

Figure 1 shows the distribution of the number of companies having rolling six-month capital changes over the two decades from July 1992 to December 2012 for the S&P/ASX 200. The figure identifies the number of companies within each range of sizes of net capital changes.
The data shows that for well over half the stocks, roughly 60 per cent, there is typically no capital change (1 per cent to 1 per cent) during the rolling six-month periods. The average number of companies raising capital over a rolling six-month period (change > 5 per cent) is 25, while the average number of companies decreasing capital (<-2.5 per cent) is 7. Not surprisingly, the number of companies increasing capital far outweighs the number reducing capital. Companies increase capital for many reasons, however, large-scale reductions in capital are rarely seen, and when reductions do occur, they are commonly executed through on-market or off-market buy-backs which can occur over the course of many months.

Figure 1 shows that the trends in capital changes are largely consistent with the market cycles, except for the notable spike in capital increases and drop in capital reductions throughout 2009. This pattern shows a direct reaction to the global financial crisis, during which many companies were forced to increase their capital in order to reduce debt, satisfy regulatory requirements and fund ongoing operations.

**Investigation and results**

The principal question being investigated in this paper is whether the size and direction of changes to a company's capital will impact that company's share price performance over the subsequent months.

The simplest and most obvious way to explore this question is to simulate a series of portfolios from the S&P/ASX 200 index over an historical period where stocks are selected according to their recent net capital change, and then evaluate the performance of these portfolios relative to the market benchmark. Four separate approaches are investigated and reported below.

**Ranking by net capital change**

In the first instance, stocks are ranked each month according to the NCC variable. Each month, the top 20 per cent of stocks with the largest (most positive) capital changes are selected and denoted as portfolio (P5). Stocks ranked 60 per cent to 80 per cent according to most positive capital change are selected for portfolio (P4), and so on until the bottom 20 per cent of stocks is selected into the smallest (or most negative) capital change portfolio (P1).

Selecting portfolios by ranking of NCC means that it is not the absolute size of the net capital change which is the cut-off value; rather it is the size of NCC relative to all the other stocks that determines selection. This approach has the benefit of being consistent with much of the existing literature on value and momentum investment styles that focuses on relative value and relative momentum strength. Furthermore, using relative rank ensures that selection is not overly biased by data errors and extreme outliers.

For measuring performance, an equal weighting is applied to the stocks within each of these portfolios. Equal weighting is chosen ahead of market capitalisation weighting to avoid problems caused by the largest stocks in the index. For example, when BHP is selected in a quintile portfolio, it typically takes 30 per cent to 40 per cent or more of the capitalisation weight, which is not particularly useful from an investment point of view or for identifying market inefficiencies. Equal weighting, in this case, gives a much more interpretable distribution of stocks weights.

To evaluate performance, the portfolios formed each month are held for 12 months, meaning the total portfolio will be a combination of 12 staggered sub-portfolios, each held for 12 months. The 12-month holding period for each sub-portfolio begins the day after the end of the formation period, ensuring the return period for each sub-portfolio is independent of the formation period, thus eliminating any hindsight bias.

The five portfolios P1, P2, P3, P4 and P5 are simulated over the S&P/ASX 200 for the sample period 1992 to 2012. The average annual performance for each of these portfolios relative to the S&P/ASX 200 (termed here as alpha) is shown in Figure 2 and Table 1. Transaction costs are ignored in these simulations, both for simplicity and for consistency with existing literature. Given that there is no standard assumption for applying transaction costs, it remains most useful to examine all further results in a costless environment.

The portfolio of stocks with lowest NCC rank, P1, i.e. those companies returning capital to shareholders, outperforms the benchmark index by 4.5 per cent per annum. Conversely, the portfolio of stocks with the highest NCC rank, P5, i.e. those companies raising capital from shareholders, underperforms the S&P/ASX 200 by an average of 2.5 per cent per annum.

This result is consistent with the value theory of capital management, namely that companies will increase their capital when it is cheap to do so (company is undervalued and will outperform) and decrease their capital when it is beneficial to do so (company is overvalued and will underperform).

Importantly here, the consistency of the returns is found not just in the tails of the data, rather the average annual alphas decrease in a monotonic manner as we move from P1 to P5. This is a
The strong result, and suggests that the ranking of a company's change in capital relative to the other stocks in the universe contains meaningful information that can be used to help predict the company's future share price movements.

**Ranking by net capital change combined with value-style investing**

Despite the strength of the results above, there is an underlying question as to whether the net capital change is merely a proxy signal for value, and hence whether the NCC ranking will generate similar results once the sample is controlled for company value scores. To answer this question, a set of simulations are run controlling for value, taking into account the impact of both 'cheap' and 'expensive' stocks.

A value score is calculated for each stock in the S&P/ASX 200, which is the rank of each company’s price–book ratio (PB) within the benchmark index. PB is chosen to be consistent with existing studies and because its meaning is easily understood. The company with the smallest PB ratio is given the lowest rank, and the company with the largest PB ratio is given the highest rank. Cheap stocks are then classified as any stock with a PB rank below the 50th percentile, and expensive stocks are those with a PB rank above the 50th percentile.

Stocks are then re-ranked according to NCC within each of the cheap and expensive subsets. Portfolios P1 and P5, are then created from both the cheap and expensive subsets, and these four portfolios are simulated in the way described earlier. Again, the simulation period is July 1992 to December 2012 with a 12-month holding period for stocks bought at each monthly rebalance. The annual performance for each portfolio relative to the S&P/ASX 200 (alpha) is shown in Figure 3 and Table 2.

The portfolio of cheap stocks that returned the most capital to shareholders outperforms the S&P/ASX 200 by 6 per cent per annum. The portfolio of expensive stocks that returned the most capital to shareholders underperforms by -0.6 per cent per annum.

The portfolio of cheap stocks that returned the most capital to shareholders outperforms the S&P/ASX 200 by 2.8 per cent per annum. The portfolio of expensive stocks that raised the most new capital from shareholders underperforms by -4.2 per cent per annum.
In both subsets, cheap stocks and expensive stocks, the portfolio of stocks returning capital to shareholders outperforms the portfolio of stocks raising new capital from shareholders. In fact, the return differential between the two portfolios is almost identical for both the cheap and expensive subsets: \((6\% - (-0.6\%)) = 6.6\%\), and \((2.8\% - (-4.2\%)) = 7.0\%\). These results indicate that the impact of the net capital change is largely independent of any standard valuation metrics, and it is not simply a reformulation of value investing.

The analysis above provides strong evidence that changes in equity capital can have a significant impact on future share price movements. However, thus far the rank of the net capital change has served as the criterion for selecting comparative portfolios. The question must also be asked whether the magnitude of the net capital change also contains useful information.

### Magnitude of net capital change

To answer this question, a series of portfolios are simulated across the S&P/ASX 200 using the magnitude of the net capital change as the selection criteria rather than the ranking. The number of stocks in the portfolios can now vary each month depending on the market conditions, but the interpretation of results is perhaps more clearly understood in terms of familiar physical quantities.

As observed earlier, the number of companies increasing capital far outweighs the number reducing capital. Companies increase capital for many reasons, however, large-scale reductions in capital are rarely seen. In view of this observation, four cases are considered.

- All capital reductions of more than 2.5\%, (i.e. \(NCC < -2.5\%\))
- All capital reductions of more than 1.0\%, (i.e. \(NCC < -1.0\%\))
- All capital raisings of more than 7.5\%, (i.e. \(NCC > 7.5\%\))
- All capital raisings of more than 10.0\%, (i.e. \(NCC > 10.0\%\)).

Portfolio simulations are then carried out as previously described. Results are shown in Figure 4 and Table 3.

These simulations reinforce the results from the earlier section. Those stocks that decrease capital by more than 1 per cent and 2.5 per cent outperform the S&P/ASX 200 by 5.9 per cent and 6.2 per cent per annum, respectively. Conversely,

![FIGURE 3: Comparative alpha for cheap and expensive stocks for different capital management strategies](image)

### TABLE 2: Comparative alpha for cheap and expensive stocks for different capital

<table>
<thead>
<tr>
<th>NCC Portfolio</th>
<th>Relative Net Capital</th>
<th>Cheap Good Value</th>
<th>Expensive Poor Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1: 0 to 20</td>
<td>Capital Reduction</td>
<td>6.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>P5: 80 to 100</td>
<td>Capital Raising</td>
<td>-0.6%</td>
<td>-4.2%</td>
</tr>
</tbody>
</table>
stocks that increase capital more than 5 per cent and 10 per cent underperform the S&P/ASX 200 by 3.7 per cent and 4.1 per cent per annum, respectively. Although the number of stocks selected varies, these results are robust in that only those stocks that satisfy the criteria for substantial net capital changes are selected each month.

Magnitude of net capital change along with value-style investing

For completeness, these results are controlled for the impact of value metrics. Using the procedure employed earlier, the portfolio of stocks with capital increases above 10 per cent and the portfolio of stocks with capital decreases more than 2.5 per cent are simulated from a subset of cheap stocks and a subset of expensive stocks using the fiftieth percentile cut-off on the ranked price-to-book ratio. The annual alpha for each portfolio relative to the S&P/ASX 200 is shown in Figure 5 and Table 4.

The portfolio of cheap stocks that reduces capital outperforms the S&P/ASX 200 by an average of 6.2 per cent per annum over the period. The portfolio of cheap stocks that raises new capital underperforms the S&P/ASX 200 by an average of -1.9 per cent per annum.

Similarly, the portfolio of expensive stocks that reduces capital outperforms the S&P/ASX 200 by an average of 2.9 per cent per annum, and the portfolio of expensive stocks that raises new capital underperforms the S&P/ASX 200 by an average of -6.1 per cent per annum.

Again, the return difference between the capital increase portfolio and capital decrease portfolio is very similar, in the magnitude of 8 to 9 per cent per annum for both cheap stocks and expensive stocks. This result is fully consistent with the rank simulations reported above.

Further investigation

While these results are robust and largely comprehensive, they do provide the setting for a deeper investigation into the interaction between net capital changes and other documented

![Diagram of Twelve-month alpha following different capital management strategies]

TABLE 3: Twelve-month alpha following different capital management strategies

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Net Capital Change</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than -2.5%</td>
<td>Capital Reduction</td>
<td>6.2%</td>
</tr>
<tr>
<td>Less than -1%</td>
<td>Capital Reduction</td>
<td>5.9%</td>
</tr>
<tr>
<td>Greater than 5%</td>
<td>Capital Raising</td>
<td>-3.7%</td>
</tr>
<tr>
<td>Greater than 10%</td>
<td>Capital Raising</td>
<td>-4.1%</td>
</tr>
</tbody>
</table>
market anomalies. For example, controlling results independently for both momentum signals and systematic risk (beta) may provide additional insights into the potential justifications for capital management decisions and help explain the impact these decisions have on future share price movements.

**Conclusion**
This investigation provides evidence for Australia that corporate decisions about capital management affect shareholder returns. Both the rank of capital changes relative to other stocks in the benchmark and the absolute size of the capital changes have been shown to be strong signals for determining future share price movements. Furthermore, the signal provided by net capital change is independent of value metrics, thus providing useful information over and above that generated using conventional measures of value.
1. In order to reduce the impact of size bias, all analysis was replicated over the S&P/ASX 100 index. The S&P/ASX 100 results were largely consistent with the S&P/ASX 200 results, thus suggesting company size was not the primary driver of returns. Further investigation into interaction of size and net capital change is left for future research.

References


CANDLESTICK CHARTING
in European stock markets

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The purpose of this study is to investigate whether an old Japanese trading technique can function in a Western context. This paper employs a 1×4 vector to categorise two-day candlestick patterns systematically, and then examines their profitability for the FTSE 100, DAX 30 and CAC 40 component stocks. After conducting statistical tests and the bootstrap methodology, we find that three patterns can produce profits after considering transaction costs in the major European stock markets. We also investigate the effects of the global financial crisis on the efficacy of the candlestick method.

In practice, some investors rely heavily and exclusively on technical analysis, and this is true for both professional and amateur traders (Smidt 1965; Billingsley and Chance 1996). However, if an investing scheme is valid, it will soon be adopted by many investors, and the profit will thus decline or disappear, which eventually leads to the self-destruction of this particular approach (Caginalp and Laurent 1998). But although candlestick charting has been used for more than 300 years, it still appears to be effective (Marshall et al. 2006). In that regard, the main aim of this paper is to examine the performance of candlestick trading strategies within the context of European stock markets.

The findings of earlier studies examining the effectiveness of candlestick analysis have been mixed. They include Caginalp and Laurent (1998), Goo et al. (2007), Shiu and Lu (2011), Lu and Shiu (2012) and Lu et al. (2012), which all conclude that candlestick charting has value for investors. In contrast, Fock et al. (2005), Marshall et al. (2006), Marshall et al. (2008) and Horton (2009) find that the approach is ineffective.

The results of the current study provide some positive support for candlestick charting. More specifically, the findings reveal that one reversal pattern is profitable for stocks in the FTSE 100 (UK), one continuation pattern is profitable for the DAX 30 (Germany), and another is profitable for the CAC 40 (France). The main contribution of this study, in addition to its examination of candlestick patterns in European stock markets, is its development of a vector approach (building on the four-digit approach inspired by Levy (1971) and used by Lu and Shiu (2012)) to categorise a wider variety of two-day patterns in an objective manner. The study also examines the robustness of the results by comparing pre- and post-financial crisis data.

Candlestick charting and classification procedures

Candlestick charting was first developed in Japan in the 18th century by Munehisa Honma (Nison 1991; Caginalp and Laurent 1998). A few centuries later, Steve Nison introduced it to the West, where it has been increasingly popular (Nison 1991). This approach is based on the shape of candlesticks, as shown in Figure 1, which is made up of the opening, high, low and closing prices. The area between the opening and closing prices is drawn as a box, which is called the real body. The vertical lines drawn above and below the real body are the upper and lower shadows, respectively. If the closing price is higher than the opening one, the real body is white or hollow, which defines the session as bullish, while if the closing price is lower than its opening price, the real body is black or filled, and the session is regarded as bearish.

FIGURE 1: Single candlestick pattern
In practice, candlestick patterns are generally divided into bullish and bearish patterns. This makes the potential force behind the direction of trends more apparent. A bullish pattern after a downtrend can be regarded as a contrarian pattern, while after an uptrend it turns into a momentum one. This rationale can also be applied to a bearish pattern.

Candlestick charting has been in practical use for more than three hundred years, as it is believed to reveal excess supply or demand pressures in a market (Nison 1991; 1994). Weir (2006) also notes that candlestick analysis provides tools that can be used to measure how emotions affect the market. Proponents of candlestick charting thus suggest entering the market following certain candlestick signals or patterns, and then exiting after holding for about 10 days (Nison 1991; Marshall et al. 2006; 2008). The trends that form before candlestick patterns are very important with regard to the profitability of this approach (Nison 1991). There are thus three key issues with regard to candlestick patterns, i.e. categorising patterns, identifying trends, and calculating profits, and these are discussed in more detail below.

**Categorising patterns**
While candlestick charting is one of the oldest methods of technical analysis, there are few scientific and systematic investigations of the related patterns. This paper adopts a systematic method by coding all two-day patterns using a $1 \times 4$ vector, as below (and also shown in the grids in Figure 2).

$$| k_1, k_2, k_3, k_4 |$$

where $k_1$ and $k_2$ represent the ranking of the opening and closing prices of the first day of the two-day pattern; whereas $k_3$ and $k_4$ refer to the ranking of the opening and closing prices of the second day of the two-day pattern, respectively.

In other words, the four numbers are based on the ranking of the four prices. For example, ‘1234’ means that the opening price of the first day is the highest one, the closing price of the first day is the second highest, the opening price of the second day is the third highest, and the closing price of the second day is the lowest price, and all four prices are used to make up a candlestick.

**Identifying trends**
To identify any uptrends or downtrends before the patterns of interest, we adopt a general definition of trends based on Shiu and Lu (2011), Lu and Shiu (2012) and Lu et al. (2012), using a five-day moving average. This is because Nison (1991) and Morris (1995) suggested that candlestick charting is most useful for short-term trading, and five trading days (a week) seems to be an appropriate length of time. A five-day moving average at time $t$ is defined by:

$$MA_5(t) = \frac{1}{5} [P(t-4) + P(t-3) + P(t-2) + P(t-1) + P(t)]$$

where $P(t)$ denotes the closing price on day $t$.

An uptrend on day $t$ is defined by:

$$MA_5(t-6) < MA_5(t-5) < ... < MA_5(t-1) < MA_5(t)$$

Analogously, a downtrend on day $t$ is defined by:

$$MA_5(t-6) > MA_5(t-5) > ... > MA_5(t-1) > MA_5(t)$$

**Calculating profits**
For practical reasons, we simulate a trade at the opening price on the day following a two-day pattern, and the end of the measurement is at the closing price on the tenth holding day. Nison (1991) and Morris (1995) propose that the maximum holding
period for candlesticks is 10 days. Following Brock et al. (1992), the current study tests the profits by examining raw returns rather than abnormal returns, as this is deemed more appropriate for short-term trading strategies (Sweeney 1986). The return rates are calculated from a buy-and-hold perspective, in which positive return rates for buying patterns and negative ones for selling patterns indicate that the trade has been profitable.

To sum up, the trading rule examined in this study is that if at the end of day $t$ the five-day moving average of closing prices has increased consistently for the past seven days, from day $t$ to day $t-6$, an uptrend is identified as existing at the end of day $t$. Next, the two-day candlestick patterns are observed for days $t+1$ and $t+2$. Then, a trading position is opened at the start of day $t+3$ and held until the end of day $t+13$ (a 10-day holding period). Finally, the returns from the trading positions opened following each pattern are then measured and analysed.

**Empirical results**

**Data and transaction costs**

Most prior technical analysis studies utilise index data, which can be biased due to non-synchronous trading (Day and Wang 2002), and so this paper adopts individual stock data. The data consist of the daily opening, high, low, and closing prices of component stocks in the FTSE 100, DAX 40 and CAC 30. The data are gathered for the period from 2 January 2003 to 31 October 2012. Moreover, since the research period includes the global financial crisis, we take the accepted start of this, 14 September 2008, as the cut-off point to examine the robustness of the results.

There is still little evidence to prove that technical trading rules can generate abnormal returns after transaction costs, so it is of considerable interest to take both transaction costs and risk into consideration in this study. None of the three stock markets examined in this work has trading taxes, but investors face a 0.5 per cent stamp tax in Britain. Brokerage commissions and fees are about 0.3 per cent for a round-trip in each market. The execution costs, such as the bid–ask spread, are generally in the range of 0.1 per cent to 0.3 per cent (Caginalp and Laurent 1998), and are thus set at 0.3 per cent in this paper. More precisely, total costs are 1.1 per cent for a round-trip in each market. The execution costs, such as the bid–ask spread, are generally in the range of 0.1 per cent to 0.3 per cent (Caginalp and Laurent 1998), and are thus set at 0.3 per cent in this paper. More precisely, total costs are 1.1 per cent for the FTSE 100, and 0.6 per cent for both the DAX 30 and CAC 40.

**Results for uptrands**

We apply the skewness-adjusted $t$-test proposed by Johnson (1978) to test the null-hypothesis, $H_0: \mu = 0$ for the average returns, and the binomial-test to test the null-hypothesis $H_0: p = 0.5$ for the winning rates. We assume that winning trades should be as frequent as losing trades without candlestick signals, and therefore the binomial-test is used to examine the randomisation of two-day patterns. We also use a more stringent significance level to examine the robustness of the results, namely the Bonferroni-adjusted significance level (adjusted for the number of different patterns). If the results for one pattern satisfy the requirements of both two tests, then it can be regarded as a profitable trading rule which has genuine predictive power.

The trends that form before candlestick patterns are crucial with regard to the profitability of this approach (Nison 1991). Therefore, this study investigates all 24 patterns (shown in Figure 2) after uptrands and downtrends. Panel A in Table 1 shows the results for the three different stock markets when the trend is an upward one. (For reasons of space, only significant results in average returns, which occurred for 11 out of 24 patterns, are shown.) Note that a positive value for the bullish (buying) signals and a negative one for the bearish (short-selling) signals reveal that the pattern correctly predicted the direction of the market. A positive (negative) value after an uptrend indicates this pattern might be used to implement a momentum (contrarian) strategy.

The best performance is produced by pattern 1324 in the DAX 30 and pattern 2314 in the CAC 40, with the average returns for these being significantly positive over transaction costs, at 1.09 per cent and 1.33 per cent for the 10 holding days, respectively, and the proportion of positive profits in both markets is significantly greater than 50 per cent. To be more specific, holding the 10-day pattern 1324 for the DAX 30 has an average return of 0.49 per cent, while pattern 2314 has an average return of 0.73 per cent for the CAC 40 after considering transaction costs. These patterns, which produce buying signals after uptrands, are called ‘bullish continuation’ patterns, and have significant practical implications. For example, the opening price of the first day of pattern 1324 is above the prior day’s high following an uptrend, and thus market sentiment is positives. Next, the low of the second day falls to a new low during the pattern. In this case, the bulls have more control over the market and their aim is accumulation of stock. Finally, uncertain and fearful investors may easily be overwhelmed by bulls who utilise trading psychology, and this is often called a ‘flag consolidation’ pattern in the practical literature. Pattern 2314 has similar characteristics, in that the second day falls to a new low price, and this is known as an ‘engulfing’ pattern in several references.

**Results for downtrends**

As shown in Panel B in Table 1, only one significant result, pattern 2134, was found for the FTSE 100, and there are no convincing results in the other two
markets. Comparing the current study with Lu and Shiu (2012), bullish pattern 1324 after an uptrend tends to be profitable not only in Germany but also in Taiwan, with similar average returns of 1.09 per cent and 1.20 per cent, respectively, while bullish pattern 2314 after an uptrend in this study is similar to the ‘bearish engulfing’ pattern in Nison (1991), although the related trading strategies are opposites. The fact that different patterns are profitable in different markets is probably due to the characteristics of the related investors, as well as the varied institutional contexts, such as different price limits and auction systems.

Based on the results reported above, different candlestick patterns are more suitable for certain markets. The average return rate is 1.31 per cent, and the proportion of positive profits following a bullish signal is 61.41 per cent. The buying signal after a downtrend is called a ‘bullish reversal’ pattern. This is beneficial for contrarian strategies, and may be because investor disappointment has been exhausted in the downtrend. This result seems compatible with the argument in Jegadeesh (1990) and Lehmann (1990) that stocks often have a significant reversal when they experience a price fall.

### Table 1: Results for the patterns

<table>
<thead>
<tr>
<th>Patterns</th>
<th>FTSE 100</th>
<th>DAX 30</th>
<th>CAC 40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Return %</td>
<td>Winning %</td>
</tr>
<tr>
<td>Panel A. Uptrends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1324</td>
<td>1062</td>
<td>0.23 (&lt;0.21)</td>
<td>53.58* (&lt;0.02)</td>
</tr>
<tr>
<td>1423</td>
<td>309</td>
<td>-0.22 (&lt;0.44)</td>
<td>51.13 (&lt;0.73)</td>
</tr>
<tr>
<td>2134</td>
<td>691</td>
<td>-0.63* (&lt;0.02)</td>
<td>47.90 (&lt;0.29)</td>
</tr>
<tr>
<td>2314</td>
<td>486</td>
<td>0.45 (&lt;0.07)</td>
<td>55.35* (&lt;0.02)</td>
</tr>
<tr>
<td>2341</td>
<td>624</td>
<td>-0.52* (&lt;0.01)</td>
<td>49.04 (&lt;0.66)</td>
</tr>
<tr>
<td>2431</td>
<td>615</td>
<td>-0.61* (&lt;0.02)</td>
<td>49.92 (&lt;1.00)</td>
</tr>
<tr>
<td>3124</td>
<td>720</td>
<td>0.09 (&lt;0.74)</td>
<td>54.03* (&lt;0.03)</td>
</tr>
<tr>
<td>3214</td>
<td>1030</td>
<td>0.05 (&lt;0.80)</td>
<td>52.04* (&lt;0.20)</td>
</tr>
<tr>
<td>3241</td>
<td>427</td>
<td>-0.10 (&lt;0.74)</td>
<td>55.04* (&lt;0.04)</td>
</tr>
<tr>
<td>4213</td>
<td>1305</td>
<td>-0.44* (&lt;0.01)</td>
<td>52.80* (&lt;0.05)</td>
</tr>
<tr>
<td>4321</td>
<td>2404</td>
<td>-0.42* (&lt;0.01)</td>
<td>49.96* (&lt;0.98)</td>
</tr>
<tr>
<td>Panel B. Downtrends</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1234</td>
<td>1879</td>
<td>0.75* (&lt;0.01)</td>
<td>59.34* (&lt;0.01)</td>
</tr>
<tr>
<td>1243</td>
<td>645</td>
<td>0.66* (&lt;0.04)</td>
<td>53.80* (&lt;0.06)</td>
</tr>
<tr>
<td>1324</td>
<td>1315</td>
<td>0.78* (&lt;0.01)</td>
<td>57.95* (&lt;0.01)</td>
</tr>
<tr>
<td>1342</td>
<td>869</td>
<td>0.71* (&lt;0.01)</td>
<td>56.27* (&lt;0.01)</td>
</tr>
<tr>
<td>2134</td>
<td>368</td>
<td>1.31** (&lt;0.01)</td>
<td>61.41* (&lt;0.01)</td>
</tr>
<tr>
<td>2341</td>
<td>710</td>
<td>0.41 (&lt;0.10)</td>
<td>53.80* (&lt;0.05)</td>
</tr>
<tr>
<td>2431</td>
<td>989</td>
<td>0.75* (&lt;0.01)</td>
<td>57.74* (&lt;0.01)</td>
</tr>
<tr>
<td>3124</td>
<td>350</td>
<td>0.88* (&lt;0.02)</td>
<td>58.00* (&lt;0.01)</td>
</tr>
<tr>
<td>3142</td>
<td>142</td>
<td>0.89* (&lt;0.01)</td>
<td>63.38* (&lt;0.01)</td>
</tr>
<tr>
<td>3214</td>
<td>628</td>
<td>0.83* (&lt;0.01)</td>
<td>58.28* (&lt;0.01)</td>
</tr>
<tr>
<td>3421</td>
<td>752</td>
<td>-0.13 (&lt;0.66)</td>
<td>56.38* (&lt;0.01)</td>
</tr>
</tbody>
</table>

Note: Winning rate represents the proportion of positions with positive returns. The numbers in parentheses and brackets represent p-values of skewness-adjusted t-test and binomial test. * indicates statistical significance at the 5% level. † indicates Bonferroni-adjusted significance at the level of 5% divided by the number of patterns. Returns following other patterns are insignificant in the three markets. For reasons of space, only significant results in average returns, which occurred for 11 out of 24 patterns, are shown here.
To check the sensitivity to profitability of the three patterns, the results of holding for five days compared with holding for 10 days are shown in Table 3. It can be seen that there are statistically significant results for the two holding periods, but the returns from a five-day holding period are smaller than those for a 10-day period, except for pattern 2134. This agrees with the prior literature (Nison 1991; Morris 1995) which found that candlestick charting is most useful for short-term trading with a holding period of less than 10 days, and its power gradually increases from five to 10 days.

To check the influence of the global financial crisis, we use 14 September 2008 as the cut-off point to divide the sample period into two groups. Robustness check

To deal with the issue of data snooping, we not only consider the Bonferroni-adjusted significance levels, but also employ the bootstrap methodology to check the robustness of the empirical results. In prior candlestick literature, Marshall et al. (2006), Marshall et al. (2008), Lu and Shiu (2012), and Lu et al. (2012) also adopt this method to test their results. The approach proposed by Marshall et al. (2006) uses the GARCH-M process to produce new closing prices and then randomises the original price percentage changes on them (i.e. it produces new closing prices). The results in Table 2 show that the average returns on the original series are all better than those on the bootstrapping series, and the winning rates are also better with the former than the latter.

To check the sensitivity to profitability of the three patterns, the results of holding for five days compared with holding for 10 days are shown in Table 3. It can be seen that there are statistically significant results for the two holding periods, but the returns from a five-day holding period are smaller than those for a 10-day period, except for pattern 2134. This agrees with the prior literature (Nison 1991; Morris 1995) which found that candlestick charting is most useful for short-term trading with a holding period of less than 10 days, and its power gradually increases from five to 10 days.

To check the influence of the global financial crisis, we use 14 September 2008 as the cut-off point to divide the sample period into two groups.
Table 4 presents the results for the two periods before and after the financial crisis, which seems to reduce both the profitability and statistical significance of the patterns. More specifically, the average returns of the three profitable patterns before the crisis are significantly greater than those after it, and the winning rates also decline after the crisis, except for pattern 2134. In addition, the statistical significance after the crisis decreases from satisfying both the basic and Bonferroni levels to only satisfying the former (5 per cent). It thus seems highly plausible that the global financial crisis weakened the predictive power of the candlestick method in the three stock markets examined in this work.

**Conclusion**

Three findings are worth summarising. First, the candlestick method has predictive power and can generate value for investors in the three main European stock markets. Second, the direct comparisons between the three markets carried out in this study reveal that candlestick charting would need to be used differently in each of these markets. Third, the global financial crisis reduced the efficacy of candlestick patterns in these markets.

From a behavioural finance perspective, candlestick charting might be used to implement a contrarian (FTSE 100) or momentum (DAX 30 and CAC 40) strategy, and based on the historical data examined here, they may be expected to deliver above-average returns.

The conclusion of the current study seems to go against the efficient markets hypothesis, which implies that any technical approach to market price prediction is invalid. The results of the present study suggest two dimensions that might profitably be addressed by further researchers. One is extending the approach proposed in this paper to a matrix form; the other is investigating whether different institutional backgrounds influence the efficacy of candlestick charting in different markets. ■

**Note**

1. See Marshall et al. (2006, p. 2310) for the details about how to produce bootstrapping results of candlesticks.

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THE BASEL III CONTROVERSY:
A critical assessment of the views of Australian regulators

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KELLY BURNS, Research Officer, School of Economics, Finance and Marketing, RMIT

This paper critically examines the arguments put forward by Australian regulators in favour of Basel III and the Basel accords, more generally. We argue that Basel II contributed significantly to the global financial crisis (GFC) and the European crisis. We also suggest that Basel III is not a ‘great leap forward’ when compared with Basel II, its provisions will not make banks more resilient, its architects have not learned much from the GFC and that the international unification of banking regulation is a flawed idea.

In October 2010, the Basel Committee on Banking Supervision (BCBS) released a report entitled The Basel Committee’s Response to the Financial Crisis: Report to the G20 (BCBS 2010). The report announced the development of a reform program to address the lessons of the crisis and laid the foundations of the Basel III accord, which is typically portrayed as a ‘great leap forward’ when compared to its predecessor, Basel II.

Australian regulators seem to be enthusiastic about Basel III (and its predecessors) and the international unification of banking regulation. For example, in a Regulation Impact Statement, Australian Prudential Regulation Authority (APRA) argues that ‘Basel III addresses deficiencies in the Basel II framework’ and that the adoption of Basel III would ‘reduce the likelihood of the need for (and degree of) government intervention in any future financial crisis’ (APRA 2012a). APRA Chairman John Laker has repeatedly declared that a ‘stronger Australian banking system will emerge from the Basel III reform’ (APRA 2012b). Officials from APRA and the Reserve Bank of Australia (RBA) have been exceptionally supportive of the rapid implementation of Basel III in Australia (see, for example, Edey 2011; Byres 2010, 2011).

Yet many economists and observers believe that Basel III does not solve the basic shortcomings of Basel II and that international unification of bank regulation does not work.

The Basel III Provisions

Basel III is designed to modify Basel II by taking into account lessons learned from the GFC. The Basel III proposals aim to boost regulatory capital while modifying its definition to ‘emphasise the quality, consistency and transparency of the capital base’ as well as making common equity the predominant form of Tier 1 capital. Another feature is the introduction of a countercyclical capital buffer to reduce the procyclicality of the banking industry. Basel III also requires the introduction of a (non-risk-based) leverage ratio as a ‘supplementary’ measure to the Basel II risk-based framework. The objectives behind the introduction of the leverage ratio are to: prevent the build-up of leverage in the banking sector; put a limit on the ‘gaming’ of the risk-based requirement; and address model risk.

The proposed liquidity provisions include the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR) requirements. The LCR is the ratio of high-quality assets to projected 30-day net cash outflows in an acute stress scenario. The NSFR is the ratio of available stable funding — calculated by weighting deposits and wholesale funding by reference to their stickiness — to required stable funding (based on asset holdings etc.). Banks can meet these standards by changing their funding profiles, which makes them less vulnerable to liquidity shocks.

The views of Australian regulators

One can get a feel for Australian regulators’ views on Basel III from the writings and speeches of, among others, Malcolm Edey, the Assistant Governor (Financial System) of the RBA (Edey 2011) and Wayne Byres, the Executive General Manager (Diversified Institutions Division) of APRA (Byres 2010, 2011). Wayne Byres is also currently the Secretary General of the BCBS, replacing Stefan Water in January 2012.

Edey (2011) describes the Basel III proposals as a ‘major re-think of the existing minimum standards
Proposition 1: Basel II did not cause the global financial crisis

In their defence of Basel II, Edey (2011) and Byres (2010, 2011) echo the views held by the staff of the Basel Committee and the Bank for International Settlements. The Chairman of the Basel Committee, Nout Wellink, has argued that Basel II ‘would have helped prevent the global credit crisis from occurring’ and that ‘it was a misunderstanding to say that Basel II would have allowed the risky practices among banks that triggered the crunch’ (Wellink 2008). Like Wellink, the General Manager of the Bank for International Settlements, Jaime Caruana, suggests two reasons why Basel II had nothing to do with the crisis: (i) the crisis manifested itself in 2007 on the basis of imbalances that had built up prior to the implementation of Basel II; and (ii) many countries that have adopted Basel II did so in 2008 or later (Caruana 2010).

The proponents of Basel II seem to forget that the accord was actually approved in 2005 and that most banks were fully compliant by 2008. They also overlook two other important points, viz. that: the originate and distribute model, which was encouraged by Basel I and sustained by Basel II, made banks more reckless; and the calculation of regulatory capital on the basis of risk-weighted assets encouraged the accumulation (by banks) of triple-A collateralised debt obligations (CDOs) and sovereign debt (including Greek bonds). By assigning risk weights based on the rankings of the rating agencies and giving equal risk weights to the bonds issued by Greece and those issued by Germany, Basel II actually contributed to the advent of the GFC and the current European crisis.

The sanguine views towards Basel II — as expressed by Wellink (2008), Caruana (2010) and our own regulators — are not widely accepted. Whalen (2007) argues that ‘we do not believe that the implementation of the Basel II proposal or anything that looks remotely like it would have alleviated the ongoing collapse of the market of complex structured assets’. For one thing, Basel II was fixated excessively on capital adequacy, which is a ‘lagging indicator of potential trouble’ (Llewellyn 2010). Dolan (2010) points out that dozens of the world’s largest banks, including many that (on paper) fully met the Basel II capital adequacy standards, were devastated by the crisis. He also suggests that Basel II allowed banks to overstate their true capital and understate the risks to which they were exposed. Blundell-Wignall and Atkinson (2010) also argue that ‘the Basel risk weighting approach has allowed banks to expand their leverage almost without limit for all practical purposes’. Llewellyn (2010) points out that ‘Basel II created incentives for banks to develop off balance sheet business and to shift credit risk’, and that ‘it was largely the Basel Capital Accord that induced banks to engage in securitisation and to develop credit risk shifting instruments’. Any prosecutor seeking the indictment of Basel II will not have a difficult job to do.

Proposition 2: Basel III is designed to make banks more resilient

Australian regulators believe that banks will be made more resilient by the introduction of new capital adequacy rules as well as the liquidity and leverage provisions. In terms of the capital adequacy rules, we certainly agree with the proposition that redefining capital to exclude items that do not remotely represent or resemble capital is a positive move. However, redefining capital and raising regulatory capital requirements do not solve the problem that Basel III, like Basel II, is capital-based regulation — more like buying insurance to pay for the damage than avoiding the damage.

Another problem is the calculation of the capital ratio on the basis of risk-weighted assets. The risk weights are arbitrary, and the whole system boosts the procyclicality of the banking industry without solving the problem of regulatory arbitrage. On a macroeconomic level, the risk-based approach may have some adverse consequences for employment because it discriminates against small- and medium-sized firms. Since they are perceived to represent greater risk than big firms, banks will have the tendency to deprive these firms of credit lines.

The procyclicality of Basel II results from the calculation of the capital ratio on the basis of risk-weighted assets. As bank assets (loans in particular) are assigned higher risk weights during an economic downturn, banks are required to hold more capital, which weakens their ability to grant loans (and vice versa in the case of an upturn). This means that one of the proclaimed advances over Basel I (increased risk sensitivity) is counterproductive. It seems strange to design Basel II in such a way as to make
it procyclical, then trying to reduce procyclicality by introducing countercyclical capital buffers in Basel III. Because it is a product of the risk-weighted capital requirement, some economists argue that procyclicality can be reduced by calculating the capital ratio from total unadjusted assets, which Byres (2010) does not favour. For example, Goldstein (2008) suggests that one way in which countercyclical elements could be introduced into regulatory capital requirements is to make capital a function of the change in assets, not the risk-weighted level.

The introduction of a leverage ratio is a step forward, but the problem is that the leverage ratio is regarded (by the BCBS and our regulators) as being ‘supplementary’ or a ‘backstop to risk-based requirements’. Blundell-Wignall and Atkinson (2010) point out that ‘the leverage ratio should not be thought of as a backstop measure, given how effective [or rather ineffective] the capital weighting approach has been’. They go as far as arguing for the leverage ratio to be the primary ‘capital control tool’, pointing out that ‘risk weighting and leverage ratio may not sit well together’. Charles Littrell of APRA admits that the use of risk-weighted assets ‘understates true leverage’ (Joye 2013).

To suggest that the leverage ratio is a supplementary tool to the capital ratio is somewhat strange, given that when a leverage ratio is in place, it implies a corresponding capital ratio. Furthermore, the leverage ratio is more objective, easier to calculate and more readily understandable than the risk-based capital ratio. While there is substantial empirical evidence for a negative relation between the leverage ratio and bank insolvency, there is no such evidence on how insolvency is related to the risk-based capital ratio (for example, Evanoff and Wall 2001).

Regulating liquidity is a step forward because low liquidity hampers business and may induce a run on bank deposits. The problem here is that the proposed liquidity provisions are rather complex in the sense that the liquidity ratios are difficult to measure. More serious is the fact that the net stable funding ratio (NSFR) is based on liabilities rather than assets, which is inappropriate. Furthermore, it is not clear how the liquidity coverage ratio (LCR) and NSFR are going to be reconciled, given that the former is asset-based while the latter is liabilities-based.

**Proposition 3: Basel III incorporates lessons of the GFC**

It is unclear as to why the Basel Committee did not recognise the importance of leverage, liquidity, underwriting standards, and a variety of other factors mentioned by Stefan Walter, the former Secretary General of the BCBS, in his (ex post) diagnosis of the financial environment in the run-up to the GFC (Walter 2010). If the view is that the crisis has demonstrated the importance of these factors, it is puzzling as to why several lessons of the crisis have been ignored.

One lesson that has not been learned is that capital-based regulation is inadequate and that risk-based capital regulation can produce disastrous results. A related lesson is that it is not a good idea to allow banks to use their own models to calculate regulatory capital and that it is hazardous to put too much faith in internal risk models in general, and value-at-risk models in particular. Yet another lesson is that we should not depend on the ratings provided by the cartel of ratings agencies. It is not clear why the BCBS still sees value in these ratings.

**Proposition 4: Basel III is a great leap forward**

The perception that Basel III represents a major overhaul of Basel II is worth challenging. There are two considerations here: whether the flawed components have been carried forward and whether the shortcomings of Basel II have been rectified. The answers to these questions are ‘yes’ and ‘no’, respectively.

Blundell-Wignall and Atkinson (2010) argue that ‘some of the most fundamental problems with Basel I and Basel II have not been dealt with [in Basel III]’. These problems include the model framework, regulatory and tax arbitrage and the need for more capital. And there are more: allowing banks to use internal models to calculate regulatory capital; reliance on rating agencies; the implementation problems; and the exclusionary and discriminatory aspects of Basel II. Despite the claims of Basel enthusiasts (including our regulators), Basel III is not (and neither should it be) about risk management. Like its predecessor, it is a pure compliance exercise.

**Proposition 5: Banking regulation should be harmonised internationally**

Our regulators appear to reject the proposition that financial regulation, just like exchange rate regime choice, is (or should be) a domestic issue. Instead, they advocate the application of the same rules to banks in financial systems as diverse as those of Bangladesh, Somalia, Malta, Sweden and Saudi Arabia. Edey (2011) correctly argues that all countries benefit from financial stability but this does not imply that all countries should adopt a similar set of regulations. It is ironic that while Byres is adamantly against adopting country-specific rules, he admits that Australia was saved from the GFC, not because of international regulation but because of domestic policy measures.
Acharya (2012) argues that ‘India should resist the call for a blind adherence to Basel III and persist with its (Reserve Bank of India’s) asset-level leverage restrictions and dynamic sector risk-weight adjustment approach’. The Economist (2011) agrees with the views expressed by Acharya, arguing that it is not clear why banks in Third World countries should be regulated by Basel III when, in fact, they have tighter (and more effective) controls. With the help of an analytical model, Acharya (2002) had earlier found that when capital standards are harmonised across countries that have different rescue policies, the outcome is a ‘regression to the worst regulation’.

A unified implementation of Basel III is not only undesirable but also impractical. Watt (2011) argues that ‘when push comes to shove, though, there are worries individual regulators may tweak certain parts of the rules to suit their own banking sectors’. If, as Edey (2011) suggests, national regulators eventually set the standards as dictated by domestic conditions, the Basel rules become irrelevant. The RBA has already devised a unique ‘Australian solution’ to the problem of meeting the liquidity requirements of Basel III by creating a taxpayer-backed line of credit to make sure that Australian banks do not run out of cash. This is an Australian arrangement that actually defeats the purpose of the Basel III liquidity rules.

Any justification for using internationally uniform capital standards is more like rhetoric than economic sense and substance. The claim that the international implementation of the Basel rules is conducive to worldwide financial stability, as Edey (2011) argues, is doubtful because financial instability has been the rule rather than the exception since the mid-1980s when the Basel Committee started to flex its muscles.

**Conclusions**

The enthusiasm of our regulators for Basel III seems to be unwarranted, to say the least. The proposed provisions of Basel III are problematic while failing to address the fundamental shortcomings of Basel II. If the Basel Committee has its own way, banks and regulators will keep on receiving new provisions for Basel IV, Basel V and so on. They are in for enormous regulatory fatigue and regulatory capture, respectively. The biggest losers will be bank customers who will foot the bill for the implementation of the Basel III provisions. They will also endure the consequences of future financial crises that will strike either because the Basel provisions encourage malpractices or, at best, because these provisions do not prevent crises or reduce their impact. 

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Understanding how stakeholders evaluate bank performance can be useful for bank managers and investors, particularly as most banks’ operations are multi-dimensional and serve many objectives. This preliminary study examines different stakeholder perceptions of a common set of financial ratios as revealed by a cross-country survey of three major trading partners with financial systems of differing levels of economic success and stage of development.

The importance of taking a multiple stakeholder perspective

This study is motivated by market analysts’ emphasis on financial ratios in their evaluations of bank performance and the absence of a more holistic approach. Banking is a highly regulated industry, which is scrutinised by a range of stakeholders including regulators and customers. Yet, financial ratios are commonly used to evaluate performance primarily for the benefit of investors — with little thought being given to how these ratios are viewed by other key stakeholders. In the current study based on a preliminary online survey, we aim to shed some light on the different perspectives held by various stakeholders on well-established financial ratios.

There are other compelling reasons as to why a multiple stakeholder perspective may be beneficial to the bank evaluated. For example, the conventional wisdom is that an organisation which is not constantly acquiring knowledge is likely to lose its competitive advantage. Those who go beyond univariate financial ratios in benchmarking performance often believe that managers can respond more effectively to change if they are better informed about the business’s stakeholders. Thus, banks familiarising themselves with the views of various stakeholders can enhance organisational learning and make knowledge acquired part of their competitive advantage in the longer-term.

We also briefly acknowledge the banking literature that discusses competition and profitability within the context of shareholder value (SHV) versus stakeholder value (STV) models (e.g. see Llewellyn 2005). According to Llewellyn, while the SHV model mainly focuses on achieving a target return on equity (ROE), the STV model attempts to strike a balance among the interests of a larger group of stakeholders that includes shareholders, customers, employees, local community, suppliers and so on. The STV model is also less prone to decision making focused on short-term objectives. We see an opportunity for decision makers to use the insights gained from a study such as this to fine-tune financial targets for use in an STV model, and to better understand competitor approaches to accommodating the perceptions of various stakeholders.

In summary, we maintain that understanding bank performance from a multiple stakeholder perspective could help bank managers as well as investors better evaluate the underlying longer term value of an organisation. A more holistic or global approach to assessing bank performance could also help to better understand the often-complex relationships between banks and their various stakeholders, which cannot be gained by simply considering current share prices or price-to-earnings ratios. In doing so, the knowledge gained could contribute to multinational expansion strategies once we compare, say, Australian perceptions with those found in an emerging financial market such as China, or a relatively stagnant market such as Japan.

In our analysis we focus on five financial ratios (also used in Avkiran and Morita 2010) which were gleaned from bank performance measures used by the industry (e.g. KPMG’s Financial Institutions Performance Survey). These ratios are: capital adequacy ratio (soundness); ratio of equity to impaired loans (credit quality); return on average equity (profitability); income-to-cost ratio (efficiency); and dividend payout per share (value).
Background to banking systems and conjectures on different stakeholder perspectives

We have chosen to examine stakeholder perspectives in Australia and Japan (a major trading partner with a highly developed financial system and banking sector) and China (also a major trading partner with an emerging financial and banking system of particular interest to Australian and Japanese banks looking to expand into that market). The potential for doing banking business in China is evidenced by 40 locally incorporated foreign banks (PwC 2012). Among these banks, Australian and Japanese origin foreign banks include ANZ and Mizuho Corporate Bank; others with representative offices or branches include the Commonwealth Bank of Australia, National Australia Bank, Bank of Tokyo-Mitsubishi UFJ and Sumitomo Mitsui Banking Corporation.

In order to understand why stakeholder perspectives might vary across countries, we briefly identify the key changes in each country’s banking sector. For example, the Australian banking sector is one of the few that survived the most recent global financial crisis (GFC) in 2007–08 relatively unscathed, and remains highly profitable. However, reflecting international regulatory changes (Basel III etc.) there has been a strengthening of prudential regulation. Also, and particularly relevant to stakeholder attitudes, concerns over increased banking sector concentration and consumer protection have led to a significant number of recent regulatory initiatives in these areas aimed at increasing competition and enabling financial consumers and investors to make more informed decisions.

The Chinese banking sector has been offering a wider range of products and services as a result of the ongoing deregulation which has gained momentum since China joined the World Trade Organisation in 2001. There is also increased foreign bank presence and the emergence of major domestic banks as global giants. This is thus a banking sector in which stakeholders have been experiencing major changes, and one in which there have been major concerns regarding non-performing loans (NPL) in past decades — although these appear to have recently been brought under control. Nevertheless, there remain significant risks associated with a possible rise in bad loans if economic growth slows and property prices fall in a banking environment that is closely monitored by the central government, and in which market discipline and strong corporate governance have limited presence (IMF 2011). While tightly regulated, representation of stakeholders such as customers and bank employees is less clear in the Chinese banking sector.

Deregulation of the Japanese banking sector has been unfolding since 1998, characterised by the lifting of the blanket guarantee on deposits, diversification of products and services, and the establishment of new alliances with non-bank firms. For example, Japanese regional banks, the largest cohort, have traditionally built their long-term business relationships with local firms, often limiting their presence to the prefecture where the head office is located, while maintaining a branch in the major cities such as Tokyo and Osaka. But the past and potential future consolidation of regional banks and other small banks have potential service and performance ramifications for customers and shareholders alike. Moreover, the Japanese economy has been stagnant for many years compared to its major trading partners Australia and China. Japan’s banking sector has not escaped the lacklustre performance of the rest of the country’s economy, which leads us to construct the first conjecture:

> **C1:** Japanese stakeholder groups are likely to rate the desirability of higher measures of the five performance ratios more highly than those in the other countries in the study because of dissatisfaction with the poor average financial performance of banks in Japan.

Based on intuitive expectations, three other conjectures of interest are:

> **C2:** Customers are likely to consider higher levels of bank performance ratios less desirable than all of the other stakeholders do because, most probably, they regard themselves as paying for bank financial performance.

> **C3:** Shareholders are likely to consider higher levels of performance ratios more desirable than all of the other stakeholders do because this group directly benefits from performance ratios in the form of higher dividends and share prices.

> **C4:** Within the set of financial ratios considered here, regulators are unlikely to perceive higher levels of dividend payout per share (DPS) as desirable because they probably regard dividends as detracting from capital used to manage risk.

Survey of five key stakeholders’ perceptions on five bank performance ratios

The preliminary survey was designed to capture the thoughts of five stakeholder groups (regulators, shareholders, customers, management and employees) in Australia, China and Japan on the desirability of higher financial performance ratios. Following on-campus piloting of the questionnaire, a number of key stakeholder groups were invited to participate. The survey was conducted in the form of a web-based online questionnaire over approximately 12 months across 2010–11. In order to encourage responses to the questionnaire, it was intentionally kept brief, with anonymity and confidentiality assured and no demographic data being collected (see Appendix for an online survey example).
Table 1 summarises the main survey findings. Perhaps the most striking observation is the low relative rating given to dividend payout ratios by regulators in all countries. This possibly reflects the fact that the other variables are those typically incorporated into supervisory assessments (such as CAMELS ratings — i.e. ratings of capital adequacy, asset quality, management quality or efficiency, earnings, liquidity, and sensitivity to market risk), and also the diluting effect which dividends have on capital adequacy. Focusing on the last column, we observe that overall, customers consider higher levels of bank performance ratios less desirable than all of the other stakeholders across the three countries. More specifically (see the shaded areas in Table 1), customers consider higher levels of ROAE and income/cost ratios less desirable than all the other stakeholders across Australia, China and Japan (i.e. compare the proportions in the ROAE and I/C columns independently across the five stakeholders).

But to what extent are the proportions observed statistically different when we compare one stakeholder to another? That is, we now compare the proportions of respondents perceiving a higher financial ratio as desirable across pairs of stakeholders reported in the body of Table 1 (the shaded areas). For example, when Australian customers are compared to other stakeholders, testing reveals the differences observed to be statistically insignificant. With China, customer/management and customer/shareholder comparisons statistically confirm the significance of the differences observed in Table 1, and provide partial support for the conjecture (number 2) that customers rank financial performance lower than other stakeholders — although the differences are significant only

### TABLE 1: Survey findings

<table>
<thead>
<tr>
<th>Australian Survey</th>
<th>Number of responses</th>
<th>CAR</th>
<th>E/IL</th>
<th>ROAE</th>
<th>I/C</th>
<th>DPS</th>
<th>Mean desirability</th>
</tr>
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<tr>
<td>Customers [E/IL; ROAE; I/C; DPS; CAR]</td>
<td>25</td>
<td>92.00</td>
<td>88.00</td>
<td>60.00</td>
<td>44.00</td>
<td>32.00</td>
<td>63.20</td>
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<tr>
<td>Employees [I/C; DPS; CAR; E/IL; ROAE]</td>
<td>20</td>
<td>75.00</td>
<td>95.00</td>
<td>90.00</td>
<td>75.00</td>
<td>45.00</td>
<td>76.00</td>
</tr>
<tr>
<td>Management [ROAE; I/C; DPS; CAR; E/IL]</td>
<td>23</td>
<td>65.20</td>
<td>78.30</td>
<td>91.30</td>
<td>95.70</td>
<td>73.90</td>
<td>80.88</td>
</tr>
<tr>
<td>Regulators [DPS; CAR; E/IL; ROAE; I/C]</td>
<td>37</td>
<td>94.60</td>
<td>85.70</td>
<td>88.60</td>
<td>74.30</td>
<td>41.70</td>
<td>76.98</td>
</tr>
<tr>
<td>Shareholders [CAR; E/IL; ROAE; I/C; DPS]</td>
<td>24</td>
<td>79.20</td>
<td>91.70</td>
<td>91.70</td>
<td>87.50</td>
<td>83.30</td>
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</table>

<table>
<thead>
<tr>
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<th>Number of responses</th>
<th>CAR</th>
<th>E/IL</th>
<th>ROAE</th>
<th>I/C</th>
<th>DPS</th>
<th>Mean desirability</th>
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<tbody>
<tr>
<td>Customers [E/IL; ROAE; I/C; DPS; CAR]</td>
<td>42</td>
<td>75.00</td>
<td>65.90</td>
<td>69.20</td>
<td>56.40</td>
<td>62.50</td>
<td>65.80</td>
</tr>
<tr>
<td>Employees [I/C; DPS; CAR; E/IL; ROAE]</td>
<td>33</td>
<td>90.90</td>
<td>68.80</td>
<td>84.40</td>
<td>81.80</td>
<td>57.60</td>
<td>76.70</td>
</tr>
<tr>
<td>Management [ROAE; I/C; DPS; CAR; E/IL]</td>
<td>20</td>
<td>75.00</td>
<td>70.00</td>
<td>85.00</td>
<td>85.00</td>
<td>70.00</td>
<td>77.00</td>
</tr>
<tr>
<td>Regulators [DPS; CAR; E/IL; ROAE; I/C]</td>
<td>17</td>
<td>88.20</td>
<td>76.50</td>
<td>76.50</td>
<td>64.70</td>
<td>41.20</td>
<td>69.42</td>
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<tr>
<td>Shareholders [CAR; E/IL; ROAE; I/C; DPS]</td>
<td>18</td>
<td>88.90</td>
<td>66.70</td>
<td>94.40</td>
<td>94.40</td>
<td>83.30</td>
<td>85.54</td>
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<th>Japanese Survey</th>
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<th>CAR</th>
<th>E/IL</th>
<th>ROAE</th>
<th>I/C</th>
<th>DPS</th>
<th>Mean desirability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers [E/IL; ROAE; I/C; DPS; CAR]</td>
<td>35</td>
<td>79.40</td>
<td>67.60</td>
<td>88.20</td>
<td>70.60</td>
<td>50.00</td>
<td>71.16</td>
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<td>Employees [I/C; DPS; CAR; E/IL; ROAE]</td>
<td>33</td>
<td>81.80</td>
<td>75.00</td>
<td>93.80</td>
<td>81.80</td>
<td>54.50</td>
<td>77.38</td>
</tr>
<tr>
<td>Management [ROAE; I/C; DPS; CAR; E/IL]</td>
<td>31</td>
<td>93.30</td>
<td>83.30</td>
<td>90.00</td>
<td>90.00</td>
<td>66.70</td>
<td>84.66</td>
</tr>
<tr>
<td>Regulators [DPS; CAR; E/IL; ROAE; I/C]</td>
<td>26</td>
<td>100.00</td>
<td>72.00</td>
<td>96.00</td>
<td>83.30</td>
<td>48.00</td>
<td>79.86</td>
</tr>
<tr>
<td>Shareholders [CAR; E/IL; ROAE; I/C; DPS]</td>
<td>28</td>
<td>89.30</td>
<td>92.90</td>
<td>92.90</td>
<td>100.00</td>
<td>100.00</td>
<td>95.02</td>
</tr>
</tbody>
</table>

Notes: The order of measures as they appear in the actual survey is shown in square brackets next to stakeholder names. The mean desirability is the average of five proportions recorded for ratios.

CAR: capital adequacy ratio; E/IL: equity/impaired loans; ROAE: return on average equity; I/C: income/cost; DPS: dividend payout per share defined as dividends per share divided by earnings per share, multiplied by 100.
FIGURE 1: Charting proportions across stakeholders and performance ratios

FIVE STAKEHOLDERS

- Customers
- Employees
- Management
- Regulators
- Shareholders

Note: AU (Australia); CHN (China); JPN (Japan); CAR (capital adequacy ratio); ROAE (return on average equity); DPS (dividend payout per share).

FIVE RATIOS

Note: AU (Australia); CHN (China); JPN (Japan); CAR (capital adequacy ratio); ROAE (return on average equity); DPS (dividend payout per share).
relative to managers and shareholders. For Japan there is also a statistically significant difference in observed proportions for the customer/shareholder comparison.

Similarly (consistent with conjecture 3) shareholders appear to rate higher levels of performance ratios more highly than other stakeholders do. For example, looking at the DPS column in Table 1 and across countries, shareholders consider higher levels of DPS to be more desirable than other stakeholders do. Nevertheless, statistical testing in the same manner as above, but where shareholders are systematically pitched against the other stakeholders, reveals significant differences only between shareholder/customer responses for China and Japan.

Based on proportions reported in Table 1 (the shaded areas), we find that the majority of the regulators, consistent across the three countries in the study, do not perceive higher levels of dividend payout per share as desirable (e.g. focusing on China, this proportion equals 100% – 41.2% = 58.8%). In order to test the significance of the difference between ‘desirable’ and ‘undesirable’ answers entered by the regulators on DPS, we undertake a Chi-square test. The responses of the regulators regarding desirability of higher DPS across the three countries are not statistically different between ‘desirable’ and ‘undesirable’. Therefore, C4 is not supported.

Figure 1 shows the data collected through the survey. The first and second charts allow a comparison of proportions across stakeholders and countries, and across performance ratios and countries, respectively. For example, in the first chart, the first bar is the mean proportion of Australian customers who perceive a higher level as desirable across the five performance ratios (i.e. 63.20 per cent). As might be expected, customers and employees appear to have the least interest in financial performance, while management and shareholders have most interest. We notice that on average the Japanese stakeholder groups (see the first chart) rate the desirability of higher measures of the five performance ratios more highly than the other countries. However, testing C1, we cannot state with any degree of statistical certainty that Japanese stakeholder groups are likely to rate the desirability of higher ratios more highly than stakeholders in the other countries. In the second chart, the first bar represents the proportion of Australian stakeholders that perceives a higher level of CAR as desirable (i.e. 82.95 per cent), and so on.

Concluding remarks

We find that Chinese customers consider higher levels of bank performance ratios less desirable than management or shareholders do. Similarly, Japanese customers perceive higher levels of bank performance ratios to be less desirable than shareholders do (see conjecture 2). We also find statistical evidence in support of conjecture 3, namely that Chinese and Japanese shareholders rate the desirability of higher levels of performance ratios more highly than customers do. We do not find any statistical support for conjectures 1 or 4. In the current study we were able to test only a handful of potential relationships because of the limitations imposed by the relatively small number of respondents. Some of the numerical differences observed in Table 1 and Figure 1 need to be further tested in future studies (i.e. conjectures 1 and 4).

Extending the study across three major trading partners opens the way to pose some additional research questions where answers may inform cross-border operations or investment decisions. For example, assuming there are substantial differences between stakeholder perspectives across countries, how would the assessment of Chinese banks change when their performance is viewed from the perspectives of Australian or Japanese stakeholders? This may assist bank management in charge of international operations to better position their strategic decisions for expansion or partnerships. This kind of insight may also assist banks who raise equity capital in overseas markets to fine-tune how they present themselves to others.

Finally, with the benefit of hindsight, we note that administering the survey across five different stakeholders and three countries proved to be much more difficult than initially anticipated; the unusually large number of people listed in the acknowledgements bears witness to this. We hope that regulators or banking associations from these countries will collaborate to undertake a similar survey with greater coverage to follow up on the preliminary findings of this survey, which was limited by our personal resources.
Notes
1. A non-parametric test of equality of means, the Mann-Whitney U test, is used to test whether two independent samples of observations are drawn from identical distributions.
2. A Chi-square value of 0.212 with a significance of 0.899 suggests the null hypothesis that the two variables are independent cannot be rejected.
3. Using the Mann-Whitney U test retains the null hypothesis at the 0.337 level when Japanese responses are compared against Australian responses; comparing Japan against China also retains the null but at the marginal significance level of 0.064.

Acknowledgements
We would like to extend our gratitude to the large number of people who helped with the survey and offer our apologies for any names we may have inadvertently omitted. These are John Allen, Danielle Burke, Katrina Ellis, Yue Liu, Claire Matthews, Jia Qiu, Stephen Scholtz, Li Su, Evelyn Tan, David W Tripe, Barry Williams, Yu Hong, Li Kagen, Yang Chao, Kazuhiko Shioyama, Shigeki Hayashi, Toshiyuki Ando, Naoki Watanabe, Hajime Shimizu, Kazuo Yanagishita, Yukio Funayama, Kiyoshi Inaba, Eiichi Akimoto and Yasushi Kanzaki. The guidance provided by Kevin Davis and the anonymous reviewer is equally appreciated.

References

Appendix: An example of the online questionnaire
Performance measures to be evaluated by regulators:

We identify five key stakeholders in banking (regulators, shareholders, customers, management and employees) and select five well-documented performance measures. In this questionnaire, you are requested to answer questions from your perspective as a bank regulator. That is, if you believe that a bank regulator is likely to regard a higher dividend payout per share (DPS) as primarily a sign of a bank’s ability to generate healthy cash flows from operations, then a higher DPS would be desirable. On the other hand, once again in your opinion, if you think the regulator is more likely to regard a higher DPS as reduced availability of internal funds in the bank to cover unanticipated cash outflows, then a higher DPS may be considered undesirable. Even if you find yourself considering this question from various other viewpoints, you are requested to make a recommendation based on what you consider to be the most dominant view. Please select either Desirable or Undesirable in all the five questions that follow. Thank you.

1. A higher measure of DPS (dividend payout per share) is either
   - Desirable, or
   - Undesirable
2. A higher measure of CAR (capital adequacy ratio = Core capital / Risk weighted assets) is either
   - Desirable, or
   - Undesirable
3. A higher measure of Equity / Impaired loans ratio is either
   - Desirable, or
   - Undesirable
4. A higher measure of ROAE (return on average equity = Profits after tax / Average equity) is either
   - Desirable, or
   - Undesirable
5. A higher measure of Income / Cost ratio is either
   - Desirable, or
   - Undesirable
WHAT IS THE KEY DRIVER OF BANK STOCK RETURNS?
A comparative analysis

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JIN-YONG YANG, Hanyang University, Korea

This study analyses stock price performances during the past decade and the key drivers of the stock price movements of 228 global banks, which are classified as either GEM (global emerging market) or DM (developed market) banks based on their countries and regions. Our findings suggest that strong pre-provision operating profit growth is more important than profitability as a stock return driver for banks around the world. We also find that despite their similar ROE levels, GEM banks have outperformed DM banks almost every year.

Banks play crucial roles in allocating assets and providing liquidity transformation in local and global economies. Furthermore, with the growth of financial markets, bank stocks explain a substantial portion of the total market capitalisation of each country. Bank stocks make up about one-tenth of the total market capitalisation in both emerging and developed countries (Yang and Tsatsaronis 2012). Therefore, financial industries and market regulators have great interest in the performance and function of banks worldwide.

While many empirical studies have examined the global performance and efficiency of banks, utilising a variety of measures,1 we focus on bank stock returns because they are the most direct and appropriate measure of bank performance, and provide additional information about economic conditions that are not easily captured by overall stock market returns.2 We are also motivated by practitioner concerns that the volatility of bank stock returns is increasing and that forecasting returns has become more difficult after the recent global financial crisis. We believe that the global financial community has become more uncertain about the major determinants of bank stock returns.

By analysing global market data for a representative sample of banks, we note that GEM (global emerging market) banks have continuously and significantly outperformed the DM (developed market) banks in stock returns over the past decade. This observation motivates us to investigate the systematic factors that underlie such differences in stock return performances between GEM and DM banks.3 To the best of our knowledge, although some previous studies attempt to illuminate the determinants of bank stock returns (Beccalli et al. 2006; Song 1994; Viale et al. 2009), no existing studies compare GEM banks with DM banks to examine the determinants of recent bank stock returns.

Our findings suggest that the key driver of bank stock returns is not profitability, which is often proxied by ROE (return on equity) or ROA (return on assets), but by growth in PPOP (pre-provision operating profit).4 Although many financial accountants and analysts still believe that ROE is the most appropriate measure of financial performance, our results indicate that this does not apply directly to the banking sector, especially since the recent global financial crisis. Specifically, our results suggest that GEM banks have strongly outperformed DM banks almost every year, led by strong earnings growth and, to a lesser extent, that was driven by strong PPOP growth, and to a lesser extent by relative improvement in credit cost. We also observe that the PPOP margins5 of GEM banks have continuously expanded, while the PPOP margins of DM banks have contracted since 2007, steadily increasing the gap between the two.

Data
We collected the annual data regarding stock returns and accounting information for a worldwide sample of 228 banks from the Bloomberg database and corporate filings. The sample period of this study covers the decade from 2002 to 2011, which includes the recent global financial crisis period. We classify
the 228 banks as GEM banks (135) from 27 countries and DM banks (93) from 16 countries based on the MSCI (Morgan Stanley Capital International) classification code. There is a wide spread of banks across counties. For example, there are 19 US, 11 Japanese, seven Australian, seven Italian and seven Greek banks in the DM total of 93, and 16 Chinese, 11 Indian, 10 Saudi Arabian and nine Polish banks in the GEM total of 135.

Findings

We first compare the median annual share price returns of GEM and DM banks and observe the key drivers of stock return performance. We then perform panel data regression to corroborate our findings.

PPOP growth as the key share price driver

To identify a more accurate driver of bank share price performance, rather than looking for share price drivers from macroeconomic indicators, we chose P&L (profit and loss) items, given that share price drivers are likely to be direct contributors to profitability, either positively or negatively. We chose net revenue (NR, net interest income + non-interest income) growth, PPOP growth and credit cost improvement as the potential key drivers. We hypothesised that either NR or PPOP would be the key share price driver, rather than just ROE, given that: 1) NR or PPOP is the more sustainable part of the P&L, as it is usually driven by loan growth, which is the result of economic growth and demand for credit; 2) NR or PPOP is generated by the top part of the P&L, indicating that a stronger growth in these items would translate to greater net profit growth as a result of operating and financial leverage; and 3) NR or PPOP growth is usually driven by loan growth and increases assets, which helps support higher leverage ratios (asset/equity) and, in turn, higher levels of ROE. The question we focus on is whether the market prefers NR growth, which is a measure of the revenue growth of the bank, or PPOP growth, which is a measure of the revenue growth and management ability to control operating costs.

To test our hypothesis we measured the median annual stock returns of all GEM and DM banks, sought to identify strong correlations between stock returns and the share price drivers described above. The median stock return performances of GEM banks were superior to those of DM banks during the past decade, outperforming the DM banks every year except for 2006 (and in 2006, the median stock return performance for GEM banks was 17.0 per cent vs 17.4 per cent for DM banks). The stock return performance was measured as the raw share price returns of each individual bank in a given year plus the reported dividend yield. Our analysis suggests that the superior performance of GEM banks is due to strong PPOP growth and, to a lesser extent, improved credit cost control. PPOP growth for GEM banks has consistently outperformed that of DM banks, and thus, we believe it is the key driver of profitability.

We also observed that GEM banks generally outperformed DM banks with regard to market adjusted returns; GEM banks outperformed DM banks for seven of the last 10 years, and maintained an average 5 per cent underperformance for the remaining three years. We believe this indicates

<table>
<thead>
<tr>
<th>Year</th>
<th>GEM</th>
<th>DM</th>
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<tbody>
<tr>
<td>2002</td>
<td>8%</td>
<td>-19%</td>
</tr>
<tr>
<td>2003</td>
<td>55%</td>
<td>29%</td>
</tr>
<tr>
<td>2004</td>
<td>39%</td>
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<td>21%</td>
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</tr>
<tr>
<td>2011</td>
<td>-21%</td>
<td>-30%</td>
</tr>
</tbody>
</table>

FIGURE 1: Median stock returns for GEM vs DM banks
that the stock returns for banks across GEM and DM countries do not simply reflect the overall stock market returns of those countries.

**ROE is not the key driver of share prices**

Our findings suggest that strong PPOP growth is more significant than profitability in explaining share price performance and that GEM banks largely outperformed DM banks despite similar ROE levels from 2002 to 2006. Such performance differences are attributed mostly to PPOP growth and, to a lesser extent, to relative credit cost improvement.

We believe that the order of importance among key drivers of bank share prices is determined by the contribution the driver makes to the quality of earnings. PPOP growth in GEM banks is usually driven by strong loan demand as a result of underpenetrated financial services in fast growing countries; hence, this growth is a very strong driver of sustainable earnings growth. However, other drivers of earnings such as cost control and credit cost management are not sustainable drivers of long-term earnings. In addition, improvement or
maintenance of ROE is difficult to achieve without PPOP growth if not accompanied by capital management.

**Regression analysis also supports our claim**

Using panel data for our worldwide sample of 228 banks for the period 2002-11, we formulate a simple model that regresses share price returns (SPR) on ROE (ROE) and PPOP growth (PPOP GR). The following panel estimation equation includes bank (\( \bar{a}_i \)) and year dummies (\( \bar{a}_t \)), which control the influences of bank-specific and year-specific characteristics, respectively. That is, the effects of time invariant factors are reflected by bank dummies. Accordingly, bank dummies control the effects of country-specific legal and institutional factors, as well as bank specific factors. Similarly, year dummies control yearly effects that are common to all banks. Common effects due to global economic shocks or global institutional changes could be regarded as such. The model does not include lagged variables because the regression analysis is based on annual observations. We assume that investors have reasonable information on the variables without any time lags.

\[
SPR_{it} = \bar{a}_i + \bar{a}_t + \bar{a}_{PPOP_{GR}} + \bar{a}_{ROE} + \bar{a}_w, \quad \text{where } i=1,\ldots,228, \quad t=2002,\ldots,2011 \quad (1)
\]

In addition to equation (1), we estimate alternative equations, for comparison, in which PPOP growth is replaced by NR growth (NR GR) or provision growth (PROV GR). To assess the robustness of the results, we also run regressions in which real total assets (RTA) are included as an additional explanatory variable to control for the effect of bank size. The RTA of each bank is obtained by dividing the total assets of the bank in its national currency by the consumer price index of the country.

Note that the dependent variable SPR indicates total returns, which include stock price changes and dividends paid. We use stock price returns that are not adjusted for market returns in regressions to avoid subtle problems arising from inflation rate differentials across countries.

Table 1 provides basic descriptive statistics, including correlations of variables. Correlations among variables indicate that the multi-collinearity problem does not exist in our regression. F tests are also performed for the mean differences between DM and GEM bank groups, and show that the means of SPR and PPOP GR are significantly different between groups, while the means of ROE, NR GR and PROV GR are not.

Table 2 shows the estimation results. They demonstrate that PPOP growth is a statistically significant determinant of share price returns, but that NR growth or provision growth is not. This result is robust regardless of the inclusion of real total assets as an additional control variable. ROE also explains bank share returns, but its effect is not robust. At the 5 per cent significance level, the effect of ROE on share price returns is statistically significant with real total assets included, but it is rejected when real total assets are excluded. This finding corroborates our hypothesis that PPOP growth is a key driver of bank share returns. However, the alternative measures of PPOP growth, namely NR growth and provision growth, do not explain bank share returns. RTA, which is a proxy of bank size, seems to have negative effects on share price returns, but the effects are not consistent.

**Market has preferred PPOP over NR**

Our regression analyses showing that PPOP growth explains bank share price performance better than NR growth indicate that investors prefer revenue growth and operating leverage. They view these as key determinants for selecting bank shares to invest in, rather than merely focusing on revenue growth.

As Figure 4 shows, these conclusions are strengthened by the steady improvement in PPOP margins of GEM banks, both on an absolute basis and relative to DM banks. The PPOP margins of DM banks have contracted since 2008, when they began to deleverage, since the reduced loan growth resulted in lower interest income. However, GEM banks’ PPOP margins have continued to expand, and the gap between the GEM and DM banks’ PPOP margins as

**TABLE 1: Descriptive statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (Mean)</th>
<th>DM (Mean)</th>
<th>GEM (Mean)</th>
<th>F-stat.</th>
<th>P-value</th>
<th>SPR</th>
<th>PPOP GR</th>
<th>NR GR</th>
<th>PROV GR</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPR</td>
<td>0.148</td>
<td>0.634</td>
<td>0.257</td>
<td>0.762</td>
<td>0.009</td>
<td>0.375</td>
<td>74.76</td>
<td>0.000**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPOP GR</td>
<td>0.322</td>
<td>2.825</td>
<td>0.450</td>
<td>3.639</td>
<td>0.140</td>
<td>0.680</td>
<td>6.13</td>
<td>0.013*</td>
<td>1.69</td>
<td></td>
</tr>
<tr>
<td>NR GR</td>
<td>0.199</td>
<td>3.102</td>
<td>0.293</td>
<td>4.102</td>
<td>0.075</td>
<td>0.280</td>
<td>2.22</td>
<td>0.136</td>
<td>0.054</td>
<td>0.512</td>
</tr>
<tr>
<td>PROV GR</td>
<td>0.976</td>
<td>9.202</td>
<td>1.012</td>
<td>7.689</td>
<td>0.927</td>
<td>10.925</td>
<td>0.04</td>
<td>0.849</td>
<td>-0.060</td>
<td>-0.002</td>
</tr>
<tr>
<td>ROE</td>
<td>12.499</td>
<td>70.907</td>
<td>14.019</td>
<td>9.555</td>
<td>10.288</td>
<td>12.016</td>
<td>1.48</td>
<td>0.223</td>
<td>0.140</td>
<td>0.012</td>
</tr>
<tr>
<td>RTA</td>
<td>0.029</td>
<td>0.029</td>
<td>0.184</td>
<td>0.104</td>
<td>0.184</td>
<td>0.104</td>
<td>0.029</td>
<td>0.029</td>
<td>0.029</td>
<td>0.051</td>
</tr>
</tbody>
</table>

Note: **(*) indicates the difference in the mean of each variable between DM and GEM bank groups, and is statistically significant at the 1% (5%) significance level.
of 2010 is at its highest level during the past decade. In our view, this is most likely due to operating leverage, as the cost–income ratio of GEM banks has fallen on strong PPOP growth (see Figure 5); weaker PPOP growth has become more common among DM banks. Our data also suggest that operating leverage, despite the controversy, exists quite visibly in banks and has been influential for at least as long as our analysis period, especially among GEM banks.

Possible interpretations
We conclude that PPOP growth, and not just current profitability, accounts for the high performance of GEM bank stocks over the past decade. Our findings indicate that a perspective on growth, not the ROE, has a critical role in explaining the superior stock performance of GEM banks. This also leads to the conclusion that stock market investors, who invest in the banking sectors, put more emphasis on PPOP growth than on profitability.

Further possible interpretations for our results are as follows. If banks make abnormal returns (i.e. if their ROEs are greater than their costs of equity), then higher projected growth may indicate increased economic value added such that if current PPOP growth is used as a forecast of future growth there could be a positive link to bank stock returns. This could also mean that investors may benefit from monitoring the components of PPOP growth, such as Net Revenue Growth (NR), Provision for Losses Growth (PROV), and Return on Equity (ROE).
strategic planning for growth is at least as crucial for the sustainable performance of the bank. For investors, our results suggest that banks with solid and sustainable PPOP growth tend to perform well and, hence, that utilising PPOP growth as a common denominator is beneficial when creating a screen for selecting banks to invest in. Finally, for regulators, we find that while stressing risk management and strong capital is significant, it is also critical for regulators to consider policies to help cultivate healthy growth in bank balance sheets.

We might attribute our findings to the unique characteristics of the banking industry. In the manufacturing industry, for example, net profits and manufacturing costs are expected to be highly relevant for estimating firm values. However, operating costs are not as significant in the banking industry. The possibility of growth and, as a result, increased domination of the market, might therefore be more important than increasing current profitability and reducing costs, especially for banks in emerging countries. These characteristics of the banking industry might explain why investors should care more about PPOP growth than the ROE value, which is traditionally used to measure profitability.

**Conclusion**

By analysing data from a worldwide sample of 228 banks, we find that strong PPOP growth is the key driver of bank stock performance and that PPOP growth explains the performance gap between the GEM and DM banks over the past decade. This finding is striking considering that market practitioners believe that traditional profitability measures, such as ROE and ROA, describe the stock performances of firms.

The findings of our study provide the following implications for bankers, investors, and regulators. For bankers, our results suggests that, while risk management has always been stressed as the foremost goal in bank management, well thought-out

<table>
<thead>
<tr>
<th>Year</th>
<th>GEM</th>
<th>DM</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>57%</td>
<td>59%</td>
</tr>
<tr>
<td>2003</td>
<td>56%</td>
<td>58%</td>
</tr>
<tr>
<td>2004</td>
<td>53%</td>
<td>58%</td>
</tr>
<tr>
<td>2005</td>
<td>53%</td>
<td>56%</td>
</tr>
<tr>
<td>2006</td>
<td>52%</td>
<td>53%</td>
</tr>
<tr>
<td>2007</td>
<td>49%</td>
<td>54%</td>
</tr>
<tr>
<td>2008</td>
<td>48%</td>
<td>60%</td>
</tr>
<tr>
<td>2009</td>
<td>46%</td>
<td>57%</td>
</tr>
<tr>
<td>2010</td>
<td>44%</td>
<td>58%</td>
</tr>
<tr>
<td>2011</td>
<td>44%</td>
<td>61%</td>
</tr>
</tbody>
</table>
Notes
1. Pasiouras et al. (2008) provide excellent reviews of the efficiency of the banks.
2. Cole et al. (2008) claim that bank stock returns indicate future economic growth, and that the share returns of banking industries broadly reflect the performances of the banking sectors of each country.
3. Another motivation for this study is that the stock performances of Korea’s leading banks were terrible in 2011, despite good business profits and ROEs. This phenomenon implies that investors do not perceive (short-run) profitability as (long-run) performance and, as a result, do not want to hold bank stocks despite high ROE values. Since the Korean economy has recently shifted from an emerging to a developed economy, we believe that a comparative investigation of performance differences between GEM and DM banks will provide additional economic implications for the Korean and global markets that cannot be detected from a single market study on the Korean market.
4. PPOP = (net interest income) + (non-interest income) – (selling general and administrative expenses)
5. PPOP margin = PPOP / average asset
6. Full details are available from the authors.
7. In this case, cross-country differences in inflation are reflected in both dependent and explanatory variables. These regressions do not allow for cross-country differences in market returns, but using market-adjusted returns as the dependent variable yields basically similar results.
8. The mean difference and basic statistics for RTA between DM and GEM bank groups are omitted, because they are meaningless as RTAs are valued in different national currencies.

Acknowledgements
The authors are grateful for the helpful comments and suggestions from Kevin Davis, Marion Fahrer and the anonymous referee.

References
Papers from the UNSW Roundtable Conference on Regulating Culture: Compliance, Risk Management and Accountability in the Aftermath of LIBOR

Finsia acknowledges the contribution of the papers from the UNSW Roundtable Conference to this issue of JASSA. The conference was held in October 2012 by the UNSW Centre for Law, Markets and Regulation. The conference was co-sponsored by Finsia.
PROFESSIONAL OBLIGATION, ETHICAL AWARENESS
and the search for accountability in the aftermath of LIBOR

The global financial crisis has demonstrated in startling detail the externalities caused by emasculated or compartmentalised conceptions of responsibility. Corporate executives and their professional advisors conspired to push through deals and strategies informed by legal technicalities and accounting conventions. If not in direct violation of the letter of the law, these strategies led to sub-optimal results for both the sustainability of specific corporate models and the professional standing of their advisors.

The fact that the statute of limitations has run in most jurisdictions without the bringing of criminal charges for willful blindness poses a series of fundamental and unresolved questions. Has the panoply of reform initiatives at national, regional and global level addressed the core normative problem? Alternatively, have we privileged the politics of symbolism, creating the illusion of a robust architecture incapable of withstanding a crisis of similar magnitude?

The scandal involving the manipulation of the London Interbank Offered Rate (LIBOR) offers a perfect case study to explore these questions. There can be no doubting the magnitude of the scandal. The allegations of misconduct span the globe. Critically, the evidence proffered in settlement agreements to date, involving $2.6 billion in fines, points to the operation of a cartel, an aspect currently under investigation by the European Commission. Of equal significance, the willful misconduct continued long after the onset of the GFC making future criminal prosecution a distinct possibility.

The papers presented here form part of a major project conducted by the Centre for Law Markets and Regulation at UNSW Law, which will be published as an edited collection this year, Integrity, Risk and Accountability in Capital Markets: Regulating Culture (Oxford: Hart Publishing, 2013). Eric Talley and Samantha Strimling provide an overview of the LIBOR scandal, linking it to the commodification and corruption of knowledge. David Westbrook suggests that the outcomes reflect the triumph rather than the failure of an embedded culture, while Bob Ferguson suggests that credible reform necessitates refashioning the incentives governing its operation.

What these papers also show is that LIBOR and its administration have been carried out around and within codes of conduct incapable of addressing hubris, myopia and the decoupling of ethical considerations from core business. The failure to articulate and integrate purpose, values and principles within a functioning ethical framework has created toxic and socially harmful corporate cultures in urgent need of reform, which an emphasis on technical measures alone will be incapable of addressing.
INCENTIVISING COMPLIANCE in the banking industry

Bob Ferguson is a head of department at the UK Financial Conduct Authority. This article was written while he was a Visiting Academic at the UNSW Centre for Law, Markets and Regulation. The views he expresses are his own and are not to be attributed to the FCA.

One consequence of the global financial crisis has been an explosion of calls for a radical change of culture in the banking sector — for a shift to a much more responsible, prudent, long-termist business model, and for a corresponding transformation of attitudes and values. Last year’s events in the UK imparted fresh impetus to the debate about what needs to be done. This paper explores the potential regulatory activity in this area and its limitations.

The Barclays LIBOR settlement provoked a huge backlash, in the wake of which the Serious Fraud Office initiated two Barclays-related criminal investigations (one on LIBOR-fixing, the other on ‘certain commercial arrangements’ made with the suppliers of Qatari capital in 2008 at the height of the financial crisis). HSBC was the subject of a scathing US Senate case study focused on abject weaknesses in its anti-money laundering controls in the US.1 The New York State Department of Financial Services accused Standard Chartered of ‘grave violations of law and regulation’ mainly in the form of wire-stripping to conceal Iranian connections in payment messages. Standard Chartered quickly settled, paying a $340 million fine.2 Both banks remain in settlement discussions with the US federal authorities.

Diverse ideas have been put forward about how to instill a culture of integrity in the banking sector. These include ethical training for employees, setting the ‘tone from the top’, board-level ethics committees, more ‘process-oriented’ regulation, ring-fencing of retail and investment banking, and ‘mutually interdependent’ (rather than antagonistic) relationships between banks and regulators. There is no room for a critique of these ideas here.

The starting point for this paper is the commonplace observation that profit (for the firm) and bonus and commission (for the individual) are dominant motivators of behaviour in banking. People who work in banking are generally more interested in making money than in public service or other forms of job satisfaction: that is part of the culture. This simple observation has powerful implications. It points us in the direction of sanctions and incentives structured by regulatory intervention as a means of reorienting the behaviour of banks and their people. If regulators can reframe the incentives and disincentives at work in the banking environment, they will be speaking to bankers in their own language — in other words harnessing their motivation and mobilising it to achieve a more socially acceptable end. In this paper I explore the potential, some of it yet to be fulfilled, of regulatory activity in this area, and also its limitations.

What is the problem?

The most widely recognised manifestation of banking’s dysfunctional culture is the prudentially reckless risk-running in wholesale and credit markets which (along with global macroeconomic imbalances) lay at the heart of the financial crisis and led ultimately to large public subventions in major financial centres (US, UK, Switzerland), as well as countries such as Belgium, Ireland and Spain.

Alongside this, at least in the UK, there has also been extensive mis-selling to customers (in the form of selective explanation of the material features of financial products, or unsuitable or seriously suboptimal recommendations), and poor-quality compliance with the anti-money laundering (AML) regime. The worst mis-selling episodes have related to occupational pension transfers and opt-outs in the 1990s, and payment protection insurance (PPI) more recently, each occasioning well over £10 billion of redress. Concerns over the sale of interest rate derivatives to small businesses are also current. Meanwhile extensive blindness or indifference to high money-laundering risk was documented in an FSA report in 2011.

Some countries may have greater problems than others, but it would be optimistic to ascribe these problems just to the UK. Concern about how interest rate derivatives have been sold has emerged in Italy, Australia and the US, as well as the UK. And the ‘incremental yet pervasive detriment to consumers...
caused by poor, conflicted advice now seems to be widely acknowledged in Australia. In relation to anti-money laundering, the Swiss federal AML authority has identified issues comparable to the UK’s. In Australia, serious doubts have now been raised about the quality of Australian banks’ AML compliance in relation to customers who are PNG – ‘politically exposed persons’.

What all these episodes have in common is that they show profit, commission and bonus-seeking being put ahead of bona fide compliance and customers’ interests. As Andrew Haldane, an executive director of the Bank of England, puts it: ‘Banking [in the years before the global financial crisis] became a transactional business, underpinned by a sales-driven, commission-focussed culture.’ If this culture is to be transformed, the incentives and disincentives to which behaviour responds must also change.

Sanctions

**Regulatory sanctions: corporate accountability**

A critical question is whether there is enough deterrence in the system. When delinquent banks are subject to regulatory punishment, are the penalties heavy enough to deter other banks in the same regulatory jurisdiction? Looking around the world, the answer is generally no. A crude application of the economic theory of deterrence would tell us that the sanction should (i) exceed the profitability of the wrongdoing, and (ii) be multiplied by a factor derived from the improbability of being both caught and selected for enforcement proceedings. So, for example, if the profitability is $100 million and the chance of being caught and proceeded against is 5 per cent, the penalty should be more than $2 billion. Few, if indeed any, regulatory authorities operate on this basis, and there is little sign of engagement with step (ii) of the economic deterrence model. And the redress point falls away altogether when there are no determinate victims: again, a cavalier approach to AML may serve as an example.

While each of these arguments has some substance, none has enough to dispel the overall impression that regulatory sanctions for misconduct by banks could and should be higher than their current levels, in order to strengthen general deterrence. This is not to say ‘the sky’s the limit’. The prudential implications of financial penalties are an important limiting factor, especially in the context of the current drive to strengthen capital buffers for institutions of systemic significance. In particular, it would be self-defeating to impose a fine of prudentially damaging magnitude upon a bank in order to sanction it for prudentially reckless behaviour. There may be occasions when the imposition of heavier capital requirements through the exercise of supervisory powers would be a more apt response than resorting to enforcement proceedings. That said, prudential intervention is not satisfactory as a general substitute for enforcement proceedings for misconduct, because it lacks the transparency and demonstration effects of the latter.

**Individual accountability**

It is not surprising that there has been a renewed focus in recent years on coupling corporate accountability with that of key individuals, as a means of countering individual irresponsibility and moral hazard. This is a sensible control strategy, as long as individual liability to regulatory sanction is premised on individual culpability (for example, negligence), and not some notion of guilt by association or strict liability. The latter not only...
run counter to principles of justice, but would also heavily discourage individuals from stepping into senior roles subject to regulatory jurisdiction.

In practice, however, the potential of regulatory enforcement proceedings against key individuals as a regulatory tool is limited (even when the necessary legal framework is in place) by two challenges. First, it can be very difficult to reconstruct for enforcement purposes what was a senior individual’s own sphere of responsibility, and then to demonstrate personal negligence within that sphere and hence personal liability. The challenge is illustrated by the recent UK case of Pottage, where the Financial Services Authority sought and failed to demonstrate that in response to warning signs, the new UK head of wealth management at UBS ought to have instituted a comprehensive review of systems and controls in his business area some time before he actually did.9 Second, with personal reputation and standing at stake, senior individuals subject to enforcement proceedings are frequently disposed to contest the case all the way (and have access to the means to do so), whereas accused institutions are often much more inclined to settle. As a result of these two factors, regulatory enforcement of individual accountability entails large resource commitments, and resource-constrained regulators must weigh carefully the investment involved against the likelihood of success.

An alternative form of individual accountability for banking delinquency might be sought through the criminal justice system. There can be no doubt of the existence of public appetite for criminal punishment of individuals with an egregious role in the fiascos of 2008. The stumbling block is the mismatch between populist impulse and legal definitions of criminal offences. Leaving aside cases of outright fraud, especially mortgage fraud, much of the imprudent behaviour associated with the financial crisis seems to defy categorisation in criminal terms, however much we might wish otherwise. In the UK the government has proposed the creation of a new offence of ‘reckless misconduct in bank management’, even though it believes the amount of material to collect ‘in a substantial financial collapse case would be enormous, and the task of analysing it to a proper standard would be formidable. This could make such investigations extremely costly, and result in prosecutions which could run into years rather than months’.10 Criminal justice is a costly commodity, prosecution agencies are stretched in terms of resources, and cases against bankers are likely to be very hard fought. There is unlikely to be scope for a step-change in criminal deterrence.

It is time for an overall conclusion on sanctions. It is inevitable that there will be an ‘undersupply’ of enforcement proceedings, whether regulatory or criminal, relative to the number of situations in which they would be warranted. This makes it all the more important that, when proceedings actually are brought and successfully concluded, the sanctions imposed should not only outweigh the profit that accrued to the wrongdoer, but also be heavy enough to be deterrent to others, even in situations where the probability of being subjected to enforcement proceedings is relatively small.

Incentives
In a recent survey of 500 senior financial professionals in the US and UK, 30 per cent of respondents reported ‘feeling pressured by bonus or compensation plans to violate the law or engage in unethical conduct’.11 About a quarter said they believed that financial services professionals might need to engage in unethical or illegal conduct in order to be successful. While it may be possible to find fault with the methodology of surveys such as this, it reinforces the now widely held view that remuneration structures are a major driver of poor behaviour in the banking sector.

For this reason regulation of the incentives that motivate the business behaviour of individuals in the first place (and not just the controls that aim to constrain them) has become a vital task.

The most advanced effort is the Financial Stability Board’s Principles and Standards on Sound Compensation Practices, which are to be implemented throughout the G20, including Australia and the UK. The FSB expressly characterises its Principles and Standards as designed to achieve "lasting change in behaviour and culture within firms”.12 The focus is on aligning the material incentives of key individuals in the firm — the ‘material risk takers’ — with the prudent long-term interests of the firm itself. A critical device for bringing this about is the requirement that payment
of a substantial proportion of variable remuneration — in other words, bonus — should be deferred for at least three years, and that a substantial proportion of the bonus should take the form of equity, to give the executive more of a stake in the long-term performance of the firm.

The complexity and challenge of this effort is evidenced by the rapid proliferation of guidance material and monitoring mechanisms (national and international) in just three or four years. It is important to bear in mind that the FSB regime has a purely prudential purpose: the main focus is on systemically significant institutions, and on risks to their capital and liquidity. In principle, therefore, the goal of the regulators and the long-term interest of the banks concerned — to avoid excessive prudential risk-taking — are mutually aligned. This ought to make the regulatory task easier than it would otherwise be.

Regulating remuneration at the interface with the bank’s clients with its prevalent sales culture is a different matter. In relation to consumer protection, the distorting and detrimental effects of commission bias have been recognised for a long time, but (perhaps because of competition policy concerns) the appetite for radical intervention has, in Australia and the UK, emerged only recently. The UK’s Retail Distribution Review commission ban13 and ASIC’s ban on conflicted remuneration are important and worthwhile initiatives. Both, however, will require intensive supervision and enforcement activity to succeed because they will (or should) interfere with product manufacturers’ ability to retail high-margin products whose distribution has hitherto been incentivised by high commissions.

In relation to AML, the motivational impact of incentives on attitudes to money-laundering risk and compliance regimes has attracted relatively little regulatory attention, though the FSA has now said it will take an ‘ongoing interest’ in the effect of remuneration structures on how bankers handle such risks.14 There is every reason to believe that the issue of incentives, and the impulse to ‘do the business’, is as critical here as it is in relation to the customer interface generally.

Regulation of incentives at the customer interface will prove to be a difficult undertaking. The relevant populations are large, and therefore hard to monitor. Compared to the prudential sphere, banks and financial advisers will be less likely to identify their own long-term interests with the goals of the regulator. There will be a constant search for avoidance and circumvention devices. And motivational devices other than commissions and bonuses can be found to sustain the pressure to sell among staff: these include social pressure15 and the fear of job loss.

To make headway, therefore, regulation of incentives will need to be display several features:

> **Sensitivity to industry developments and flexible responsiveness.** Regulators will need to be alert to the latest industry ‘work-arounds’ and to operate within a framework of rules that allows them to counter them quickly. Otherwise formal compliance coupled with avoidance will characterise the regime in practice.

> **Co-optation of senior management through corporate governance mechanisms.** Regulation of incentives needs to be complemented by corporate governance requirements (e.g. for board-level remuneration committees whose operation is transparent to the regulator) which make it clear to directors and senior managers that they have accountability to the regulators for delivering compliant remuneration structures in their firms.

> **Active monitoring and enforcement.** Regulators will need to practise active surveillance and to be prepared to bring proceedings for violations of their incentive requirements per se — which brings us back to the role of sanctions.

Regulating incentives entails problems and challenges of its own, and can only make a contribution to raising standards of conduct (and ultimately attitudes and values) in banking when combined with other tools including substantive behavioural standards, corporate governance requirements, and serious enforcement. Nevertheless the potential of the technique — changing the rules of the game for financial sector players by changing the structure of the rewards they may gain and the forfeits they may incur — as a means of changing behaviour warrants the substantial investment it will require. ■
Notes
4. FINMA 2011, Due diligence obligations of Swiss banks when handling assets of ‘politically exposed persons’, October.
5. Jason Sharman 2012, Submission to the National Anti-Corruption Plan, August); speech by Sam Koim 2012, AUSTRAC Major Reporters Meeting, October, reproduced in Anti-Money Laundering Magazine, October, 2012, p. 20. See also Jason Sharman 2012, ‘Chasing Kleptocrats’ Loot’, U4 Issue, August, no. 4, p. 8: ‘Australian bankers indicated privately to the author that they believe the federal government does not take the issue of holding the proceeds of foreign corruption seriously, and so the banks take a correspondingly relaxed view of this risk. Similarly, these bankers indicate that they take a tolerant view of accepting the proceeds of corruption in their Southeast Asian and South Pacific subsidiaries and branches, including PNG’.
13. See also the FSA’s proposed guidance on Risks to customers from financial incentives, September, 2012.
15. See, for example, references to fear, bullying and humiliation in the comments appended to ‘Revealed: The bonus list that encourages hard sell culture among ‘advisers’ in the branches of Britain’s biggest bank’, 11 September, 2012, available at www.thisismoney.co.uk
THE WORLD’S MOST IMPORTANT NUMBER:
How a web of skewed incentives, broken hierarchies and compliance cultures conspired to undermine LIBOR

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To many observers, the recent scandal involving the widespread and recurrent manipulation of the London Interbank Offered Rate (LIBOR) may go down as one of the most significant and far-reaching events associated with the global financial crisis. And for good reason: by most estimates, an estimated 350 trillion dollars’ worth of global financial contracts — ranging from mortgages to credit cards to corporate debt securities to countless financial derivatives — hinge critically upon LIBOR to govern the cash flow positions and other obligations of contractual counterparties. This paper examines the incentives, hierarchies and organisational cultures among the various players involved and floats some hypotheses about how LIBOR may be most effectively reformed in light of these factors.

Almost immediately after its inception a quarter century ago, explosive network externalities allowed LIBOR quickly to realise the aspirations originally articulated by its creator, the British Bankers’ Association (BBA): to become the ‘world’s most important number’ — the central navigating point for financial markets worldwide.

But with big stakes come big problems. In mid-2012, the British Financial Services Authority (FSA) (the regulatory overseer in the first instance for LIBOR), joined with the US Commodity Futures Trading Commission (CFTC) and US Department of Justice to impose a half-billion dollars’ worth of penalties on Barclays PLC (one of LIBOR’s core reporting banks) for a systematic and longstanding practice of manipulating its LIBOR submissions. It has now become clear that that Barclays’ detected missteps were but the tip of an immense iceberg. Regulatory penalties of similar magnitudes have since been levied against two other significant participants, UBS and Royal Bank of Scotland,2 and more are expected within months. In all, over 20 participant banks are now alleged to be caught up in the scandal, subject either to regulatory enforcement, criminal investigations, civil litigations or some combination thereof. The scandal is now thought to have been so broad as to involve a set of coordinated practices between banks (not just within them), resulting in additional allegations of racketeering and/or antitrust violations.3

In many ways, the longstanding and widespread nature of the LIBOR scandal is one of the most perplexing and intriguing things about it, as the June 2012 Barclays’ revelation surprised virtually no one even remotely familiar with the topic. LIBOR misreporting was — in effect — an open secret; hiding in plain sight. As far back as April of 2008, more than four years before the Barclays notice (and fully six months before the world’s financial markets and economies were thrown into a global tailspin), The Wall Street Journal (WSJ) published a prescient investigative study of LIBOR’s informational integrity.4 In it, authors Carrick Mollenkamp and Mark Whitehouse summarised research suggesting that many — and perhaps most — of the then-16 reporting banks responsible for the North American LIBOR rate were regularly and systematically misreporting information to Reuters, the agent charged with fixing the daily benchmark rate on the BBA’s behalf. In particular, Mollenkamp and Whitehouse noted that throughout early 2008, the spread between the reports that member banks submitted to the BBA on the one hand, and the rate that credit insurance markets implied for the banks on the other, was large and growing larger.
The WSJ found that the evident degree of misreporting was far from uniform, and varied widely by bank. For some banks, it appeared significant (led by Citibank, at nearly 90 bps). For others, it was relatively modest to non-existent (Royal Bank of Canada’s implied rate, for example, was statistically identical to its LIBOR reports). The reporting behavior of Barclays, UBS and RBS fit comfortably into the middle of the pack (between 25 and 39 bps). Moreover, although one could certainly quibble with the WSJ’s methodology (such as its reliance on the CDS market as a reliable external metric for banks’ borrowing costs), most observers understood the WSJ report, at core, to represent a facially persuasive critique of the integrity of LIBOR at least as far back as 2008 (if not almost two decades earlier still). Consequently, much of the ‘shock’ now manifest among commentators and regulators rings hollow at LIBOR. A WSJ article recounting the decision number of major institutional and technical reforms just such an independent spinoff as one of a consequent leap in market demand for benchmark rates. The most logical starting point of our inquiry is the release of the Wheatley Review, which suggested official coordinator since the benchmark’s inception. The market for LIBOR and the BBA culture role it has played in promulgating, developing and expanding the market demand for benchmark rates. On 13 September 2012, top executives from the 25 BBA member banks — who together compose the BBA’s council — voted overwhelmingly to cede control of LIBOR, for which they have been the official coordinator since the benchmark’s inception. Significantly, this vote was taken one day following the release of the Wheatley Review, which suggested just such an independent spinoff as one of a number of major institutional and technical reforms to LIBOR. A WSJ article recounting the decision dubbed it ‘the biggest change in LIBOR’s 26-year history’ (Enrich and Colchester 2012).

This characterisation is almost certainly correct. Until recently, LIBOR’s was a history marked by tremendous consistency, success, and growth. In the mid-1980s, financial contracts generally lacked a unified benchmark rate to govern variable-rate and contingent debt, as well as new financial ‘derivatives’ — products that had begun to explode in the wake of significant tax and regulatory reforms. As had become clear at the time, the viability of such financial innovations turned critically on the existence of a trustworthy common denominator upon which to frame and peg terms between contract counterparties. Dominant floating rates at the time (such as the US prime rate) were set too sporadically and were too geographically limited to buttress a global market in financial contracting. Thus, the BBA’s more organised and systematic daily survey of banks’ borrowing costs filled a niche that pre-existing measures could not. LIBOR’s popularity skyrocketed as newer financial products, including interest rate swaps, collateralised assets, credit derivative and risk management contracts increasingly incorporated the benchmark. The scale and heterogeneity of these new financial contracts strongly incentivised the BBA to expand its array of LIBOR rates across currencies and tenors (i.e. borrowing periods). By the mid-1990s, the BBA began to publish daily LIBOR rates for 10 currencies and for any monthly tenor up to one year. The increased global popularity of LIBOR necessitated a number of important but piecemeal changes in response to new market demands globally. Currencies were added and subtracted (especially following the implementation of the euro), banks have been added/removed to each panel as they gained or lost market influence and, in 1998, the official definition of LIBOR changed such that each member bank would now be asked explicitly to report its own cost of borrowing rather than that of a hypothetical ‘prime’ bank.

Nevertheless, by the turn of the century, it had become clear that LIBOR was far more than a technocratic book-keeping device: through its popularity, it had become a commoditised ‘product’ — one that could be bought, sold, purchased and licensed through the BBA. In the mid-2000s, the BBA began to seize on this potential, hiring John Ewan to serve as LIBOR Manager, to ‘put BBA LIBOR on a secure commercial footing’. Ewan’s charge was to develop and enhance appropriable revenue streams from LIBOR, introducing new products, securing intellectual property rights, and licensing the rights to LIBOR’s use. In a short time Ewan increased the BBA’s licensing revenue by an order of magnitude, and he was promoted in 2007 from LIBOR manager to BBA Director.
With the increasing commoditisation of LIBOR, however, came a significant cost: a growing commitment within the BBA organisational culture to refrain from casting doubt (at least in the public eye) on the integrity of the measure, since the exposure of reporting problems could potentially undercut LIBOR’s (and the BBA’s) market dominance. One such problem was a persistent lack of depth and liquidity in a number of LIBOR rates. As seen in Figure 2, even though LIBOR rate reports are harvested across 150 different currencies/tenor combinations, the modal pattern of unsecured deposit transactions among banks has been much narrower, concentrating heavily on less than a dozen (involving US dollar, pound sterling and euro transactions of three months’ duration or less). As a result, contracts pegged against the less focal LIBOR products regularly depended on a much thinner and more volatile set of underlying data.

The protective concern BBA had over the public perception of LIBOR is apparent from more than circumstantial evidence, however. Shortly after WSJ’s investigative 2008 report was published, the BBA convened a meeting of its Foreign Exchange and Money Markets Committee, whose principal task is to make policy decisions about LIBOR. The press accounts of their meeting suggest an organisation that was concerned as much (or more) with the measure’s prospective vitality as it was with its accuracy:

The committee is made up of banking-industry officials whose names and affiliations the BBA won’t disclose. The meeting’s agenda was how to improve LIBOR. ‘We need to adopt a minimal approach,’ said one executive, identified in a transcript as Representative 2 of ‘Bank B.’ ‘Too big a change would cause an explosive reaction.’ Another bank representative argued that the BBA should deal with banks that report artificially low data ‘by just picking up the phone … and have a conversation behind closed doors.’ The transcript indicates that other bank representatives agreed.11

Some months later, Angela Knight, then the BBA’s chief executive, approached both the Bank of England and the Federal Reserve Bank of New York to solicit their assistance with oversight of LIBOR. Both demurred (for reasons we explore in greater depth below). Nevertheless, the BBA chose to maintain its oversight.12 While perhaps a rational short-term strategic calculation for the BBA itself, this decision had major implications for many others not at the table, and arguably catalysed a compliance environment at the BBA that grew increasingly tolerant of the rate’s flagging credibility.

Regulatory culture

A second important potential contributor to the culture of non-compliance concerns the nature and evolution of bank regulation itself. Two important aspects of the regulatory landscape began to shift dramatically at the turn of the 21st century. The first was meta-regulatory: as a result of the mega-merger between Citibank and Travelers Insurance in 1998 (and the facilitating repeal of the Glass-Steagall Act months later), the 65-year old regulatory boundaries that had long separated commercial banks, investment banks, and insurance companies substantially disappeared. For the first time since the Great Depression, commercial banks’ holding companies (BHCs) could (through their subsidiaries) explore new activities in proprietary securities trading, underwriting, financial derivatives, and securities distribution, largely free from the regulatory firewalls that had once constrained them. This event set into motion a series of deregulatory movements within the US — changes that had global implications as well.

From this meta-regulatory shift emanated a micro-regulatory shift: the increased scope of BHC operations led to a problem of coordinating ‘multiple monitors’ within jurisdictions. With commercial BHCs becoming heterogeneous in scope, the activities of their subsidiaries began to fall increasingly under a patchwork of regulatory overseers, ranging (within the US) from the Fed to the Federal Deposit Insurance Corporation (FDIC), to the US Securities Exchange Commission (SEC), to the CFTC, to various state and national insurance and market regulators. Although the domains and duties of each of these regulators were distinct (at least in theory), the point where each domain left off and picked up was — at best — an opaque matter for speculation. Until the Dodd-Frank Act 2010, virtually no US regulatory entity exercised broad oversight of how different regulatory domains interact within a particular BHC (e.g. between the depository accounts and the trading desk). This regulatory oversight problem was especially pronounced where the various arenas of BHC activity intersected: and at the core of this intersection was fixing of benchmark rates. (As we shall see, this regulatory lacuna opened up significant returns for the BHC that can coordinate the efforts of these divisions).

In the years preceding the financial crisis, regulators in the US offloaded much of their oversight onto others, especially as their oversight targets became larger, more sophisticated and more complex. This trend was perhaps most publicly visible at the SEC, where then-Commissioner Cox occupied most of the first half of the 2000s pushing for increased ‘self-regulation’ of reporting firms. However, a qualitatively similar trend took hold elsewhere, such
as in commodities/derivatives regulation and bank supervision (where capital adequacy requirements and risk weighting took on new dimensions that were unfamiliar to traditional forms of supervisory oversight). In the months and years following the advent of the crisis, a different type of regulatory collective action problem arguably took hold: one of practical damage control, self-preservation and sporadic finger pointing through litigation. One reason for action directed at individual banks may be the simple practical difficulty of ex ante regulation versus ex post litigation, particularly in an environment that is in a state of near-continuous flux. Relatedly, even within the realm of ex post litigation, actions against individual banks are mechanically far more feasible than are broad indictments or ex ante regulatory pronouncements affecting an entire industry (even if the industry is in some way jointly ‘culpable’). Virtually all of the compelling probative evidence against Barclays, for example, consists (as described below) of inculpating emails, office memoranda and other correspondence. Finally, many types of enforcement action are also plausibly motivated (at least in part) by careerist norms among enforcement regulators. It is reasonable to assume that enforcement officials aspire to participate in high-profile cases, either to ascend internal promotion ladders or to perfect an exit option to private industry. For regulators with such professional aspirations, significant financial scandals are an ideal target of opportunity. As the underlying behaviour of regulated firms becomes more multifaceted and complex, regulators and regulatory culture naturally tend to substitute away from (difficult) ex ante pronouncements and towards (easier) ex post litigation.13

**Banking culture**

A final, somewhat more direct source of non-compliance culture was the reporting banks themselves. Although the proposition that banks will manage themselves to maximise profits is hardly a novel one, it gained new traction and urgency by the beginning of the 21st century, when their business prospects began to expand as a result of the significant loosening of regulatory oversight described above, and their enhanced scope and reach.

Accordingly, two discrete ‘phases’ of misreporting are described and addressed in the FSA’s recent enforcement notices. The first occurred largely before mid-2007, and involved a pattern or practice whereby a bank would ‘shade up’ or ‘shade down’ its reported cost of capital in order to distort resulting LIBOR to benefit the bank’s current derivative positions. In the second phase, (which reached maturity around the same time as the WSJ investigation described above), banks are alleged to have systematically reported their cost of debt so as to dampen — somewhat ironically — public media coverage and/or regulatory scrutiny.

The first phase of the LIBOR misreporting scandal described above is notable because it highlights the conflict of interest present within a bank, due to a difference in the interests of the fixings submitters versus those of the proprietary trading desk at the bank. While it is possible that the submitters were financially motivated by the belief that profits on Barclays’ trading positions would be distributed across the firm, a more plausible theory is that Barclays (and possibly other banks) gave its imprimatur to a culture of back-scratching and support to its highest margin units — particularly its proprietary trading desk. The FSA cites numerous examples of informal entreaties from traders to fixings submitters, such as the following 7 April 2006 missive: ‘If it’s not too late low 1m and 3m would be nice, but please feel free to say ‘no’... Coffees will be coming your way either way, just to say thank you for your help in the past few weeks’ (see Barclays FSA Final Notice 2012, p. 13).

The Barclays submitters’ apparent susceptibility to such pleas may indicate a larger power relationship within the firm, with traders exerting undue influence. To be sure, organisational cultures and incentives almost certainly vary across banks, particularly between investment banks and commercial banks with depository activities. But given the ever-eroding boundaries between the categories, the freewheeling nature of traders has arguably become a more significant factor at all banks. It is notable that some of the very institutions at the center of the current LIBOR storm have also recently faced embarrassing lapses in oversight of their trading desks. Relatively inexperienced traders were routinely trusted to manage vast sums of investment capital and were expected to turn quarterly profits on a routine basis. It should not be surprising that such traders would have a natural inclination to turn to others in their networks (both within their banks and without) to assist their efforts.

Although the second phase of the LIBOR scandal bears a much smaller mark of intra-bank conflicts of interest, the first phase almost certainly greased the wheels for a culture of industry-wide misreporting that was easy for banks to leverage. The contacts forged among (and especially between) fixings agents and trading desks — across multiple reporting banks — during the first phase no doubt proved fruitful in the second, where virtually all banks had identical agendas: to avoid public scrutiny.

**The uncertain path ahead**

As suggested above, the underlying root causes of the LIBOR scandal are likely complex and
multifaceted. Some (if not most) are as yet unknown. Consequently, the prudent redesign of LIBOR may well constitute one of the most vexing international regulatory problems of the next half decade. At present, there is but one point of general consensus — as noted in the Wheatley Review: robust and reliable benchmark rates are critical to the efficient operation of capital markets, more so now than ever. Indeed, if anything the current push towards mandatory ‘clearinghouses’ for derivatives redoubles the importance of focal benchmark reference rates (see, for example, Levitin 2013). We concur with Wheatley that a core benchmark reference rate is a phenomenon that is here to stay, whether in the guise of LIBOR or something else.

Beyond that, however, countless idiosyncratic proposals have emerged, with little consensus around them. We comment below on some of the principal candidates, offering additional constructive suggestions when appropriate.14 One set of proposals centers on systemic risk in general, and specifically the reintroduction of regulatory firewalls into large BHCs. However, these sorts of reforms do little to address many of the other drivers of current crisis in a targeted way — such as the second wave of the crisis (where trading profits were not the driving force), or widespread collaboration that appears to have taken place between reporting banks, not within them.

The Wheatley Review also proposes retaining the LIBOR fixings process in a privately administered entity, but subjecting its participants and administrators to the ‘sticks’ of ex ante regulatory oversight by the FSA/others, along with enhanced ex post enforcement oversight (Wheatley Review, p. 16). While this proposal has intuitive appeal, it faces at least two serious obstacles as well. First, it places tremendous confidence (and imposes a significant burden) on the same regulators and courts who for the good part of two decades turned a blind eye to a well-known and industry-wide pattern of misreporting. Second, even if effective regulation/enforcement were credible, the Wheatley proposal imposes both new upfront regulatory compliance costs and new back-end litigation exposure on a group of banks who, as of now, voluntarily participate in the LIBOR fixings process. The costs the proposal would visit upon reporting banks — costs avoided by non-participant banks or any of the other financial participants who use LIBOR — seem likely to induce many banks to consider disassociating from LIBOR.

Legal compulsion seems an unlikely long-term solution, since it would put participating banks at a long-term competitive disadvantage to non-participants. Designing financial and regulatory ‘carrots’ for participation is, in our view, a task that deserves considerably more attention than it has thus far garnered.15 As a first start, we would propose that along with enhanced exposure to regulatory and legal costs, LIBOR participants could (and should) be compensated for their submissions, in the form of cash payments, preferred access to central bank capital, or something equivalent. The terms of compensation, moreover, could be designed to fluctuate in an incentive-compatible manner contingent on participants’ individual market significance and the deviation in their reports from other metrics (such as market indicatives and others’ reports).

In addition, regulators would do well to consider redesigning the way that LIBOR rates are assembled once reports are received. Currently, LIBOR and EURIBOR rates are similarly computed using the arithmetic mean of the individual reports that remain after ‘trimming’ outliers (a population corresponding roughly to the middle quartiles of survey respondents). To be sure, such an approach has some notable advantages, particularly insofar as it eliminates the marginal incentive of a known outlier reporter to issue an extreme report.16 By the same token, the current protocols fail in a number of important respects. First, they do not tend to value-weight the reporting entities, and thus even the reports of a principal market participant — if an outlier — would tend to have no effect on announced rates. Second, and relatedly, the current approach of truncating outliers tends to enhance the influence of reporting entities that survive truncation. A promising alternative might be the design of a smoother ‘weighted-average’ system, whereby a reporting entity’s weight might depend on both its overall market share and its reports’ alignment with that of others and/or calibrating data.17 A related approach (and one that could be combined with greater oversight, as described above) would be to marshal more observable market rates from government bonds, swap markets, or commercial paper, as a substitute for, or a partial check on, reported bank borrowing rates (Wheatley Review, p. 25). This seems a sensible direction to move. A key concern for this market-driven approach, however, is that any candidate market indicative itself may stray from core fundamentals, or may reflect characteristics that go beyond the creditworthiness of the banks (a factor that may matter significantly to some investors).

Finally, the Wheatley Review recommends ‘warehousing’ the borrowing costs reported by individual banks away from public view for a defined period after their submission, currently proposed as three months (Wheatley Review, p. 38). The evident rationale behind such a proposal is two-fold. First, it will theoretically prevent member banks from strategically engineering their submissions to manipulate the average calculation or exclude themselves from it. Second, it may protect banks truthfully disclosing a high cost of borrowing from...
the speculations of an over-eager press. On the first point, we are skeptical that the warehousing proposal will prevent banks from expending efforts to determine statistically whether and when their reports are likely to influence movements in the index; consequently, the warehousing efforts may be ineffectual. As for the second point, to the extent that an improved LIBOR also would cultivate and incorporate observable market rates (such as swap market rates) to benchmark accuracy, significant information will already be available to broader market participants about each bank that arbitrageurs, the press, regulators, politicians or any other concerned party can use as a proxy.

Conclusion
In the end, while this debate is far closer to the starting gate than the finish line, three issues appear clear. First, as noted above, it seems inevitable that LIBOR in some form (or a close successor) will continue to play a critical role in financial contracting. Financial derivatives markets remain vitally important to the global economy, and their operation turns critically on a credible market benchmark. Second, the imposition of liability exposure and regulatory costs — absent some form of compensation — is unlikely to be a tenable long-term strategy. Finally, whatever long-term solution we craft will likely have to contend with a cascade of civil actions rooted in antitrust, securities fraud, and civil racketeering charges. A prudent regulatory redesign must contend with this significant source of exposure, both for the current scandal and ones down the road — a road whose ultimate destination remains stubbornly opaque.

Notes
1. Many thanks to participants at the University of British Columbia and UNSW Roundtable Conference on Regulating Culture: Compliance, Risk Management and Accountability in the Aftermath of LIBOR, Sydney Australia, for helpful comments and suggestions. All errors are ours.
2. See FSA (2012a). In late December 2012, Swiss banking giant UBS became the second entity to be caught up in the scandal, incurring a regulatory penalty of approximately $1.5 billion for a record of LIBOR and EURIBAR manipulations similar to Barclays’. See FSA (2012b). In February 2013, yet a third regulatory penalty of approximately $600 million was levied against the Royal Bank of Scotland. See FSA (2013).
5. This date itself is arguably a vast underestimate. Some with knowledge of alleged manipulation claim it to be widespread as far back as 1991 (see Keenan 2012).
6. See http://www.youtube.com/watch?v=SjbP100k_ME
7. We discuss the Wheatley Review later in this paper.
10. ibid.
12. As the fortunes of LIBOR began to falter, in 2009 the BBA conveyed its activities into a new legal entity, BBA LIBOR Ltd. According to at least one person involved in the decision, the BBA with the dual goals of shielding itself from prospective liability, as well as the (arguably) more altruistic goal of improving LIBOR’s governance through an independent board. While the first goal may well have succeeded (though that remains to be seen), the second likely did not: a majority of the nine independent board of directors were BBA executives, including Ewan and Knight. Marcus Agius, the chair of the Barclays board, also had a dual role as chairman of the BBA board (see Enrich and Colchester 2012).
13. See, for example, POGO (2011).
15. More precisely, the Wheatley Review suggests that banks be required to submit to LIBOR as a condition for participation in the market, but it ultimately deems compelled participation unnecessary at this stage (see Wheatley Review, p. 39).
16. For example, an entity already reporting the lowest cost of borrowing in the survey has no incentive to exaggerate its report even further, since its report will be excluded from the reported average.
17. Both the financial terms of LIBOR participation as well as the way the index is computed can substitute for some of the otherwise heavy burden that regulatory intervention would otherwise occupy.
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NEOFEUDALISM, PARAETHNOGRAPHY and the custodial regulation of financial institutions

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Regulators have turned to ‘culture’ in frustration. Through the global financial crisis (GFC) and now again with the LIBOR scandal, we observe market participants who simply do not abide by the spirit of the rules. They are, in a word, bad sports. So how do regulators, charged with refereeing the markets, get financiers to be good sports? Or how do we regulate culture?

In policy discourse, culture is commonly conceived in two ways. Lawyers tend to think of law as a fence that bounds otherwise free behavior. Economists tend to speak of incentives and reputational costs, thereby imagining culture as a cipher, like goodwill or transactional costs, which balances accounts. In neither case is culture understood to constitute market actors. And neither black letter rules nor incentives prevented the failures of the GFC, in which once proud institutions imploded or survived only with massive taxpayer support. Clearly, if culture is to be a part of the solution, then a more serious understanding of financial culture is required.

So how might one begin to think about financial culture? Consider travel. One sets out armed with a piece of plastic and sometimes a little book (for Americans, the book is blue). One exhibits these things to people, and is given airplane rides, hotel rooms, refreshments, etc. The traveller retains the plastic and the book, indeed, need not give anybody anything. Instead of actual exchange, various accounts on various computers are changed, i.e. by ‘payment’ one usually means a communication and a promise to account. Thus travel, and for that matter economic activity generally, take place in ‘economies of money’. Virtually all of what is exchanged does not exist except as essentially legal communication about the terms of financial instruments, promises to alter numbers. All that is solid melts into air, as it were.

One cannot think of communication (one cannot speak) outside of a culture. Financial culture is the water in which all swim; regulators and regulated and just plain folks. Finance itself is an expression and constitutive of culture; payment (contract, property, and so forth) is always already cultural. Thus the recent discovery of culture — as an afterthought, what to do when the rules fail to keep up with developments in the market — is subtly wrongheaded. Culture was always the question. But for a long time, before the GFC, the culture of financial elites was both workable and tacit, went without saying, and so ‘culture’ was not something that required worrying. Those days are gone.

What might be said about the structure of financial culture? To shift examples slightly, assume that you ‘order’ dinner, or better still, ‘command’ it in French, and your credit card is accepted, that is, the waiter (or ‘server’) and the kitchen obey your wishes. The restaurant and its staff accept that you are the sort of person to whom dinner should be brought. Unless you leave a tip in cash on the table, you do not actually pay for the meal. You send (or sign) a message authorising your institutions to credit their institutions. Various back offices handle looking out for the restaurant, which looks after its suppliers, its staff and so forth. From this perspective the credit card establishes the diner’s social standing. Credit transactions are rather feudal, in the fairly literal sense of a web of obligations and obedience built upon trust.

This does not sit well with the modern mind. Conventionally, transactions are imagined as exchanges among contracting parties who are legally presumed to be equals. Progress, as Henry Sumner Maine famously wrote, consisted in the historical movement from societies in which order was defined by status or birth, to societies in which order was defined by contract.

But economies of money consist of obligations and transfers without direct exchange. We see service, indeed, obedience. In The Theory of the Firm, Ronald
Finance itself is an expression and constitutive of culture; payment (contract, property, and so forth) is always already cultural. Thus the recent discovery of culture — as an afterthought, what to do when the rules fail to keep up with developments in the market — is subtly wrongheaded. Culture was always the question.

Coase was disturbed by the fact that so much economic activity was governed by hierarchies of command rather than by a price mechanism. He argued that a system of contractual subservience saved transaction costs. Perhaps, but this led Coase to the uneasy recognition that any system — including slavery — might be justified on the basis of efficiency demonstrated by its existence.

Much more may be said about the use of ‘transaction costs’ to rescue the economic imaginary of autonomous and presumptively equal contracting parties, but more old fashioned and honest words are ‘privilege’, ‘status’, and even ‘class’, understood as a relation to authoritative institutions and especially the social capital they command. It should go without saying that corporations, including banks, are — as the church and the military have always been — such authoritative institutions.

From this perspective, handing over a credit card is like showing a letter from the king, or wearing a uniform that displays my rank. The credit card establishes my position vis-a-vis a host of financial institutions and, by extension, the governments that attempt to back them up, but not always successfully. None of this is very democratic, and in that sense not very modern, and therefore difficult to contemplate. Unsurprisingly, we prefer to talk about payment in terms of an Arcadian quid pro quo, but we actually have a financial culture that consists largely of communications about relative social standing defined by a dubious system of accounting.

The meaning of financial culture
The understanding of financial culture suggested here is darker than the comfortable imaginary of lawyers and economists with which we began.

First, insofar as economic activity consists of communications that affect relative standing (‘positions’) among authoritative institutions, the public/private distinction is largely effaced. From the bottom up: webs of speech form the public sphere. The fact that speech is transactional does not somehow make it private. (The agora is a public space.) From the top down, all of the actors are licensed, regulated, and generally insured by the government. To quip, all finance is more or less public, a lesson from the recent wave of bailouts, and once again being demonstrated in Europe.

Second, almost all actors at issue in finance are officials, whose authorities and obligations are defined by law. Banks are institutions authorised to conduct certain kinds of intermediation. Bankers act not in their own capacity, but as officers of the bank. The legal capacity to dispose of assets depends on institutional status and authority, almost never on personal ownership — even in the case of so-called proprietary trading. Shareholders simply have no legal power to dispose of corporate assets. Thus the imagination that suffuses financial policy discourse, of the sheriff attempting to constrain yeoman traders, is silly. Financial policy asks, or should ask, after the proper relationships among different sorts of bureaucrats, whose powers are legally defined, whose collective actions allocate assets.

Third, and by extension from the first two points, the regulator and the object of regulation need to be understood in terms of one another, reciprocally rather than antagonistically. The metaphor of sports is instructive. The referee does not exist without the game. Conversely, games cannot be won without a set of conventions to determine the bounds of the field, what counts as a point, and the like. To understand rules — and regulators, and ultimately law — as essentially external to marketplace activity is a common error, but an error nonetheless. It is legal instruments that are being traded, all the way down.

Fourth, regulators and policy makers and even academics are conceptually ‘within’ the culture they seek to regulate. To some extent, this is a matter of biography — one must know a lot of finance even to follow the conversation. Cultural bias is also a matter of interest. The Wheatley Report is quite candid about the government’s wish to preserve the preeminence of London as a financial center. More generally, financial market participants have difficulty thinking about finance in ways other than ‘like what we’ve done, only somewhat better’.

While it is difficult to think about the context of one’s own thought, it is not quite impossible. Much contemporary anthropology is marked by the acknowledgment that the discipline is fundamentally ‘reflexive’: the account of a culture is always also the account of the writer of the culture. Hence the transformation of anthropology in the 80s has been called ‘writing culture’. The difficulty in the anthropological enterprise is acknowledging the self-referential character of the inquiry, and proceeding nonetheless.
LiBOR is reflexive, constructed by answers to the question: at what rate would your important bank be able to borrow a reasonable sum in a given currency for a specific tenor at 11:00 am? The British Bankers’ Association (BBA), through Thompson Reuters, thus asks bankers for their view of their place in the world, asks them to enact Keynes’s beauty pageant on themselves.16

Participating in a LiBOR survey is a striking example of what anthropologists Doug Holmes and George Marcus have termed the ‘paraethnographic’.17 In doing their jobs, participants in complex contemporary settings like banking must articulate their own culture, and their standing within it, to themselves as a condition of their functioning in the culture. On the one hand, global finance is impossibly complex. On the other hand, financial actors in fact imagine it, tell themselves a story about it, as a condition of working. In consequence, actors in present situations stand in much the same relationship to their own cultures as traditional anthropologists stood in relation to native cultures. Contemporary anthropology often seeks to use these lay accounts, that is, depending on ethnography done by non-anthropologists — hence ‘paraethnographic’.

Not only do actors describe their contexts to themselves, in so doing, they help constitute the context. LiBOR both reflects and creates markets for money. Nor is LiBOR the only place financial conversation operates to create the conditions under which finance is done. Consider inflation targeting: central banks announce not only their objectives, but the means by which they hope those objectives will be achieved, in a self-conscious effort to have those objectives priced in and traded upon, in a communicative circle.

For an anthropologist of the contemporary, a paraethnographic perspective can provide a conceptual grasp on complicated bureaucracies like banking or the military.18 For a regulator, a paraethnographic understanding of financial institutions could reconfigure the regulatory relationship, especially prudential regulation.

**Reconfiguring the regulatory relationship**

How so? The Bank of England’s Andrew Haldane recently gave a fine speech at the Federal Reserve’s annual meeting in Jackson Hole.19 In it, Haldane argued that financial regulation, and specifically the Basel process, resulted in rules that were so complex that, in the aggregate, they were counterproductive. Quite apart from questions of efficiency, Basel hadn’t made banks safe enough to prevent the GFC. So Haldane argued that regulation should rely less on elaborate articulation of rules, and more on the judgment of experienced officials. Haldane was not too explicit about what bank regulation would look like under such circumstances, but it seems fair to imagine that there would be many discussions in which regulators asked actors to convince them why their practices were safe, and their portfolios sound.

The cultural (contexts in which such conversations would be held) would be substantially different from the (orthodox) understanding of political economy, and hence financial regulation, as the bounded interaction of essentially private actors (the understanding with which we began our discussion of culture). As the GFC has demonstrated, the institutions of contemporary societies depend on well-functioning financial markets much as they depend on electricity, hence ‘social capitalism’.20

The social, and hence broadly political, character of contemporary financial capitalism is particularly obvious in the United States, where education, retirement, and healthcare are often directly dependent on portfolio management, rather than the taxing power of the state. If financial capitalism is understood to be social, then financial regulation is a custodial enterprise in which bankers and their regulators come to mutually agreed understanding on how to manage assets. Thus the relationship between regulator and regulated could be transformed, from one of opposition to mutually reinforcing, and interdependent, participation in the custody of social assets.21

A custodial approach to regulation should engender, within regulatory relationships, the sensitivity and tough mindedness traditionally associated with trust obligations.22 From this perspective, regulators might think of what happened at Barclays and many of the shenanigans of the past years not just as actions of a few ‘bad apples’, or even as more general expressions of a corrupt institutional culture, but as a kind of personal and professional betrayal, for which the appropriate response is anger. If management deceived key equity investors in a company, would we not expect to see such managers replaced? It would have been completely understandable had the radical interventions of 2008, and since then, resulted in the dissolution of the corporations involved: the discharge of management, the forfeit of equity and the abolition of the brands. While some banks, especially smaller banks and particularly those in the US, were resolved, banking, which is necessary, was repeatedly confused with specific banks, which are replaceable.23 From a paraethnographic perspective, if management is no longer trustworthy then paraethnographic regulation, founded on trust, is not possible and the institution cannot be licensed or backed by the state. Even if a society does not have the stomach to replace its banks, it should at least have the will to replace its bankers. Suffice it to say that such will is not to be seen in advanced economies at present.
Quite apart from questions of efficiency, Basel hadn’t made banks safe enough to prevent the GFC. So Haldane argued that regulation should rely less on elaborate articulation of rules, and more on the judgment of experienced officials.

What does a custodial understanding of regulation mean for the efforts to ‘fix’ LIBOR in particular? Most proposals for reform, including by Wheatley, treat LIBOR as if it were a device like a thermometer that measured an aspect of the natural world. Barclays and others tampered with the instrument, so that it gave an inaccurate reading. But LIBOR doesn’t measure anything outside the social context of its formation. As every teacher knows, performance on a test is always about the test and maybe the class, but only tangentially about the truth. Similarly, LIBOR is a ritual for expressing sentiment about the cost of capital and therefore the relative standing of financial institutions in the present environment. But nothing is measured. LIBOR estimates are provided even in the absence of trades, that is, on a speculative basis.

Thus LIBOR wasn’t untrue in the way that a faulty thermometer is inaccurate. The ritual was performed, and the BBA did generate a very important number on a daily basis. LIBOR was untrue in the sense of being dishonest. When asked ‘what do you believe?’, players lied. That is, the virtue at issue is not the mechanical one of accuracy, but the moral virtue of honesty. Lies about interest rates, however, are dwarfed by the ideological claim that the officials of financial institutions, enabled, licensed, and ultimately backed by the state, are merely private actors who are to act within bounds arguably set by lawyers, and in rational accordance with the disincentives of reputational cost, as the economists unconvincingly have it.

How could financial regulation be more honest?

Through a paraethnographic encounter with their regulators, leaders of financial institutions could assist in the design of their own constraints, and could shape their own service. LIBOR reform, and what has been learned from the financial crisis more generally, could yet be seen in happy terms. Bankers and their regulators could come to recognise that they are profoundly privileged and, as such, have great obligations. The current culture of disingenuous reporting, pro forma compliance with byzantine and contested rules, and perennially insufficient oversight could be replaced by a more reciprocal relationship in which those who act and those who authorise and ultimately insure speak earnestly and candidly about their worlds. Together these elites could exercise their power wisely, and navigate a prudent course forward. Honest conversations about worlds dimly imaginable could lead to good policy in spite of unavoidable uncertainty. The people would be grateful for the custody of their institutions. The ship of trade would make good, but not rash, progress.

Even in such a well-governed financial order, sometimes an institution would fail, and the taxing power of the state would have to be used to sustain the viability of the order. At issue, then, would also be the nature of the failure. Was management unworthy? Sometimes an institution or an entire industry may lose sight of its own virtues, a story of decadence and decline easily told in London and New York. In such cases, when the privileged had abused their trust, they would be removed from office, and their responsibility transferred to more worthy mandarins.

But privileged individuals would not often abuse their trust. People rarely willingly leave their class for a lower one. Thus a paraethnographic, conversational and reciprocal understanding of the regulatory relationship could go a long way toward making banking a more virtuous enterprise. Presently empty promises to reform could be made serious by establishing contexts in which elites were answerable to other elites, at pain of losing their offices and so their status. ■
Notes
1. Author of Out of Crisis: Rethinking Our Financial Markets, Paradigm Press, 2009, The expressions offered here were first aired as a keynote for a conference given by the law firm of Allen and the University of New South Wales Centre for Law, Markets and Regulation, Regulating Culture: Compliance, Risk Management and Accountability in the Aftermath of LIBOR, Sydney, 26 October 2012. I thank the participants for many thoughtful comments. I also thank Justin O’Brien for the invitation to speak, and Jack Schiegel and Douglas Holmes for good reads on short notice. Sean O’Brien provided excellent and speedy research help, for which I am grateful. Any failings are my responsibility.

2. See agenda, Regarding Culture: Compliance, Risk Management and Accountability in the Aftermath of LIBOR, UNSW Centre for Law, Markets and Regulation, 26 October, 2012.


4. See note 1.


10. Incidentally, it is not entirely clear what is meant, in the LIBOR context, by ‘unsecured’ lending. Who needs collateral if obligations are backed by the taxing power of the state?


12. As an aside, none of the cultural anthropologists with whom I speak make any attempt to define ‘culture’ objectively and externally. Instead, culture is a placeholder for a web of understandings in which both anthropologists and their interlocutors are implicated.


14. As another aside, economics and so finance has not yet really taken the turn to interpretation that marks the rest of the social sciences and also the humanities.

15. See Wheatley, note 11, p. 22.


20. See Problematique, note 5.

21. The elegant exchange of letters between Barclays Chairman Marcus Agius and the FSA’s Adair Turner is exactly what I’m NOT talking about. See The Exchange of Letters between Lord Turner, Chairman of the FSA, and Marcus Agius, Chairman of Barclays, available at http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/481/48111.htm

22. See, for example, Meinhard v. Salmon, 249 N.Y. 458 (1928) (A trustee is held to something stricter than the morals of the market place).

23. Banks, as Bagehot taught a long time ago, should conduct themselves with the understanding that they are replaceable. Walter Bagehot 1877, Lombard Street: A Description of the Money Market.
